Reportable Disease Surveillance in Virginia, 2013

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Introduction

The Virginia Department of Health, Office of Epidemiology is pleased to present its twenty-sixth annual report of disease surveillance activities. This report summarizes morbidity data reported by the Virginia Department of Health, Office of Epidemiology to the federal Centers for Disease Control and Prevention (CDC) during calendar year 2013.

The Office of Epidemiology, in conjunction with health departments in districts throughout Virginia, is responsible for the ongoing statewide surveillance of diseases according to the provisions of the *Regulations for Disease Reporting and Control.* Disease surveillance involves the collection of pertinent data, the tabulation and evaluation of the data, and the dissemination of the information. These data provide the foundation for public health activities to reduce morbidity.

Diseases must be diagnosed and reported to the health department before case investigations can occur and disease control activities can begin. Physicians, personnel in medical care facilities, laboratory directors, and other health care providers are therefore essential to the surveillance process. By reporting diseases, health care personnel aid the health department in identifying unusual disease patterns occurring in the community. The health department notifies physicians of these unusual disease patterns, which helps physicians provide a more rapid diagnosis and treatment of individuals who present with compatible symptoms.

This report summarizes those diseases and conditions that are listed as officially reportable in the *Regulations for Disease Reporting and Control*. The report is divided into four sections as described below.

Introduction and Data Summary: Tables summarizing 2013 morbidity are included in this introductory section. These tables include the list of reportable diseases; ten year trends for both the number of reported cases and the incidence rate per 100,000 for all reportable diseases; the number of reports and incidence rate per 100,000 population for selected diseases by age group, race, sex, and health planning region; and the number and percent of reports by quarter of onset.

Descriptive Epidemiology of Reportable Diseases: This section consists of narrative and graphics describing the populations reported with each disease or condition. The section includes information about the total number of cases reported; the ten year trend in number of reported cases and incidence rate; the demographics of cases in terms of age, race and sex; and the distribution of cases by date of onset and health planning region of the state. Mortality, microbial species, and other attributes of diseases also are presented when applicable. Sources of information include the CDC (http://www.cdc.gov/), *Infectious Disease Epidemiology* (Nelson, K., Williams, C., & Graham, N., 2004), *Red Book: 2012 Report of the Committee on Infectious Diseases* (American Academy of Pediatrics, Pickering, L., Baker, C., Kimberlin, D., Long, S., eds., 2012), and *Control of Communicable Diseases Manual* (Heymann, D., ed., 2008).

Population-based rates are often presented to provide a measure of disease frequency in the population and to allow for comparisons between groups. When calculating rates, population estimates for 2012 prepared by the United States Census Bureau for the state's cities and counties and total population were used.

Race is usually presented as black, white, or other. The "other" race category includes Asian/Pacific Islanders, American Indians, Alaskan Natives and multi-racial persons.

In describing the occurrence of disease throughout the year, date of onset is used whenever it is available. Onset is the time when symptoms first occurred. Some cases reported in 2013 experienced onset prior to the year of report. In some situations information is only available on the date of report, or the date the report was first received by the health department, and these dates are used in place of date of onset. Date of specimen collection or date of diagnosis may also be used to estimate date of onset.

To the extent possible, rates by locality are calculated based on residence of the patient. When the address of the patient is neither reported by the health care provider nor ascertained by the health department, the location of the reporting source, such as the physician, hospital, or laboratory, is used.

Number of Cases and Rate by Locality: This section of the report presents the number of cases and incidence rate per 100,000 population for selected diseases by locality, district, and health planning region. In previous reports, cities and counties that shared one health department were combined and the data were presented as one jurisdiction. Beginning with the 2013 annual report, all independent cities and counties are listed as separate entities. Caution is urged in interpreting the data in this section as well as in the following section because localities with small populations may have large disease rates but only a few reported cases of disease. Both numbers of cases and incidence rates should be considered when using these tables to rank morbidity by city or county.

Maps of Incidence Rates: Disease-specific maps are presented within several of the narratives to depict incidence rates by locality. For each disease-specific map, the rates have been divided into four categories using the following process:

> Category 1 – Localities reporting zero cases of the disease.
>
> Category 2 – Localities with an incidence rate greater than zero and up to the mean for the state.
>
> Category 3 – Localities with an incidence rate greater than the mean and up to one standard deviation above the mean for the state.
>
> Category 4 – Localities with an incidence rate greater than one standard deviation above the mean for the state.

The Office of Epidemiology hopes that the readers of this report will find it to be a valuable resource for understanding the epidemiology of reportable diseases in Virginia. Any questions or suggestions about this report may be directed to Lala Wilson at the Virginia Department of Health, Office of Epidemiology, P.O. Box 2448, 109 Governor St., 5th Floor, Richmond, Virginia 23218, or by telephone at 804-864-8141.

Table 1. Reportable Diseases in Virginia, 2013

Acquired immunodeficiency syndrome (AIDS)	Monkeypox
Amebiasis	Mumps
Anthrax	Mycobacterial Diseases (including AFB)
Arboviral infection (e.g., dengue, EEE, LAC, SLE, WNV)	Ophthalmia neonatorum
Botulism	Outbreaks, all (including foodborne, healthcare-associated, occupational, toxic substance-related, and waterborne)
Brucellosis	
Campylobacteriosis	Pertussis
Chancroid	Plague
Chickenpox (Varicella)	Poliovirus infection, including poliomyelitis
Chlamydia trachomatis infection	Psittacosis
Cholera	Q fever
Creutzfeldt-Jakob disease if <55 years of age	Rabies, human and animal
Cryptosporidiosis	Rabies treatment, post-exposure
Cyclosporiasis	Rubella, including congenital rubella syndrome
Diphtheria	Salmonellosis
Disease caused by an agent that may have been used as a weapon	Severe acute respiratory syndrome (SARS)
Ehrlichiosis/Anaplasmosis	Shigellosis
Escherichia coli infection, Shiga toxin-producing	Smallpox (variola)
Giardiasis	Spotted fever rickettsiosis, including RMSF
Gonorrhea	*Staphylococcus aureus* infection, invasive, methicillin-resistant (MRSA) and vancomycin-intermediate or vancomycin-resistant
Granuloma inguinale	
Haemophilus influenzae infection, invasive	Streptococcal disease, Group A, invasive or toxic shock
Hantavirus pulmonary syndrome	*Streptococcus pneumoniae* infection, invasive, in children <5 years of age
Hemolytic uremic syndrome (HUS)	Syphilis
Hepatitis A	Tetanus
Hepatitis B (acute and chronic)	Toxic substance-related illness
Hepatitis C (acute and chronic)	Trichinosis (Trichinellosis)
Hepatitis, other acute viral	Tuberculosis (TB), active disease
Human immunodeficiency virus (HIV) infection	Tuberculosis infection in children <4 years of age
Legionellosis	Tularemia
Leprosy (Hansen disease)	Typhoid/paratyphoid fever
Listeriosis	Unusual occurrence of disease of public health concern
Lyme disease	Vaccinia, disease or adverse event
Lymphogranuloma venereum	*Vibrio* infection
Malaria	Viral hemorrhagic fever
Measles (Rubeola)	Yellow fever
Meningococcal disease	Yersiniosis

Table 2a. Ten-Year Trend in Number of Reported Cases of Reportable Diseases in Virginia, 2004-2013

Disease	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	5-year Average
AIDS	774	626	589	599	638	*	*	*	*	*	*
Amebiasis	25	42	45	53	42	20	14	17	29	26	24.4
Anthrax	0	0	0	0	0	0	0	0	0	0	0.0
Arboviral infection	7	5	5	5	3	8	20	20	51	34	20.4
Botulism, foodborne	0	0	0	1	0	0	0	0	0	0	0.0
Botulism, non-foodborne	3	1	0	0	3	4	1	2	2	3	2.4
Brucellosis	1	1	0	0	0	5	0	0	0	3	1.0
Campylobacteriosis	668	618	669	665	669	770	778	805	764	709	757.2
Chancroid	0	0	1	0	0	0	0	0	1	0	0.2
Chickenpox (Varicella)	1,240	1,834	1,959	1,582	1,489	773	548	549	505	374	772.8
Chlamydia trachomatis infection	21,635	22,668	24,081	24,528	31,205	30,904	30,799	36,317	35,016	33,561	32,848.2
Cholera	0	0	0	0	0	0	1	1	0	0	0.4
Creutzfeldt-Jakob disease (CJD)^	0	0	1	1	0	0	0	0	0	0	0.0
Cryptosporidiosis	66	77	71	90	81	86	109	140	144	144	112.0
Cyclosporiasis	1	3	0	2	2	1	1	2	1	4	1.4
Diphtheria	0	0	0	0	0	0	0	0	0	0	0.0
Ehrlichiosis/Anaplasmosis	8	13	8	39	65	72	93	131	148	143	101.8
E. coli infection, Shiga toxin-producing	62	111	168	165	241	156	149	123	81	109	150.0
Giardiasis	563	602	514	582	432	503	512	290	272	278	401.8
Gonorrhea	8,565	8,346	6,474	6,267	10,336	7,791	7,401	6,521	6,894	6,992	7,788.6
Granuloma inguinale	0	0	0	0	0	0	0	0	0	0	0.0
Haemophilus influenzae infection, invasive	56	61	69	80	92	88	85	108	101	98	94.8
Hantavirus pulmonary syndrome	0	0	0	0	0	0	0	0	0	0	0.0
Hemolytic uremic syndrome	1	1	2	1	2	2	2	3	3	6	2.4
Hepatitis A	140	93	64	89	51	42	52	30	49	36	44.8
Hepatitis B, acute	303	146	78	144	130	110	97	84	84	72	101.0
Hepatitis C, acute	15	13	9	8	8	10	13	25	76	41	26.4
HIV disease*	875	833	914	836	844	1429*	1,194	1,085	1,105	1,151	1,192.8
Influenza	3,404	15,942	16,107	8,416	24,580	40,614	2,467	18,153	19,146	27,564	20,992.0
Influenza-associated deaths in children~	1	2	3	3	3	8	0	5	1	2	3.4
Kawasaki syndrome	16	19	6	2	3	3	2	–	–	–	1.6
Lead - elevated blood levels in children**	703	527	515	394	307	389	350	274	201	164	304.2
Legionellosis	56	55	68	61	66	67	79	93	76	123	76.2
Leprosy (Hansen disease)	0	0	1	1	0	0	1	1	0	0	0.4
Listeriosis	27	17	20	16	17	16	13	15	18	29	15.8
Lyme disease	216	274	357	959	933	908	1,245	1,023	1,110	1,307	1,043.8
Lymphogranuloma venereum	1	2	0	0	0	0	0	0	0	0	0.0
Malaria	59	44	55	65	49	61	67	78	65	75	64.0
Measles	0	0	0	0	1	1	3	7	0	0	2.4

Table 2a. Ten-Year Trend in Number of Reported Cases of Reportable Diseases in Virginia, 2004-2013 (continued)

Disease	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	5-year Average
Meningococcal disease	24	35	22	23	24	18	21	18	5	7	17.2
Monkeypox	0	0	0	0	0	0	0	0	0	0	0.0
Mumps	11	2	117	27	9	9	13	13	7	109	10.2
Ophthalmia neonatorum	8	18	11	5	10	7	7	8	11	4	8.6
Pertussis	400	363	221	128	198	222	384	399	625	418	365.6
Plague	0	0	0	0	0	0	0	0	0	0	0.0
Poliovirus infection, including poliomyelitis	0	0	0	0	0	0	0	0	0	0	0.0
Psittacosis	0	0	0	0	0	0	0	0	0	0	0.0
Q fever	0	2	4	4	2	1	2	3	0	3	1.6
Rabies in animals	474	495	637	730	620	564	573	618	562	488	587.4
Rabies in humans	0	0	0	0	0	1	0	0	0	0	0.2
Rubella, including congenital rubella syndrome	0	0	0	0	0	0	2	0	0	0	0.4
Salmonellosis	1,196	1,172	1,089	1,249	1,165	1,095	1,210	1,208	1,144	1,048	1,164.4
Severe acute respiratory syndrome (SARS)	0	0	0	0	0	0	0	0	0	0	0.0
Shigellosis	167	134	120	200	310	198	145	107	91	115	170.2
Smallpox	0	0	0	0	0	0	0	0	0	0	0.0
Spotted fever rickettsiosis, including RMSF	45	121	114	123	155	53	145	231	461	350	209.0
Staphylococcus aureus infection, invasive (MRSA)	-	-	-	253	1,524	1,124	1,201	1,304	1,294	1,247	1,289.4
Staphylococcus aureus infection, VISA or VRSA	0	0	0	1	0	0	1	2	2	3	1.0
Streptococcal disease, Group A, invasive or TSS	74	110	132	162	150	174	191	192	168	190	175.0
Streptococcus pneumoniae infection, invasive***	35	37	50	52	52	47	59	33	36	37	45.4
Syphilis, early	224	291	351	407	500	529	553	502	593	676	535.4
Tetanus	1	1	0	0	0	0	0	0	1	2	0.2
Toxic shock syndrome (Staphylococcal)	2	1	0	1	0	0	2	–	–	–	0.4
Toxic substance-related illness	321	324	415	434	356	342	298	273	317	304	317.2
Trichinosis (Trichinellosis)	1	1	0	0	1	0	0	2	2	2	1.0
Tuberculosis	329	355	332	309	292	273	268	221	235	180	257.8
Tularemia	0	0	0	3	1	0	1	6	2	2	2.0
Typhoid fever	11	20	20	21	19	12	11	9	10	10	12.2
Vaccinia, disease or adverse event	0	0	0	0	1	0	0	0	0	1	0.2
Vibrio infection	20	25	32	33	29	29	40	30	41	42	33.8
Viral hemorrhagic fever	0	0	0	0	0	0	0	0	0	0	0.0
Yellow fever	0	0	0	0	0	0	0	0	0	0	0.0
Yersiniosis	10	18	10	10	14	11	13	10	8	11	11.2

^ Condition is reportable only in individuals < 55 years of age.
- Not a reportable disease at this time.
* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.
~ Condition is reportable only in children < 18 years of age.
** Condition is reportable only in children < 16 years of age.
*** Condition is reportable only in children < 5 years of age.

Table 2b. Ten-Year Trend in Incidence Rate per 100,000 Population for Reportable Diseases, Virginia, 2004-2013

Disease	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	5-year Annual Rate
AIDS	10.4	8.4	7.8	7.8	8.3	*	*	*	*	*	*
Amebiasis	0.3	0.6	0.6	0.7	0.5	0.3	0.2	0.2	0.4	0.3	0.3
Anthrax	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arboviral infection	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.2	0.6	0.4	0.3
Botulism, foodborne	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Botulism, non-foodborne	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Brucellosis	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Campylobacteriosis	9.0	8.3	8.8	8.7	8.7	9.9	9.9	10.1	9.4	8.7	9.6
Chancroid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chickenpox (Varicella)	16.6	24.6	25.9	20.7	19.3	9.9	7.0	6.9	6.2	4.6	9.8
Chlamydia trachomatis infection	290.0	303.9	318.2	320.9	404.6	397.8	390.7	453.9	432.5	410.0	416.2
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Creutzfeldt-Jakob disease (CJD)^	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cryptosporidiosis	0.9	1.0	0.9	1.2	1.1	1.1	1.4	1.7	1.8	1.8	1.4
Cyclosporiasis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diphtheria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ehrlichiosis/Anaplasmosis	0.1	0.2	0.1	0.5	0.8	0.9	1.2	1.6	1.8	1.7	1.3
E. coli infection, Shiga toxin-producing	0.8	1.5	2.2	2.2	3.1	2.0	1.9	1.5	1.0	1.3	1.9
Giardiasis	7.5	8.1	6.8	7.6	5.6	6.5	6.5	3.6	3.4	3.4	5.1
Gonorrhea	114.8	111.9	85.6	82.0	134.0	100.3	93.9	81.5	85.1	85.4	98.7
Granuloma inguinale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemophilus influenzae infection, invasive	0.8	0.8	0.9	1.0	1.2	1.1	1.1	1.3	1.2	1.2	1.2
Hantavirus pulmonary syndrome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hemolytic uremic syndrome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Hepatitis A	1.9	1.2	0.8	1.2	0.7	0.5	0.7	0.4	0.6	0.4	0.6
Hepatitis B, acute	4.1	2.0	1.0	1.9	1.7	1.4	1.2	1.0	1.0	0.9	1.3
Hepatitis C, acute	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.9	0.5	0.3
HIV disease*****	11.7	11.2	12.1	10.9	10.9	18.4	15.1	13.6	13.6	14.1	15.1
Influenza	45.6	213.7	212.8	110.1	318.7	522.8	31.3	226.9	236.5	336.7	266.0
Influenza-associated deaths in children~	0.1	0.1	0.2	0.2	0.2	0.4	0.0	0.3	0.1	0.1	0.2
Kawasaki syndrome	0.2	0.3	0.1	0.0	0.0	0.0	0.0	–	–	–	0.0
Lead - elevated blood levels in children**	47.0	35.2	31.9	24.7	19.0	24.0	21.3	16.7	12.2	10.0	18.6
Legionellosis	0.8	0.7	0.9	0.8	0.9	0.9	1.0	1.2	0.9	1.5	1.0
Leprosy (Hansen disease)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Listeriosis	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.2
Lyme disease	2.9	3.7	4.7	12.5	12.1	11.7	15.8	12.8	13.7	16.0	13.2
Lymphogranuloma venereum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaria	0.8	0.6	0.7	0.9	0.6	0.8	0.8	1.0	0.8	0.9	0.8
Measles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

Table 2b. Ten-Year Trend in Incidence Rate per 100,000 Population for Reportable Diseases, Virginia, 2004-2013 (continued)

Disease	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	5-year Annual Rate
Meningococcal disease	0.3	0.5	0.3	0.3	0.3	0.2	0.3	0.2	0.1	0.1	0.2
Monkeypox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mumps	0.1	0.0	1.5	0.4	0.1	0.1	0.2	0.2	0.1	1.3	0.1
Ophthalmia neonatorum	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
Pertussis	5.4	4.9	2.9	1.7	2.6	2.9	4.9	5.0	7.7	5.1	4.6
Plague	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poliovirus infection, including poliomyelitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Psittacosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q fever	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rabies in humans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella, including congenital rubella syndrome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmonellosis	16.0	15.7	14.4	16.3	15.1	14.1	15.4	15.1	14.1	12.8	14.8
Severe acute respiratory syndrome (SARS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shigellosis	2.2	1.8	1.6	2.6	4.0	2.5	1.8	1.3	1.1	1.4	2.2
Smallpox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted fever rickettsiosis, including RMSF	0.6	1.6	1.5	1.6	2.0	0.7	1.8	2.9	5.7	4.3	2.6
Staphylococcus aureus infection, invasive (MRSA)	–	–	–	3.3	19.8	14.5	15.2	16.3	16.0	15.2	16.3
Staphylococcus aureus infection, VISA or VRSA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Streptococcal disease, Group A, invasive or TSS	1.0	1.5	1.7	2.1	1.9	2.2	2.4	2.4	2.1	2.3	2.2
Streptococcus pneumoniae infection, invasive***	7.0	7.4	9.7	10.2	10.0	9.0	11.1	6.5	7.1	7.3	8.8
Syphilis, early	3.0	3.9	4.6	5.3	6.5	6.8	7.0	6.3	7.3	8.3	6.8
Tetanus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Toxic shock syndrome (Staphylococcal)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–	–	–	0.0
Toxic substance-related illness	4.3	4.3	5.5	5.7	4.6	4.4	3.8	3.4	3.9	3.7	4.0
Trichinosis (Trichinellosis)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tuberculosis	4.4	4.8	4.4	4.0	3.8	3.5	3.4	2.8	2.9	2.2	3.3
Tularemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Typhoid fever	0.1	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2
Vaccinia, disease or adverse event	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vibrio infection	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.4
Viral hemorrhagic fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yersiniosis	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1

^ Condition is reportable only in individuals < 55 years of age.

\- Not a reportable disease at this time.

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

~ Condition is reportable only in children < 18 years of age.

** Condition is reportable only in children < 16 years of age.

*** Condition is reportable only in children < 5 years of age.

Table 3. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Age Group, Virginia, 2013

Disease	<1 year		1-9 years		10-19 years		20-29 years		30-39 years		40-49 years		50-59 years		60+ years		Unk.
Population:	100,810		927,706		1,058,560		1,173,946		1,083,649		1,167,782		1,148,368		1,525,046		
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	
Amebiasis	0	0.0	5	0.5	0	0.0	3	0.3	4	0.4	6	0.5	5	0.4	3	0.2	0
Arboviral infection	0	0.0	1	0.1	3	0.3	9	0.8	5	0.5	8	0.7	2	0.2	6	0.4	0
Campylobacteriosis	15	14.9	81	8.7	52	4.9	102	8.7	105	9.7	99	8.5	108	9.4	146	9.6	1
Chickenpox (Varicella)	31	30.8	169	18.2	99	9.4	31	2.6	24	2.2	16	1.4	3	0.3	1	0.1	0
Chlamydia trachomatis infection	1	1.0	3	0.3	9,281	876.8	19,854	1,691.2	3,410	314.7	749	64.1	184	16.0	32	2.1	47
Cryptosporidiosis	2	2.0	18	1.9	13	1.2	26	2.2	18	1.7	17	1.5	17	1.5	33	2.2	0
Ehrlichiosis/Anaplasmosis	0	0.0	0	0.0	9	0.9	6	0.5	6	0.6	25	2.1	28	2.4	69	4.5	0
E. coli infection, Shiga toxin-producing	8	7.9	39	4.2	22	2.1	18	1.5	3	0.3	6	0.5	3	0.3	10	0.7	0
Giardiasis	2	2.0	54	5.8	22	2.1	42	3.6	36	3.3	46	3.9	43	3.7	32	2.1	1
Gonorrhea	0	0.0	2	0.2	1,545	146.0	4,003	341.0	974	89.9	307	26.3	117	10.2	30	2.0	14
Haemophilus influenzae infection, invasive	1	1.0	6	0.6	1	0.1	5	0.4	1	0.1	9	0.8	11	1.0	64	4.2	0
Hemolytic uremic syndrome	1	1.0	1	0.1	1	0.1	1	0.1	0	0.0	0	0.0	0	0.0	2	0.1	0
Hepatitis A	0	0.0	2	0.2	7	0.7	6	0.5	6	0.6	1	0.1	2	0.2	12	0.8	0
Hepatitis B, acute	0	0.0	0	0.0	1	0.1	7	0.6	26	2.4	21	1.8	13	1.1	4	0.3	0
Hepatitis C, acute	0	0.0	0	0.0	1	0.1	16	1.4	15	1.4	6	0.5	3	0.3	0	0.0	0
HIV disease*	1	1.0	6	0.6	59	5.6	418	35.6	236	21.8	239	20.5	137	11.9	55	3.6	0
Lead - elevated blood levels in children**	5	5.0	155	16.7	4	0.6	-	-	-	-	-	-	-	-	-	-	0
Legionellosis	0	0.0	1	0.1	0	0.0	2	0.2	3	0.3	18	1.5	40	3.5	59	3.9	0
Listeriosis	4	4.0	0	0.0	0	0.0	1	0.1	1	0.1	1	0.1	6	0.5	16	1.0	0
Lyme disease	0	0.0	190	20.5	220	20.8	137	11.7	149	13.7	167	14.3	200	17.4	244	16.0	0
Malaria	0	0.0	11	1.2	11	1.0	13	1.1	19	1.8	10	0.9	6	0.5	5	0.3	0
Measles	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Meningococcal disease	1	1.0	1	0.1	1	0.1	0	0.0	2	0.2	1	0.1	1	0.1	0	0.0	0
Mumps	0	0.0	1	0.1	32	3.0	71	6.0	2	0.2	1	0.1	0	0.0	2	0.1	0
Pertussis	58	57.5	93	10.0	132	12.5	11	0.9	26	2.4	37	3.2	35	3.0	26	1.7	0
Q fever	0	0.0	0	0.0	0	0.0	1	0.1	1	0.1	0	0.0	1	0.1	0	0.0	0
Salmonellosis	79	78.4	209	22.5	96	9.1	113	9.6	103	9.5	113	9.7	126	11.0	209	13.7	0
Shigellosis	0	0.0	45	4.9	12	1.1	16	1.4	13	1.2	11	0.9	10	0.9	8	0.5	0
Spotted fever rickettsiosis, including RMSF	0	0.0	13	1.4	23	2.2	24	2.0	38	3.5	66	5.7	82	7.1	104	6.8	0
Staphylococcus aureus infection, invasive (MRSA)	13	12.9	12	1.3	7	0.7	45	3.8	76	7.0	96	8.2	200	17.4	796	52.2	2
Streptococcal disease, Group A, invasive or TSS	0	0.0	14	1.5	5	0.5	9	0.8	25	2.3	25	2.1	21	1.8	88	5.8	3
Streptococcus pneumoniae, invasive***	15	14.9	22	5.4	-	-	-	-	-	-	-	-	-	-	-	-	0
Syphilis, early	0	0.0	0	0.0	32	3.0	307	26.2	141	13.0	104	8.9	77	6.7	15	1.0	0
Tuberculosis	0	0.0	3	0.3	10	0.9	40	3.4	30	2.8	32	2.7	26	2.3	39	2.6	0
Typhoid fever	0	0.0	4	0.4	0	0.0	0	0.0	2	0.2	0	0.0	2	0.2	2	0.1	0
Vibrio infection	0	0.0	2	0.2	4	0.4	5	0.4	3	0.3	7	0.6	7	0.6	14	0.9	0

- Not reportable at this age.

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 4. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Race, Virginia, 2013

Disease	Total	Black		White		Other		Unk.
Population:	8,185,867	1,679,707		5,923,590		582,570		
		N	Rate	N	Rate	N	Rate	N
Amebiasis	26	1	0.1	5	0.1	1	0.2	19
Arboviral infection	34	1	0.1	8	0.1	5	0.9	20
Campylobacteriosis	709	25	1.5	296	5.0	14	2.4	374
Chickenpox (Varicella)	374	39	2.3	216	3.6	25	4.3	94
Chlamydia trachomatis infection	33,561	14,650	872.2	6,833	115.4	2,025	347.6	10,053
Cryptosporidiosis	144	18	1.1	80	1.4	6	1.0	40
Ehrlichiosis/Anaplasmosis	143	4	0.2	72	1.2	1	0.2	66
E. coli infection, Shiga toxin-producing	109	6	0.4	68	1.1	3	0.5	32
Giardiasis	278	19	1.1	85	1.4	12	2.1	162
Gonorrhea	6,992	4,380	260.8	974	16.4	237	40.7	1,401
Haemophilus influenzae infection, invasive	98	10	0.6	59	1.0	1	0.2	28
Hemolytic uremic syndrome	6	1	0.1	4	0.1	0	0.0	1
Hepatitis A	36	3	0.2	16	0.3	3	0.5	14
Hepatitis B, acute	72	7	0.4	34	0.6	2	0.3	29
Hepatitis C, acute	41	1	0.1	31	0.5	0	0.0	9
HIV disease*	1,151	674	40.1	339	5.7	125	21.5	13
Lead - elevated blood levels in children**	164	34	8.7	36	3.2	9	6.8	85
Legionellosis	123	25	1.5	59	1.0	2	0.3	37
Listeriosis	29	8	0.5	15	0.3	4	0.7	2
Lyme disease	1,307	17	1.0	615	10.4	28	4.8	647
Malaria	75	47	2.8	9	0.2	4	0.7	15
Measles	0	0	0.0	0	0.0	0	0.0	0
Meningococcal disease	7	0	0.0	6	0.1	0	0.0	1
Mumps	109	5	0.3	70	1.2	5	0.9	29
Pertussis	418	24	1.4	208	3.5	3	0.5	183
Q fever	3	0	0.0	3	0.1	0	0.0	0
Salmonellosis	1,048	105	6.3	466	7.9	51	8.8	426
Shigellosis	115	15	0.9	30	0.5	4	0.7	66
Spotted fever rickettsiosis, including RMSF	350	17	1.0	126	2.1	1	0.2	206
Staphylococcus aureus infection, invasive (MRSA)	1,247	176	10.5	607	10.2	10	1.7	454
Streptococcal disease, Group A, invasive or TSS	190	26	1.5	93	1.6	2	0.3	69
Streptococcus pneumoniae, invasive***	37	12	9.8	14	4.1	0	0.0	11
Syphilis, early	676	370	22.0	244	4.1	59	10.1	3
Tuberculosis	180	58	3.5	47	0.8	75	12.9	0
Typhoid fever	10	0	0.0	2	0.0	3	0.5	5
Vibrio infection	42	3	0.2	16	0.3	0	0.0	23

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 5. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Sex, Virginia, 2013

Disease	Total	Female		Male		Unk.
Population:	8,185,867	4,164,342		4,021,525		
		N	Rate	N	Rate	N
Amebiasis	26	6	0.1	20	0.5	0
Arboviral infection	34	17	0.4	16	0.4	1
Campylobacteriosis	709	312	7.5	395	9.8	2
Chickenpox (Varicella)	374	172	4.1	195	4.8	7
Chlamydia trachomatis infection	33,561	23,339	560.4	10,185	253.3	37
Cryptosporidiosis	144	64	1.5	80	2.0	0
Ehrlichiosis/Anaplasmosis	143	62	1.5	80	2.0	1
E. coli infection, Shiga toxin-producing	109	55	1.3	54	1.3	0
Giardiasis	278	96	2.3	181	4.5	1
Gonorrhea	6,992	3,703	88.9	3,287	81.7	2
Haemophilus influenzae infection, invasive	98	56	1.3	41	1.0	1
Hemolytic uremic syndrome	6	4	0.1	2	0.0	0
Hepatitis A	36	19	0.5	17	0.4	0
Hepatitis B, acute	72	32	0.8	40	1.0	0
Hepatitis C, acute	41	22	0.5	19	0.5	0
HIV disease*	1,151	219	5.3	932	23.2	0
Lead - elevated blood levels in children**	164	76	9.4	87	10.3	1
Legionellosis	123	50	1.2	73	1.8	0
Listeriosis	29	14	0.3	15	0.4	0
Lyme disease	1,307	604	14.5	702	17.5	1
Malaria	75	25	0.6	50	1.2	0
Measles	0	0	0.0	0	0.0	0
Meningococcal disease	7	2	0.0	5	0.1	0
Mumps	109	52	1.2	57	1.4	0
Pertussis	418	247	5.9	169	4.2	2
Q fever	3	0	0.0	3	0.1	0
Salmonellosis	1,048	567	13.6	475	11.8	6
Shigellosis	115	53	1.3	62	1.5	0
Spotted fever rickettsiosis, including RMSF	350	131	3.1	218	5.4	1
Staphylococcus aureus infection, invasive (MRSA)	1,247	535	12.8	699	17.4	13
Streptococcal disease, Group A, invasive or TSS	190	90	2.2	96	2.4	4
Streptococcus pneumoniae, invasive***	37	14	5.6	23	8.9	0
Syphilis, early	676	57	1.4	619	15.4	0
Tuberculosis	180	72	1.7	108	2.7	0
Typhoid fever	10	6	0.1	4	0.1	0
Vibrio infection	42	17	0.4	25	0.6	0

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 6. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Health Planning Region, Virginia, 2013

Disease	Total		Northwest Region		Northern Region		Southwest Region		Central Region		Eastern Region	
Population:	8,185,867		1,265,495		2,346,221		1,355,354		1,387,067		1,831,730	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Amebiasis	26	0.3	1	0.1	19	0.8	1	0.1	2	0.1	3	0.2
Arboviral infection	34	0.4	4	0.3	23	1.0	1	0.1	3	0.2	3	0.2
Campylobacteriosis	709	8.7	116	9.2	249	10.6	109	8.0	116	8.4	119	6.5
Chickenpox (Varicella)	374	4.6	82	6.5	111	4.7	69	5.1	60	4.3	52	2.8
Chlamydia trachomatis infection	33,561	410.0	3,687	291.3	5,524	235.4	4,144	305.8	7,645	551.2	12,561	685.7
Cryptosporidiosis	144	1.8	12	0.9	69	2.9	20	1.5	9	0.6	34	1.9
Ehrlichiosis/Anaplasmosis	143	1.7	38	3.0	24	1.0	43	3.2	23	1.7	15	0.8
E. coli infection, Shiga toxin-producing	109	1.3	39	3.1	31	1.3	27	2.0	4	0.3	8	0.4
Giardiasis	278	3.4	46	3.6	129	5.5	36	2.7	36	2.6	31	1.7
Gonorrhea	6,992	85.4	412	32.6	761	32.4	1,227	90.5	1,869	134.7	2,723	148.7
Haemophilus influenzae infection, invasive	98	1.2	29	2.3	17	0.7	27	2.0	12	0.9	13	0.7
Hemolytic uremic syndrome	6	0.1	3	0.2	2	0.1	1	0.1	0	0.0	0	0.0
Hepatitis A	36	0.4	6	0.5	15	0.6	3	0.2	10	0.7	2	0.1
Hepatitis B, acute	72	0.9	8	0.6	6	0.3	31	2.3	15	1.1	12	0.7
Hepatitis C, acute	41	0.5	17	1.3	0	0.0	22	1.6	2	0.1	0	0.0
HIV disease*	1,151	14.1	87	6.9	322	13.7	99	7.3	225	16.2	418	22.8
Influenza	27,564	336.7	3,608	285.1	8,433	359.4	5,599	413.1	5,266	379.7	4,658	254.3
Lead - elevated blood levels in children**	164	10.0	34	13.4	30	5.8	22	9.2	32	11.7	46	12.5
Legionellosis	123	1.5	18	1.4	20	0.9	19	1.4	30	2.2	36	2.0
Listeriosis	29	0.4	4	0.3	14	0.6	3	0.2	3	0.2	5	0.3
Lyme disease	1,307	16.0	339	26.8	537	22.9	303	22.4	73	5.3	55	3.0
Malaria	75	0.9	10	0.8	51	2.2	2	0.1	8	0.6	4	0.2
Measles	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Meningococcal disease	7	0.1	2	0.2	4	0.2	1	0.1	0	0.0	0	0.0
Mumps	109	1.3	26	2.1	2	0.1	2	0.1	77	5.6	2	0.1
Pertussis	418	5.1	103	8.1	80	3.4	112	8.3	42	3.0	81	4.4
Q fever	3	0.0	1	0.1	1	0.0	1	0.1	0	0.0	0	0.0
Rabies in animals ~	488	-	130	-	82	-	112	-	76	-	88	-
Salmonellosis	1,048	12.8	194	15.3	279	11.9	143	10.6	166	12.0	266	14.5
Shigellosis	115	1.4	9	0.7	61	2.6	8	0.6	8	0.6	29	1.6
Spotted fever rickettsiosis, including RMSF	350	4.3	85	6.7	37	1.6	103	7.6	89	6.4	36	2.0
Staphylococcus aureus infection, invasive (MRSA)	1,247	15.2	185	14.6	180	7.7	365	26.9	231	16.7	286	15.6

Table 6. Number of Reported Cases of Selected Diseases and Rate per 100,000 by Health Planning Region, Virginia, 2013 (continued)

Disease	Total		Northwest Region		Northern Region		Southwest Region		Central Region		Eastern Region	
Population:	8,185,867		1,265,495		2,346,221		1,355,354		1,387,067		1,831,730	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Streptococcal disease, Group A, invasive or TSS	190	2.3	41	3.2	30	1.3	43	3.2	34	2.5	42	2.3
Streptococcus pneumoniae, invasive***	37	7.3	11	14.8	12	7.2	4	5.7	4	4.9	6	5.1
Syphilis, early	676	8.3	35	2.8	185	7.9	79	5.8	152	11.0	225	12.3
Tuberculosis	180	2.2	12	0.9	107	4.6	9	0.7	30	2.2	22	1.2
Typhoid fever	10	0.1	0	0.0	10	0.4	0	0.0	0	0.0	0	0.0
Vibrio infection	42	0.5	5	0.4	13	0.6	2	0.1	5	0.4	17	0.9

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 16 years of age. Rates are based on 0-15 year old population.

~ Population rate is not applicable for rabies in animals

*** Condition is reportable only in children < 5 years of age. Rates are based on 0-4 year old population.

Table 7. Number of Reported Cases of Selected Diseases by Quarter of Onset, Virginia, 2013

Disease	Total	Prior to 2013		1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		N	%	N	%	N	%	N	%	N	%
Amebiasis	26	1	3.8	3	11.5	10	38.5	6	23.1	6	23.1
Arboviral infection	34	1	2.9	6	17.6	2	5.9	19	55.9	6	17.6
Campylobacteriosis	709	10	1.4	124	17.5	174	24.5	223	31.5	178	25.1
Chickenpox (Varicella)	374	3	0.8	89	23.8	113	30.2	80	21.4	89	23.8
Chlamydia trachomatis infection	33,561	0	0.0	8,793	26.2	8,052	24.0	8,215	24.5	8,501	25.3
Cryptosporidiosis	144	6	4.2	28	19.4	20	13.9	56	38.9	34	23.6
Ehrlichiosis/Anaplasmosis	143	4	2.8	2	1.4	69	48.3	62	43.4	6	4.2
E. coli infection, Shiga toxin-producing	109	1	0.9	13	11.9	41	37.6	37	33.9	17	15.6
Giardiasis	278	9	3.2	55	19.8	55	19.8	95	34.2	64	23.0
Gonorrhea	6,992	0	0.0	1,745	25.0	1,574	22.5	1,841	26.3	1,832	26.2
Haemophilus influenzae infection, invasive	98	3	3.1	24	24.5	29	29.6	21	21.4	21	21.4
Hemolytic uremic syndrome	6	0	0.0	1	16.7	1	16.7	3	50.0	1	16.7
Hepatitis A	36	1	2.8	10	27.8	5	13.9	10	27.8	10	27.8
Hepatitis B, acute	72	2	2.8	17	23.6	21	29.2	19	26.4	13	18.1
Hepatitis C, acute	41	2	4.9	10	24.4	9	22.0	9	22.0	11	26.8
HIV disease*	1,151	0	0.0	281	24.4	265	23.0	252	21.9	353	30.7
Influenza	27,564	0	0.0	22,875	83.0	1,327	4.8	166	0.6	3,196	11.6
Legionellosis	123	0	0.0	15	12.2	46	37.4	43	35.0	19	15.4
Listeriosis	29	0	0.0	5	17.2	5	17.2	13	44.8	6	20.7
Lyme disease	1,307	79	6.0	154	11.8	443	33.9	470	36.0	161	12.3
Malaria	75	0	0.0	13	17.3	26	34.7	25	33.3	11	14.7
Measles	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Meningococcal disease	7	0	0.0	3	42.9	1	14.3	1	14.3	2	28.6
Mumps	109	0	0.0	38	34.9	69	63.3	2	1.8	0	0.0
Pertussis	418	18	4.3	83	19.9	89	21.3	111	26.6	117	28.0
Q fever	3	0	0.0	0	0.0	2	0.0	0	0.0	1	0.0
Salmonellosis	1,048	7	0.7	140	13.4	292	27.9	390	37.2	219	20.9
Shigellosis	115	2	1.7	18	15.7	21	18.3	42	36.5	32	27.8
Spotted fever rickettsiosis, including RMSF	350	12	3.4	17	4.9	149	42.6	143	40.9	29	8.3
Staphylococcus aureus infection, invasive (MRSA)	1,247	59	4.7	377	30.2	263	21.1	273	21.9	275	22.1
Streptococcal disease, Group A, invasive or TSS	190	5	2.6	61	32.1	64	33.7	29	15.3	31	16.3
Streptococcus pneumoniae, invasive**	37	1	2.7	14	37.8	10	27.0	5	13.5	7	18.9
Syphilis, early	676	0	0.0	160	23.7	179	26.5	166	24.6	171	25.3
Typhoid fever	10	0	0.0	3	30.0	4	40.0	2	20.0	1	10.0
Vibrio infection	42	0	0.0	0	0.0	14	33.3	25	59.5	3	7.1

* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS-defining condition at first HIV report.

** Condition is reportable only in children < 5 years of age.

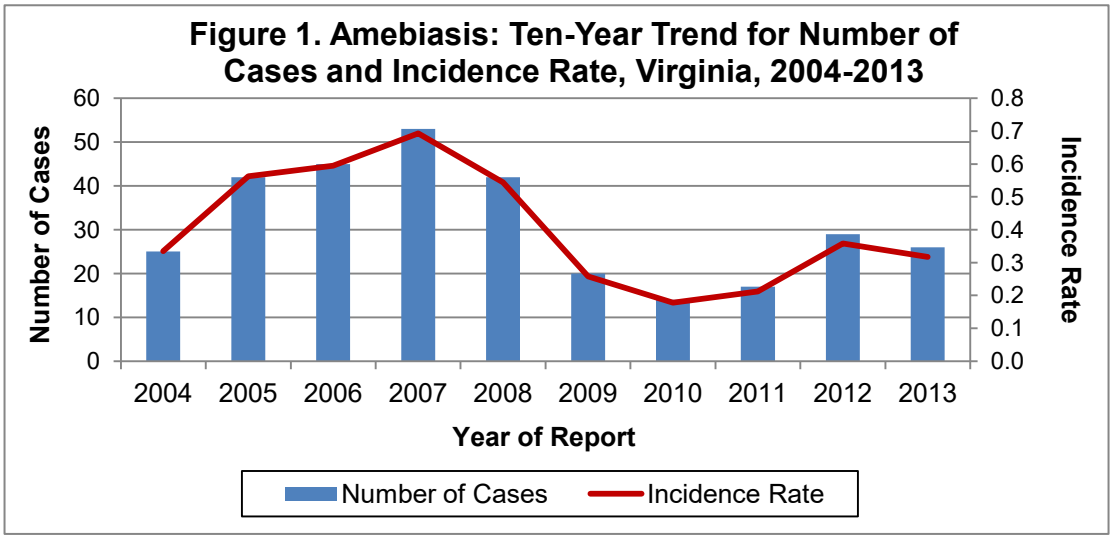
DESCRIPTIVE EPIDEMIOLOGY OF REPORTABLE DISEASES

Amebiasis

Agent: *Entameoba histolytica* (parasite)
Mode of Transmission: Ingestion of food or water contaminated with amebic cysts or by fecal-oral contact with an infected person.
Signs/Symptoms: Most infections are asymptomatic. Symptomatic infections are often mild and can include diarrhea, stomach pain, and stomach cramping. Amebic dysentery is a severe form of amebiasis associated with diarrhea, which may be bloody or contain mucus; abdominal pain; fever; and chills. Diarrhea may alternate with periods of constipation. Symptoms may become chronic. Rarely, the parasite invades other body sites, such as the liver, lung, or brain and produces an abscess (collection of pus).
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, and before preparing and eating food. When traveling to a country with poor sanitary conditions, do not eat or drink: fountain drinks or any drinks with ice cubes; fresh fruit or vegetables that you did not peel yourself; milk, cheese, or dairy products that may not have been pasteurized; anything sold by street vendors; or water unless it is bottled or has been boiled for 1 minute or made safe by filtering it through an "absolute 1 micron or less" filter and dissolving chlorine, chlorine dioxide, or iodine tablets in the filtered water.
Other Important Information: Amebiasis can affect anyone, but it is most common in people who live in tropical areas with poor sanitary conditions. In the United States, it is mainly seen in people who travel to or emigrate from these tropical areas, people living in institutions with poor sanitary conditions, and in men who have sex with men.

Amebiasis: 2013 Data Summary	
Number of Cases:	26
5-Year Average Number of Cases:	24.4
% Change from 5-Year Average:	+7%
Incidence Rate per 100,000:	0.3

Twenty-six cases of amebiasis were reported in Virginia during 2013, which is just above the five-year average of 24.4 cases. One factor contributing to the overall decline in cases since the peak in 2007 (Figure 1) is a change in the national surveillance case definition

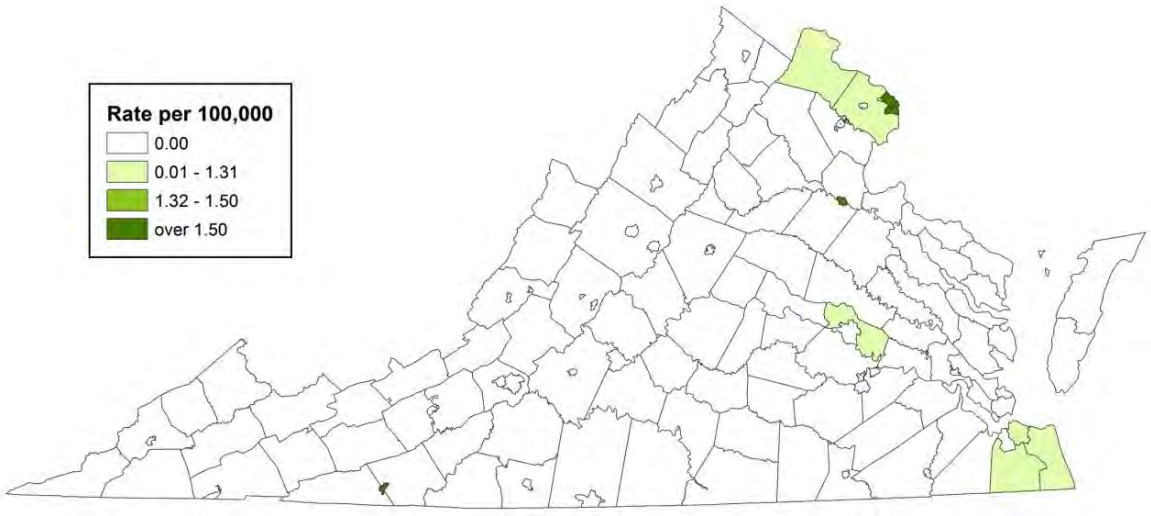


that occurred in 2008. This change required that individuals with laboratory-confirmed infection also be symptomatic for their illness to be counted for surveillance purposes.

Among cases reported in 2013, the highest incidence rate (0.5 per 100,000) was in the 1-9 and 40-49 year age groups. Because information on race was available for only 27% of reported cases, no conclusions can be drawn about the distribution of amebiasis by race. Rates were higher in males (0.5 per 100,000) than females (0.1 per 100,000).

The highest incidence rate occurred in the northern health planning region (0.8 per 100,000), followed by the eastern region (0.2 per 100,000) (see map below). The other three regions experienced an incidence rate of 0.1 per 100,000. While cases occurred throughout the year, the highest proportion was observed during the second quarter. No outbreaks or deaths attributed to amebiasis were reported in 2013 in Virginia.

Amebiasis Incidence Rate by Locality
Virginia, 2013



Anthrax

Agent: *Bacillus anthracis* (spore-forming bacteria)
Mode of Transmission: By direct contact with contaminated animal products; ingestion of contaminated, undercooked meat; and inhalation of spores during risky industrial practices (e.g., processing wool or hides) or through an intentional bioterrorism release.
Signs/Symptoms: There are three recognized forms of anthrax. The form that develops depends on the route of exposure. Cutaneous anthrax occurs when the bacteria enter a cut or abrasion on the skin and presents as a skin lesion that often develops a black scab. Intestinal anthrax occurs after the ingestion of contaminated meat and presents as abdominal distress (e.g., nausea, vomiting, diarrhea, fever). Inhalation anthrax occurs when the bacteria are inhaled; the symptoms are initially nonspecific, (e.g., fever, cough, chest pain), but progress to respiratory distress and death if untreated.
Prevention: Contact with infected animals and animal products should be minimal. A vaccine is available to immunize high-risk individuals, such as laboratorians who work with *B. anthracis* or military personnel.
Other Important Information: Person-to-person transmission is very rare. The incubation period, or time from exposure to onset of symptoms, ranges from 1 to 60 days. Anthrax is classified as a potential bioweapon because it can cause serious public health problems, be spread across a large area, and require extensive planning to protect the public's health.

No cases of anthrax were reported in Virginia during 2013. The last reported cases occurred in 2001. In that year, two Virginia residents were reported with inhalation anthrax from an intentional release of *Bacillus anthracis* spores through a letter received by the U.S. Postal Service. Both individuals were exposed at their workplace and both survived. Those were the first reported cases of anthrax in Virginia since 1970.

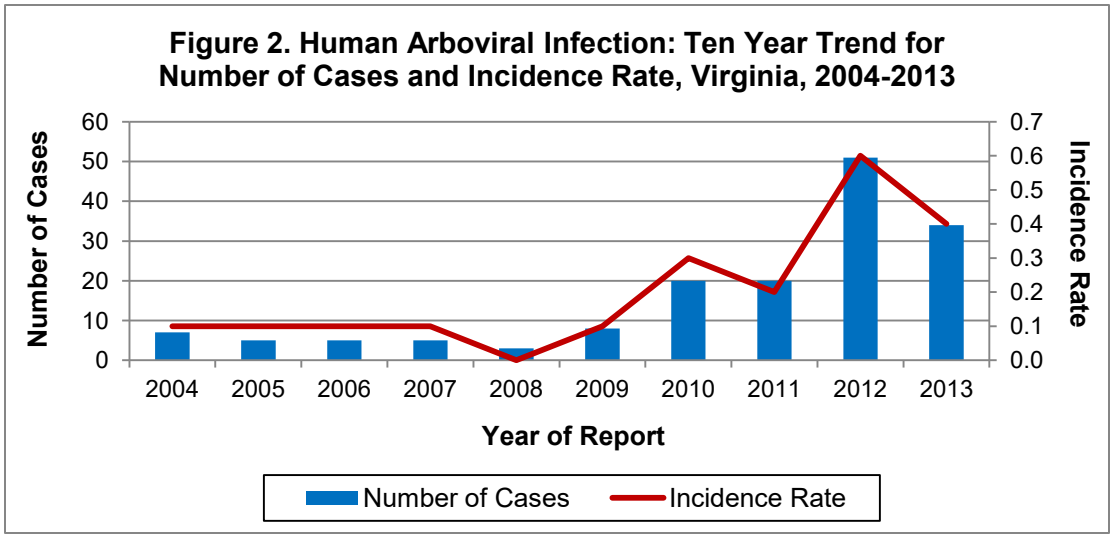
Arboviral Infection

Agent(s): In Virginia, the agents of arboviral infection, from most to least common, are the mosquito-borne West Nile virus (WNV), La Crosse encephalitis (LAC) virus, St. Louis encephalitis (SLE) virus and Eastern equine encephalitis (EEE) virus. Other arboviral agents causing illness in Virginians include the imported dengue virus and chikungunya virus, which typically infect travelers to endemic regions of the tropics and subtropics, but have not become established in Virginia. Powassan (POW) virus, which is a tick-borne encephalitis virus, was recently discovered in Virginia.
Mode of Transmission: Most commonly through the bite of an infected mosquito. WNV may also be transmitted by blood products via transfusion or transplanted organs from infected donors, and more rarely by cuts or punctures with contaminated scalpels or needles in a laboratory.
Signs/Symptoms: Severity of symptoms differs depending on the particular virus and characteristics of the infected person. Most infections are asymptomatic. Mild cases may appear as fever with headache. More severe disease can cause encephalitis (i.e., inflammation of the brain) or meningitis (i.e., inflammation of the lining of the brain and spinal cord) and may lead to permanent neurological impairment or death.
Prevention: Minimize bites by avoiding areas infested by mosquitoes or ticks, and, when in those areas, use mosquito or tick repellents and wear long-sleeved, light-colored clothing with pants legs tucked into socks. Additional mosquito control measures include maintaining screens on all open windows and doors and eliminating or regularly dumping all containers that could hold water and breed mosquitoes, including buckets, birdbaths and discarded tires. After visiting tick habitats, a person should thoroughly check all body surfaces for ticks and, if found, carefully remove attached ticks as soon as possible.
Other Important Information: WNV and SLE infections are more likely to cause severe disease in persons over the age of 50, but the majority of infections are asymptomatic. LAC is seen primarily in individuals less than 16 years of age. EEE has a high fatality rate and is more likely to affect children under the age of 15 and adults over the age of 50.

Arboviral Infection: 2013 Data Summary	
Number of Cases:	34
5-Year Average Number of Cases:	20.4
% Change from 5-Year Average:	+67%
Incidence Rate per 100,000:	0.4

Human

In 2013, 34 cases of arboviral infection were reported in Virginia, which is a much higher number than the five-year average of 20.4 cases per year, but lower than the 51 cases reported in 2012 (Figure 2). In contrast to the previous year in which US-acquired WNV predominated in Virginia, the majority (26 cases, 77%) of the 2013 arboviral



infections were acquired out-of-country. These imported cases included 23 cases of dengue fever and three cases of chikungunya. The remaining eight infections were acquired in the U.S. and included six caused by West Nile virus and two caused by La Crosse virus. No cases of Eastern equine encephalitis or Powassan virus were reported.

WNV activity in 2013 dropped sharply from 2012, but 2012 saw the largest number of cases reported in a year since the disease first reached Virginia in 2002 and 2003. All of the 2013 cases occurred in adults between 50 and 90 years of age. WNV cases occurred in two regions of Virginia, with five cases reported from the northern region and one case from the eastern region. The WNV infection reported from the eastern region was contracted in another state. All six cases occurred in urban areas. Historically, most of Virginia's WNV infections have occurred in urban sections of northern Virginia. None of the WNV infections in 2013 resulted in a fatality.

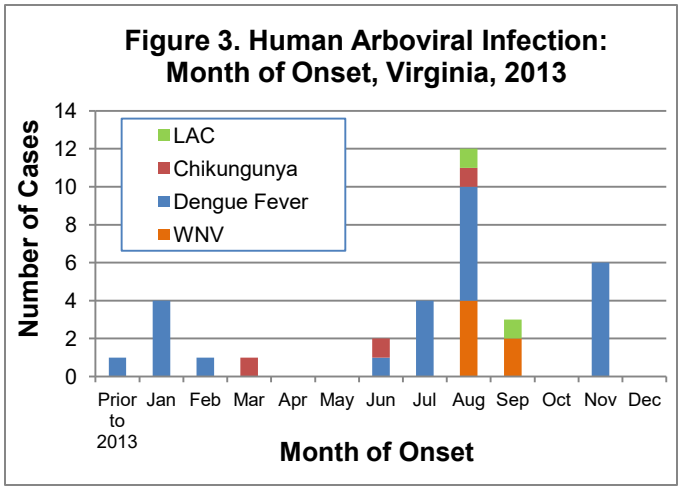
The two LAC cases (also known as California [CA] Serogroup Encephalitis) reported in 2013 occurred in young school-aged children and were reported from the northern and southwest regions. One case was contracted in another state, and neither LAC case resulted in a fatality.

All 23 cases of dengue fever were imported by travelers returning from dengue endemic countries in the American tropics (South and Central America and Mexico), south Asia, and the Middle East. Cases ranged from 17 to 60 years of age and 13 of the 23 cases were females. Dengue hemorrhagic fever was diagnosed in one case.

The three cases of chikungunya were imported. They originated in Asia or the Pacific Islands and were not associated with the Caribbean outbreak of chikungunya discovered in December of 2013.

Cases of arboviral infection occurred throughout the year with a noticeable spike in August. All WNV infections occurred in August and September, which is typically the peak of the WNV transmission season in Virginia (Figure 3). Similarly, the two La

Crosse encephalitis cases had onsets in August and September, which are also peak transmission months for LAC. Onset dates for the imported dengue fever cases occurred mostly in January, July, August and November. However, since these infections were acquired out of the country, any seasonality would be based on the travel patterns and seasonality of the illness in the endemic countries of origin.



Animal

Zoonotic surveillance for WNV and EEE is conducted each year by a limited number of jurisdictions in northern Virginia, the Richmond area, and Hampton Roads. These surveillance programs test for the presence of arboviruses in mosquitoes and sentinel chickens. Sentinel chicken flocks are maintained only in the Hampton Roads area. Veterinary records are also searched for equine cases of arboviral infection statewide. No mosquito or zoonotic surveillance and testing programs are in place for LAC or SLE viruses.

In 2013, a total of 374,737 mosquitoes were tested for WNV. These mosquitoes were tested as "pools" (i.e., batches of up to 100 mosquitoes). Of the 10,758 pools tested for WNV, 424 (4%) were positive. WNV positive pools each contained at least one WNV positive mosquito. This finding was similar to 2012, which also had a 4% rate of positive WNV pools. Of the 424 positive pools from 2013, 403 were collected from northern Virginia, five from central Virginia, and 16 from eastern Virginia. In 2013, one case of WNV infection was seen in a horse in the southwest region. Sentinel chicken testing revealed 13 WNV positive chickens in the Hampton Roads area.

In Virginia, surveillance for EEE is conducted only in the Hampton Roads area. The proportion of pools that were positive in 2013 was similar to what was observed in 2012. Of the 4,856 pools (217,024 mosquitoes) tested in that region, 123 pools (3%) tested positive for EEE. Similarly, of the 5,694 pools (262,314 mosquitoes) tested in that region in 2012, 152 pools (3%) were positive for EEE. In addition, 35 sentinel chickens tested positive for EEE in the Hampton Roads area in 2013, and 40 tested positive in 2012. One horse in the central region was infected and euthanized.

Botulism

Agent: Neurotoxin produced by *Clostridium botulinum* (spore-forming, anaerobic bacteria)
Mode of Transmission: For foodborne botulism, ingestion of food that contains toxin and has not been sufficiently heated to inactivate the toxin. For non-foodborne botulism, ingestion of food contaminated with spores that then germinate, multiply, and produce toxin in the intestine (also known as infant botulism or adult intestinal botulism, depending on the age of the patient); or contamination of wounds by ground-in soil or gravel or from improperly treated open fractures (also known as wound botulism). *C. botulinum* is not transmitted from person to person.
Signs/Symptoms: Both foodborne and non-foodborne botulism can result in descending, flaccid paralysis which can lead to cessation of breathing and death unless respiration is aided. Additional distinguishing symptoms of foodborne botulism, which usually begin 12-36 hours after the toxin is ingested, but might be delayed for up to several days after exposure, include fatigue, weakness, vertigo, and sometimes diarrhea and vomiting. Infant and intestinal botulism are characterized by constipation, weakness, loss of appetite, poor feeding or sucking, an altered cry and loss of head control. Symptoms of wound botulism are similar to those associated with foodborne botulism.
Prevention: For prevention of foodborne botulism, all canned and preserved food should be properly processed and prepared. Boiling food for 10 minutes will destroy the toxin. To prevent non-foodborne botulism, honey and corn syrup should not be given to children younger than 12 months of age because *C. botulinum* spores have been identified in these foods. Also, all wounds should be maintained properly and medical attention should be sought when wounds become infected.
Other Important Information: Botulism is a condition that requires rapid reporting to the local health department. Botulism antitoxin, released by public health authorities, is effective in reducing the severity of symptoms if administered early. Botulism is listed by CDC as a potential bioweapon because an aerosolized or foodborne botulinum-toxin weapon could cause widespread, severe disease and would require rapid public health response to control.

Foodborne

No cases of foodborne botulism were reported in Virginia during 2013. The most recent case in Virginia occurred in 2007 in an adult female. The five-year average is less than one case per year.

Non-Foodborne (including infant, intestinal and wound botulism)

Three cases of non-foodborne botulism were reported in Virginia during 2013. All of the 2013 cases occurred in female infants and were classified as infant botulism. One case was reported from the eastern region and the other two from the northwest region. All were caused by type B neurotoxin. No risk factors were identified for any of the infants.

Brucellosis

Agent: *Brucella* species (bacteria)
Mode of Transmission: Through ingestion of unpasteurized milk or milk products most commonly, but also may be transmitted by contamination of skin wounds with infected animal tissue or body fluids and by inhalation of the organism.
Signs/Symptoms: Intermittent or irregular fever, headache, chills, sweating, and muscle pain.
Prevention: Unpasteurized dairy products, especially milk, cheese, or ice cream, should not be consumed. Barrier precautions, such as wearing rubber gloves, should be used when handling animal tissue. Laboratory workers should take proper infection control precautions when handling samples known to contain or suspected of containing *Brucella*.
Other Important Information: Considered an occupational disease of those working with infected animals, especially farm workers, veterinarians, and abattoir workers. *Brucella* is listed by the CDC as a potential bioterrorism agent because the organism may be relatively easily disseminated, may cause moderate injury or death, and may need enhanced surveillance for detection.

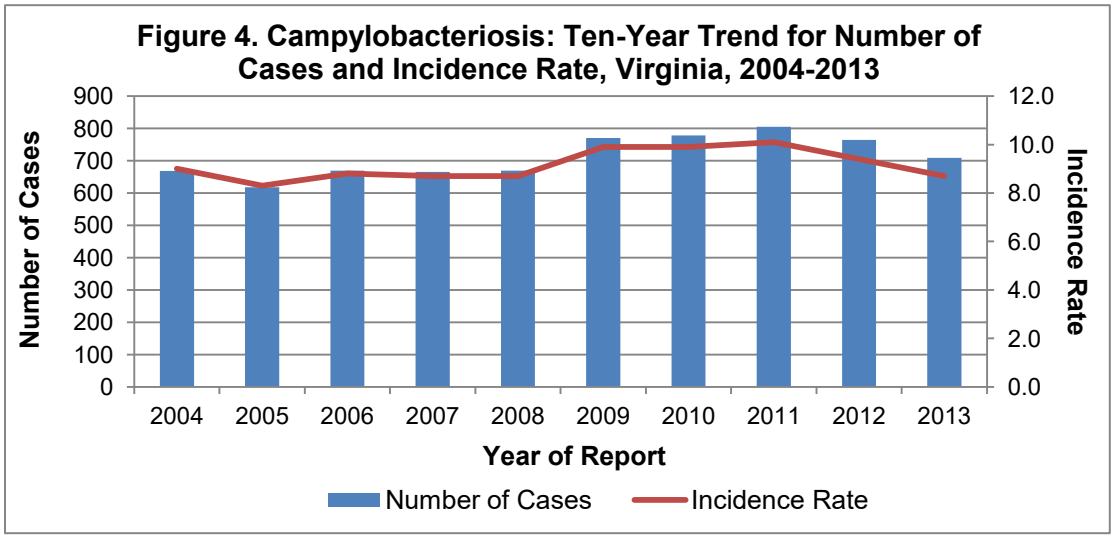
Three cases of brucellosis were reported in Virginia in 2013. Prior to this, the most recently reported cases in Virginia were the five cases diagnosed in 2009. The five-year average for brucellosis is 1.0 case per year. Of the cases reported in Virginia in 2013, one was from the southwest region and two cases were from the northern region. Of the two cases reported in the northern region, one reported consuming raw dairy products while in a Middle Eastern country and one was exposed to a *Brucella* culture while working in a laboratory. A definitive exposure could not be determined for the case reported from the southwest region.

Campylobacteriosis

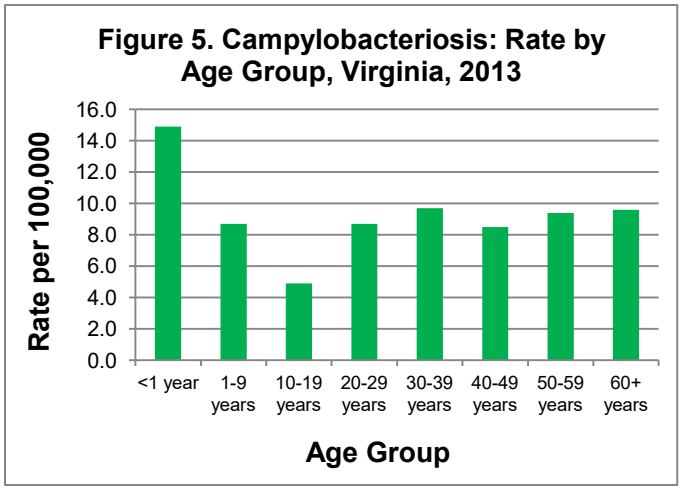
Agent: *Campylobacter* species (bacteria)
Mode of Transmission: Ingestion of undercooked meat, particularly poultry; ingestion of contaminated food, water, or raw milk; and direct contact with fecal material from infected animals or people.
Signs/Symptoms: Include diarrhea (frequently with bloody stools), abdominal pain, malaise, fever, nausea, or vomiting. In neonates and young infants, bloody diarrhea without fever may be the only manifestation of illness. Many infections are asymptomatic. Rarely, complications can develop, including reactive arthritis, febrile convulsions, or Guillain-Barré Syndrome; bacteremia can occur in children.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. Pasteurization of milk and chlorination of water supplies are also important. All foods containing eggs and meats, particularly poultry, should be cooked thoroughly.
Other important information: In 2012, a change was implemented to the case definition for campylobacteriosis. This change requires a positive lab culture for case confirmation. Given the increasing popularity of non-culture based testing methods, fewer cases of campylobacteriosis may be confirmed after 2012.

Campylobacteriosis: 2013 Data Summary	
Number of Cases:	709
5-Year Average Number of Cases:	757.2
% Change from 5-Year Average:	-6%
Incidence Rate per 100,000:	8.7

There were 709 cases of campylobacteriosis reported in Virginia in 2013. This is a 7% decrease from the 764 cases reported in 2012, and a 6% decrease from the five-year average of 757.2 cases per year (Figure 4).



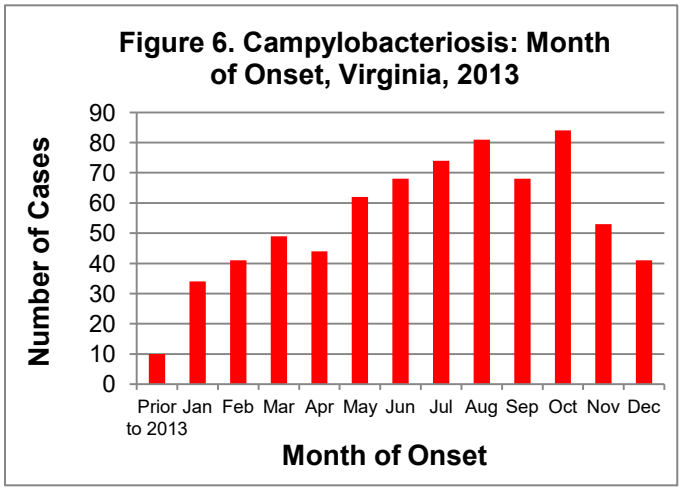
Nationally, rates of *Campylobacter* infection are highest in children younger than four years of age. In Virginia, the highest rates have consistently been seen in the less than one year age group. This remained true in 2013, with an incidence rate of 14.9 per 100,000 in this age group (Figure 5). Historically, the 10-19 year age group has had the lowest incidence rate of all age groups; this pattern remained unchanged for 2013, with a rate of 4.9 cases per 100,000 among 10-19 year olds. Incidence rates for the other age groups ranged from 8.5 to 9.7 per 100,000.



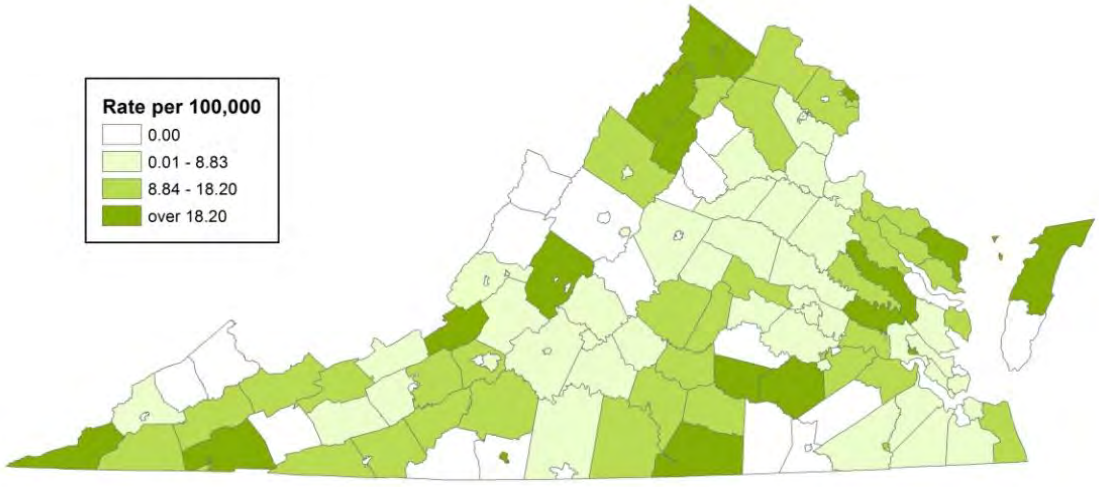
Race information was missing or unknown for 53% of reported cases. For cases with race information available, incidence in the white population (5.0 per 100,000) was more than twice the rate in the "other" race population (2.4 per 100,000), and more than three times the rate in the black population (1.5 per 100,000). During 2013, the incidence rate among males was higher than among females (9.8 and 7.5 per 100,000, respectively), consistent with observations from previous years.

By region, the highest incidence of campylobacteriosis occurred in the northern region (10.6 per 100,000), followed by the northwest region (9.2 per 100,000). Rates were similar in the central and southwest regions (8.4 and 8.0 per 100,000, respectively). The lowest rate occurred in the eastern region (6.5 per 100,000). The northern region experienced a slight increase in incidence compared to 2012 (3%), while rates in the other regions decreased. Although the incidence of campylobacteriosis varies widely by locality, localities with the highest incidence rates tend to cluster together (see map below).

While cases occurred throughout the year, disease onset was reported most frequently during the warmer months (Figure 6). A single outbreak of *Campylobacter* was reported during 2013. The outbreak resulted in 14 cases of campylobacteriosis and occurred among patrons of a restaurant in the northern region. Among Virginia residents, one death attributable to campylobacteriosis was reported in 2013. The death occurred in an adult female from the northern region.



Campylobacteriosis Incidence Rate by Locality
Virginia, 2013

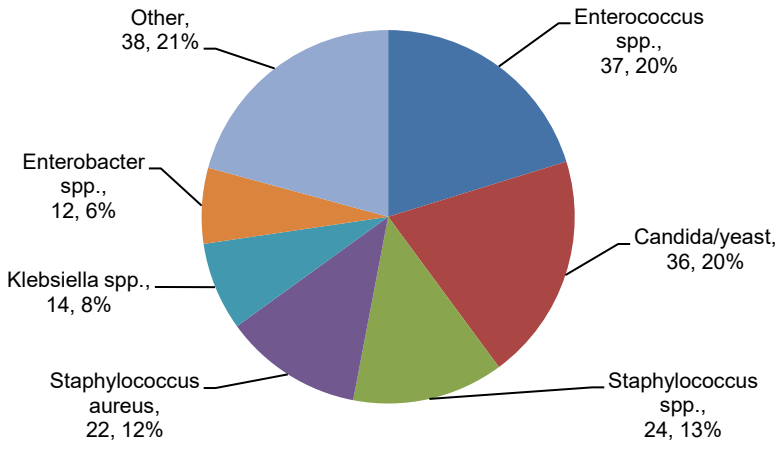


Central Line-Associated Bloodstream Infection (CLABSI)

Agent: Bacteria, virus, or fungus
Mode of transmission: A CLABSI is a central line-associated bloodstream infection. A central line is a flexible tube that is inserted near the patient's heart or into one of the large veins or arteries that can be used to give fluids or medications or measure the amount of fluid in the body. Because a central line is located in a blood vessel, any introduction of an infectious agent during central line insertion, maintenance, or removal may lead to a bloodstream infection.
Signs/symptoms: A positive blood culture and fever, chills, low blood pressure, and/or redness or tenderness at the central line insertion site. For patients less than one year of age, symptoms may also include fever, hypothermia, apnea (suspension of breathing), and/or bradycardia (slow heart rate).
Prevention: To prevent CLABSIs, healthcare providers should follow CDC infection prevention guidelines, including removal of unnecessary central lines and compliance with recommended practices for hand hygiene, central line insertion, and central line maintenance.
Other important information: Hospitals are required to provide information on CLABSIs occurring in adult intensive care units to the Virginia Department of Health (VDH) via the Centers for Disease Control and Prevention's online surveillance system, the National Healthcare Safety Network (NHSN). Hospitals have reported these data since July 2008. In 2013, 78 hospitals reported CLABSI data to VDH. Reports of hospital-specific CLABSI data are available from the VDH Healthcare-Associated Infections Program upon request.

In 2013, 183 central line-associated bloodstream infections occurred among 187,156 central line days in Virginia hospital adult intensive care units (ICUs), yielding a standardized infection ratio (SIR) of 0.52. When compared with the U.S. reference value of 1, the SIR value of 0.52 can be interpreted as indicating that 48% fewer CLABSIs were observed in Virginia adult ICUs than were predicted based on the experience of adult ICUs in United States hospitals during the baseline period (2006-2008). The 2013 SIR is similar to the SIR of 0.49 observed in 2012. Similar to past years, approximately one in three persons with CLABSI died (32%, 59 fatalities), and the infection was noted as contributing to the death in 10 (17%) of the fatalities.

Figure 7. Proportion of Central Line-Associated Bloodstream Infections by Primary Pathogen Identified, Virginia, 2013



The mean age of persons with CLABSI in 2013 was 60 years (range: 17-99) and 55% occurred in males. The largest proportion of CLABSIs occurred in medical/surgical intensive care units (26%), followed by medical intensive care

units (20%), cardiothoracic intensive care units (17%), and cardiac and surgical intensive care units (10% each). Several pathogens can be present in a CLABSI, but of greatest interest is the primary pathogen, the one noted to be most responsible for causing the infection. In 2013, six primary pathogens were responsible for 79% of CLABSIs and included *Enterococcus* species, Candida/yeast, *Staphylococcus* species (excluding *S. aureus), Staphylococcus aureus, Klebsiella* species, and *Enterobacter* species (Figure 7). Other primary pathogens that caused multiple CLABSIs included bacteria such as *E. coli* (6 cases)*, Serratia* species (5 cases), *Bacteroides* species, *Pseudomonas* species, and *Streptococcus* species (4 cases each), *Stenotrophomonas* species (3 cases), and *Pantoea* species and *Proteus* species (2 cases each).

In 2013, 32% of *S. aureus* CLABSIs were methicillin-resistant (MRSA) and 54% of the *Enterococcus* species CLABSIs were vancomycin-resistant (VRE); these numbers were slight declines from the 39% of methicillin-resistant *S. aureus* CLABSIs and 61% vancomycin-resistant *Enterococcus* CLABSIs from 2012. Of the 11 CLABSIs with a primary pathogen of *Klebsiella pneumoniae*, 18% (2 cases) were carbapenem-resistant. A total of eight carbapenem-resistant *K. pneumoniae* CLABSIs and zero carbapenem-resistant *E. coli* CLABSIs have been reported to VDH through NHSN since CLABSI reporting began in July 2008.

Chancroid

Agent: *Haemophilus ducreyi* (bacteria)
Mode of Transmission: Sexual transmission through skin-to-skin contact with open sores. Transmission not related to sexual contact is rare. Auto-inoculation to non-genital sites from open sores may occur.
Signs/Symptoms: Appearance of one or more sores or raised bumps on the genital organs. Sores are surrounded by a narrow red border and become filled with purulent secretion, and eventually rupture, leaving a painful open lesion. The chancroid ulcer is soft to the touch. In 50% of untreated cases, the chancroid bacteria infect the lymph nodes in the groin.
Prevention: Preventive measures include adhering to safe sexual practices and abstaining from sexual relations with an infected partner until the infection is cleared.
Other Important Information: Chancroid is uncommon in the United States. Most cases are seen in tropical countries. This disease is a cofactor for HIV transmission; high rates of HIV infection among patients who have chancroid are seen worldwide.

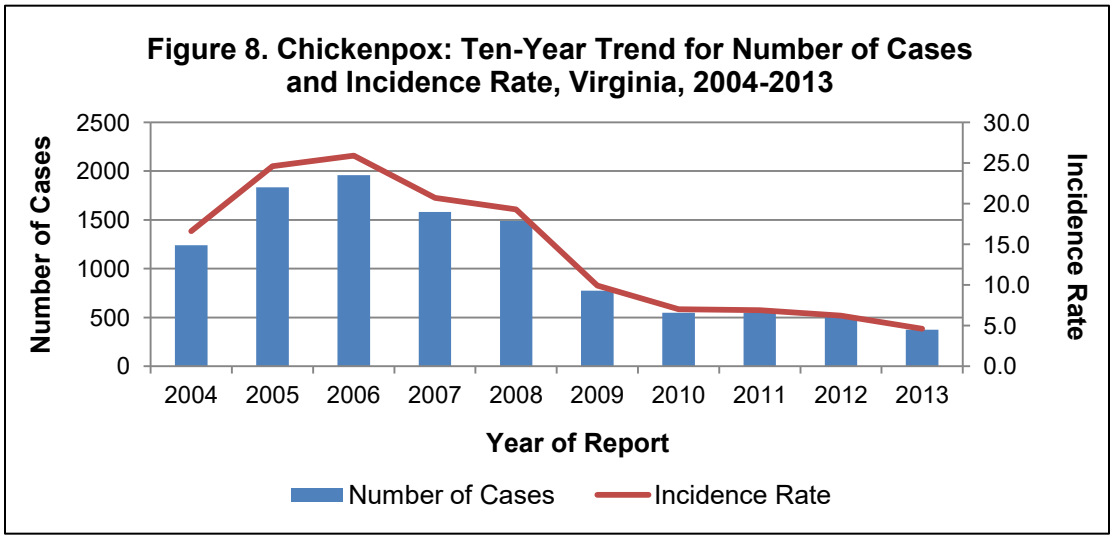
No cases of chancroid were reported in Virginia during 2013. The last reported case occurred in an adult female in 2012, and prior to that, one case was reported in 2006.

Chickenpox (Varicella)

Agent: Varicella-zoster virus (VZV)
Mode of Transmission: Person-to-person transmission by direct contact or through droplet or airborne spread of vesicular lesion fluids or respiratory secretions from an infected person.
Signs/Symptoms: Acute onset of fever and generalized, pruritic, vesicular rash typically consisting of 250-500 lesions. Successive crops of lesions appear first on the head and progress to the trunk and extremities. Lesions can appear on the scalp, armpit, and mucous membranes of the mouth, respiratory tract, and eye.
Prevention: Administration of vaccine should occur for children starting at age 12 months followed by a second dose at age 4-6 years.
Other Important Information: The disease is highly transmissible; susceptible household contacts have an 80-90% risk of becoming infected. In healthy children, acute varicella is generally mild and self-limited; however, severe complications may occur, especially in adults. Herpes zoster, or shingles, occurs when latent VZV reactivates and causes recurrent disease.

Chickenpox: 2013 Data Summary	
Number of Cases:	374
5-Year Average Number of Cases:	772.8
% Change from 5-Year Average:	-52%
Incidence Rate per 100,000:	4.6

Virginia reported 374 cases of chickenpox in 2013, a 26% decrease from the 505 cases reported in 2012 (Figure 8). Nationally, a 26% reduction in cases was also observed. In addition, the 374 cases reported in 2013 is a 52% decrease from the five-year average of 772.8 cases per year. While there has not been a significant change in the 2012 immunization rates for Virginia or the nation, vaccination is most likely the driving force behind the decline in reported cases of chickenpox. Virginia implemented a school and daycare chickenpox vaccination requirement in 1999 following vaccine licensure in 1995. The requirement was updated in 2010 to two doses of vaccine for kindergarten entry for those born on or after January 1, 1997, after a two-dose series was recommended in 2007. This update was based on the finding that one dose of vaccine is only 70-90% effective in preventing infection.

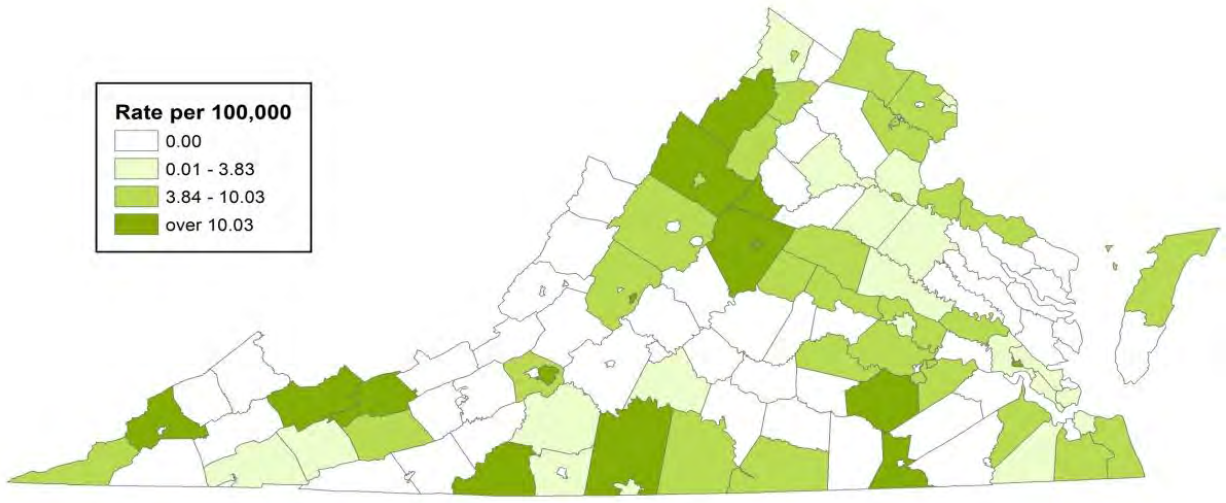


Consistent with past years, a majority of the cases (58%) were reported in young children and teens. Incidence rates for reported cases decline with age from 30.8 per 100,000 for those less than one year of age, to 18.2 per 100,000 for those 1-9 years and 9.4 per 100,000 for those 10-19 years. Rates for the remaining age groups also declined with age and ranged from 0.1 to 2.6 per 100,000. These data confirm that chickenpox is primarily a childhood disease and has the highest rates in those less than one year of age who are too young to receive the vaccine. Similar to 2012, the rate remained slightly higher among males than among females (4.8 and 4.1 cases per 100,000, respectively). For cases with known race, the "other" race population had the highest rate at 4.3 cases per 100,000, followed by the white population at 3.6 per 100,000 and the black population at 2.3 cases per 100,000.

The northwest region had the highest incidence (6.5 cases per 100,000), followed by the southwest region (5.1 cases per 100,000). Incidence in other regions ranged from 2.8 to 4.7 cases per 100,000. Incidence by locality can be seen in the map below. The highest percentage of cases (30%) was reported during the second quarter, following the trend observed nationally with cases peaking from March to May. Cases were relatively evenly distributed among the other three quarters of the year (21% – 24%).

The number of reported outbreaks declined from five in 2012 to two in 2013. Outbreaks have declined each year since 2008 with the exception of 2012. While there were three suspect outbreaks in 2013, only two met official outbreak status by having over five cases of disease. Both outbreaks involved persons who may not have received two doses of vaccine, as one occurred in a daycare facility and the other at a high school. While chickenpox vaccine is required for daycare and school entry, those enrolled in daycare or high school may only have one dose of the vaccine because they either have not received the second dose required for entry into kindergarten or they are old enough to have been born before January 1, 1997. While this is a narrow portion of the population, it reflects the impact of the two-dose vaccination schedule. Cases continued to be reported in vaccinated individuals but were milder with less than 50 skin lesions, low or no fever, and short duration of illness.

Chickenpox Incidence Rate by Locality
Virginia, 2013

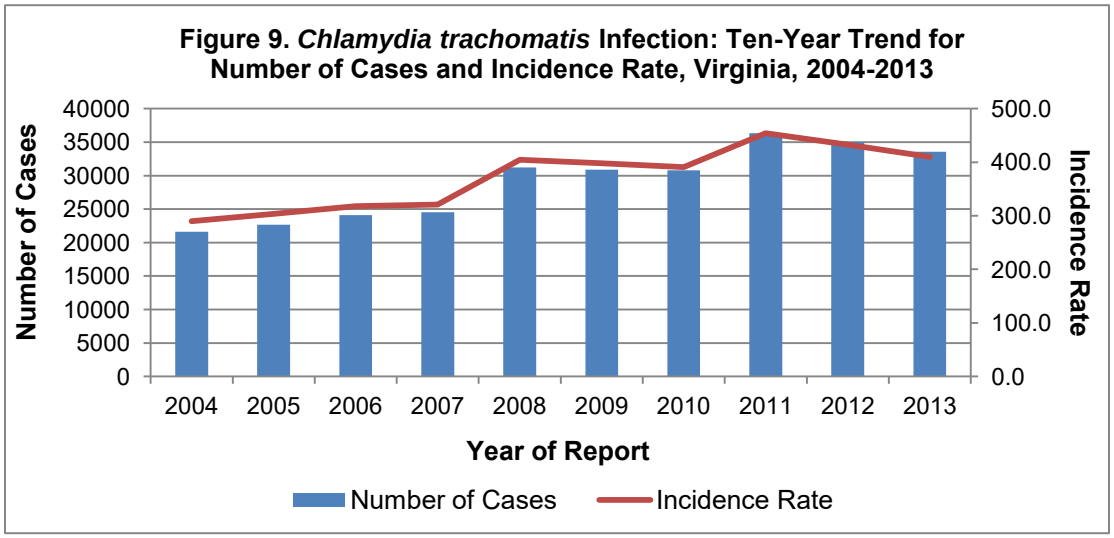


Chlamydia trachomatis Infection

Agent: *Chlamydia trachomatis* (bacteria)
Mode of Transmission: Person-to-person via sexual transmission, or from the genital tract of an infected mother to her infant during birth.
Signs/Symptoms: **Men:** Urethritis, with discharge, itching, and burning upon urination.
Women: Cervical inflammation with discharge, fluid buildup, and easily induced vaginal bleeding. Untreated *Chlamydia* can lead to pelvic inflammatory disorder and infertility.
Infants: Infections of the eyes and respiratory tract.
Prevention: Preventive measures include adhering to safe sexual practices; screening of young women less than 25 years of age; and presumptive treatment for *Chlamydia* infection among people who are exposed. Women who have recently or during the first trimester of pregnancy been infected with *Chlamydia* should be retested during the third trimester to prevent postnatal infection in the infant.
Other Important Information: Approximately 70% of infected women are asymptomatic.

***Chlamydia trachomatis* Infection: 2013 Data Summary**	
Number of Cases:	33,561
5-Year Average Number of Cases:	32,848.2
% Change from 5-Year Average:	+2%
Incidence Rate per 100,000:	410.0

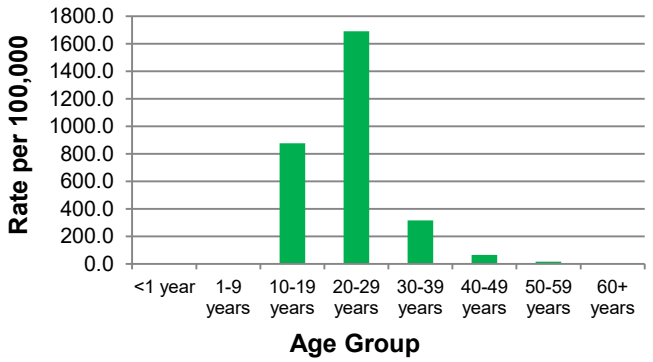
In 2013, 33,561 total cases of *C. trachomatis* (410.0 cases per 100,000) were reported in Virginia (Figure 9). This is a decrease from the 35,016 cases reported in 2012, but a 2% increase from the five-year average of 32,848.2 cases per year. Nationwide, *C. trachomatis* remains the most frequently reported bacterial sexually transmitted infection. Despite improvements in expanded screening, lab test sensitivity, and reporting, the Centers for Disease Control and Prevention estimate that the true number of annual infections remains undercounted. *C. trachomatis* is frequently asymptomatic, and screening programs are focused largely on sexually active women and male partners of infected women. While screening programs primarily target women, detection of disease among males is increasing. The incidence of reported infections among



males in Virginia rose from 88.1 per 100,000 in 2001 to 258.1 per 100,000 in 2012. In 2013, 253.3 per 100,000 males were infected with *C. trachomatis*, a 2% decrease from 2012.

In 2013, the highest incidence rate occurred in the 20-29 year age group (1,691.2 per 100,000), followed by the 10-19 year age group (876.8 per 100,000) (Figure 10). The single reported case in the less than one year age group was an infant with *C. trachomatis* pneumonia. Although four additional *C. trachomatis* infections occurred in the less than one year age group, all were ophthalmic (eye) infections due to perinatal exposure and are counted as cases of Ophthalmia Neonatorum and not *C. trachomatis* infection. For information on these cases, please see the Ophthalmia Neonatorum section of this report.

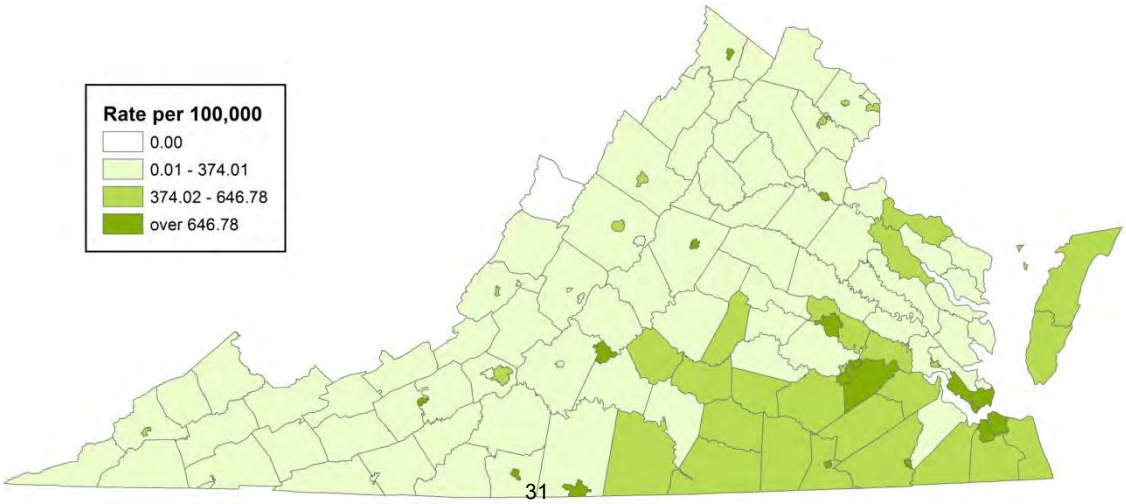
Figure 10. *Chlamydia trachomatis* Infection: Rate by Age Group, Virginia, 2013



Approximately 30% of reported cases did not include data on race; however, among cases for which race was known, incidence in the black population decreased nearly 9% from 2012 to 2013. Despite this change, *C. trachomatis* infection is almost eight times higher (872.2 per 100,000) in the black population than the white population (115.4 per 100,000) and 2.5 times the rate seen in the "other" race population (347.6 per 100,000). The rate of *C. trachomatis* infection diagnosed in females (560.4 per 100,000) was more than two times the rate in males (253.3 per 100,000), which may be largely explained by more frequent screening in women.

Since 2001, the highest incidence rate of *C. trachomatis* has been detected in the eastern region (685.7 per 100,000). Incidence in the eastern region is 1.5 times the most recent national incidence (456.7 per 100,000 in 2012) for *C. trachomatis*. In 2013, the second highest rate occurred in the central region (551.2 per 100,000), while the lowest rate was seen in the northern region (235.4 per 100,000). The map below shows incidence rates by locality.

Chlamydia trachomatis Infection Incidence Rate by Locality
Virginia, 2013



Cholera

Agent: *Vibrio cholerae* (serogroup O1 and O139)
Mode of Transmission: Epidemics and pandemics are strongly linked to the consumption of unsafe water and food, poor hygiene, inadequate water treatment, poor sanitation, and crowded living conditions. Conditions leading to epidemics exist in many developing countries where cholera is either endemic or a recurring problem in a large number of areas. The disease is unlikely to spread directly from one person to another.
Signs/Symptoms: Sudden onset of profuse, painless watery stools, often described as rice-water stool, provoked by a toxin that affects the small intestine. Nausea and profuse vomiting occur early in the course of illness. In untreated cases, rapid dehydration, dangerously high levels of acid or low levels of glucose in the blood, circulatory collapse, and renal failure can rapidly lead to death. In most cases infection is asymptomatic or causes mild diarrhea.
Prevention: Safe drinking water and proper sanitation are the keys to cholera prevention. When traveling in countries where cholera is present, only thoroughly cooked hot foods or fruits/vegetables that are peeled just before eating should be eaten, and only bottled beverages or water that has been boiled or treated with chlorine should be used for drinking, brushing teeth, or cleaning food preparation surfaces. Hands should be washed thoroughly with soap after using the bathroom and before preparing or eating food. Seafood should be cooked thoroughly before it is eaten. Existing oral cholera vaccines are not available in the U.S. and are not recommended for most travelers.
Other Important Information: In severely dehydrated cases, death may occur within a few hours and the case-fatality rate may exceed 50%. With proper and timely rehydration, this rate can be less than 1%.

No cases of cholera were reported in Virginia in 2013. Although no cases were reported in 2012, one travel-associated case had been reported each year in 2010 and 2011. No cases of cholera were reported in Virginia from 1995 to 2009.

Creutzfeldt-Jakob Disease (CJD)

Agent: Believed to be caused by a prion protein
Mode of Transmission: The majority of CJD cases (80%-90%) are sporadic CJD, with no known source. A small percentage of cases (5%-15%) may be due to heredity (familial CJD) or exposure to organ tissue contaminated with the prion (iatrogenic CJD). Classic CJD includes sporadic CJD, familial CJD, and iatrogenic CJD. A form of the disease, variant Creutzfeldt-Jakob disease (vCJD), is thought to be transmitted through ingestion of beef from cattle with bovine spongiform encephalopathy (BSE, commonly referred to as mad cow disease).
Signs/Symptoms: Symptoms may begin with confusion, and they rapidly progress to a wide range of neurological signs and symptoms, including loss of coordination and dementia.
Prevention: Organ and tissue transplants from infected individuals should be avoided. For protection against vCJD, the federal government has regulations in place to prevent the spread of BSE in the United States.
Other Important Information: vCJD occurs in younger individuals, while classic CJD occurs more often in older individuals and has a slower progression. In Virginia, CJD is reportable when it occurs in persons under 55 years of age.

No cases of Creutzfeldt-Jakob disease in persons less than 55 years of age were reported in Virginia during 2013. The last reported case occurred in 2007 in a white male in the 30-39 year age group, and the infection was determined to be classic CJD. The individual died as a result of this condition. Six cases of classic CJD infection have been reported in Virginia residents less than 55 years of age since 1998.

The only case of vCJD ever diagnosed in a Virginia resident occurred in 2006. Based on the patient's history, it was determined that the infection most likely occurred from contaminated cattle products consumed as a child when living in Saudi Arabia. It was the third case of vCJD reported in a U.S. resident. The remaining two cases were reported by other states and were born and raised in the United Kingdom, where they were believed to have been infected.

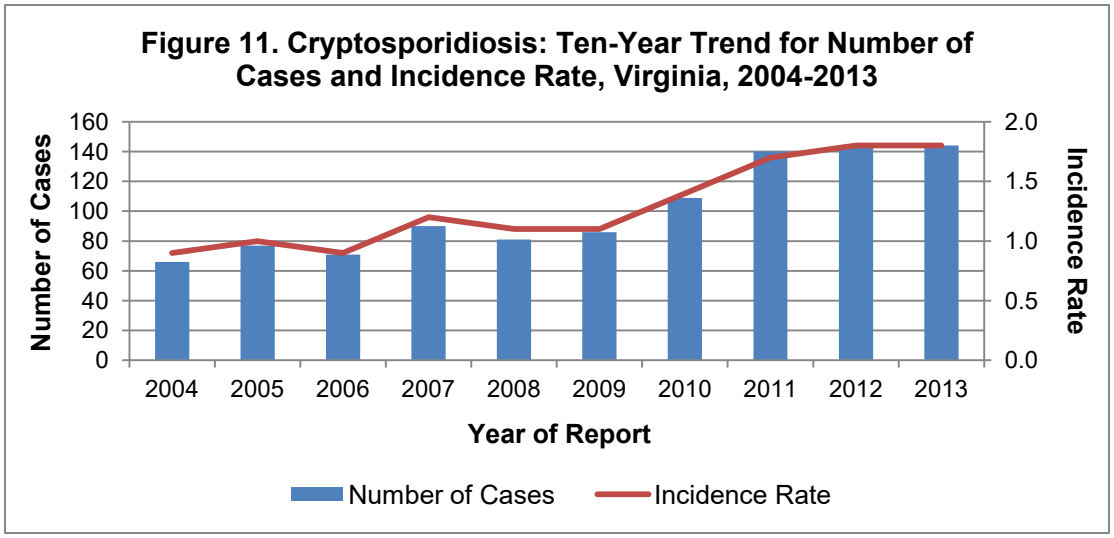
Cryptosporidiosis

Agent: *Cryptosporidium parvum* (parasite)
Mode of Transmission: Occurs via the fecal-oral route and can include person-to-person, animal-to-person, foodborne, and waterborne transmission. Animals such as cattle, sheep, and goats have tested positive for the parasite and are an important reservoir, contributing to both direct transmission and contamination of water supplies; however, many other animals, including cats and dogs, can be infected and transmit disease. *Cryptosporidium* oocysts may be excreted from infected individuals for up to several months after diarrhea has resolved. Oocysts can remain infectious for 2-6 months after being excreted. The oocysts are very resistant to chemicals used to purify drinking water and disinfect recreational water (e.g., chlorine in pools).
Signs/Symptoms: Profuse watery diarrhea with nausea, cramping, and abdominal pain. The diarrhea may be preceded by anorexia and vomiting in children. Illness is typically self-limiting. Immunocompromised persons have a higher risk of severe disease, which can lead to poor outcomes, including death. Asymptomatic infections are common.
Prevention: Preventive measures include careful hand hygiene after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. People with diarrhea should not enter public recreational water. Water purification methods, including boiling water or filtration, should be considered when drinking water from natural streams, lakes, springs, or any unknown source.

Cryptosporidiosis: 2013 Data Summary	
Number of Cases:	144
5-Year Average Number of Cases:	112.0
% Change from 5-Year Average:	+29%
Incidence Rate per 100,000:	1.8

In 2013, there were 144 cases of cryptosporidiosis reported in Virginia. This is the same number of cases reported in 2012, and represents an increase of 29% over the five-year average of 112 cases per year (Figure 11). The general upward trend in reported cryptosporidiosis cases during the past decade in Virginia mirrors a national pattern.

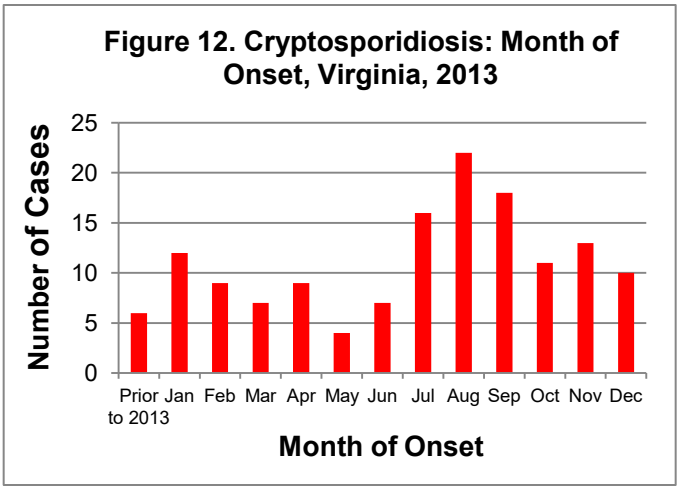
In 2013, the highest incidence rates were observed in the 20-29 year old and 60 year and older age groups, each with a rate of 2.2 cases per 100,000. This represents a 21% decrease in incidence among the 60 year and older age group, which had the highest rate in 2012. The other age groups had incidence rates ranging from 1.2 to 2.0 cases per 100,000.



Race was not reported for 28% of cases in 2013. Among cases with race information available, the rate was highest among the white population (1.4 cases per 100,000), followed by the black population (1.1 cases per 100,000) and the "other" race group (1.0 cases per 100,000). During 2013, the rate of infection was slightly higher in males than females (2.0 and 1.5 cases per 100,000, respectively).

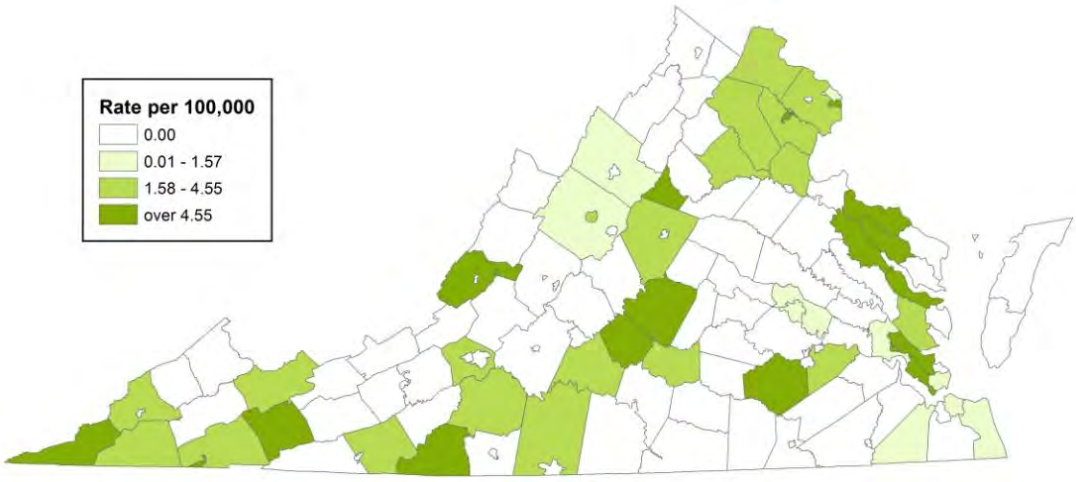
By health planning region, the highest rate was reported from the northern region (2.9 cases per 100,000). The other regions had incidence rates ranging from 0.6 to 1.9 cases per 100,000, with the central region having the lowest rate, as depicted in the map below.

Nationally, a higher number of illnesses are typically seen during the summer and early fall months, which is consistent with increased recreational water exposure, including public pools. This seasonal pattern was observed in Virginia during 2013 (Figure 12).



Among Virginia cases in 2013, the most frequently reported risk factor was travel prior to illness onset (38 cases, 26%). Other frequently reported risk factors included contact with animals (22%), recreational water exposure (11%), and immunodeficiency (10%). A single outbreak of cryptosporidiosis was reported in Virginia during 2013. The outbreak was a waterborne outbreak linked to a camp in the northwest region that resulted in 19 cases. Because none of the ill persons were residents of Virginia, these 19 cases are not included in Virginia's 2013 cryptosporidiosis case count. No deaths attributable to cryptosporidiosis were reported in 2013.

Cryptosporidiosis Incidence Rate by Locality
Virginia, 2013



Cyclosporiasis

Agent: *Cyclospora cayetanensis* (parasite)
Mode of Transmission: Can be foodborne or waterborne. *Cyclospora* are resistant to chlorine and iodine treatment and are unlikely to be killed by routine chemical disinfection or sanitizing methods. Direct person-to-person transmission has not been documented.
Signs/Symptoms: Profuse watery diarrhea commonly occurs, along with nausea, vomiting, anorexia, substantial weight loss, abdominal bloating or cramping, increased gassiness and prolonged fatigue. Low-grade fever occurs in approximately half the patients. Some infected persons are asymptomatic, particularly in settings where cyclosporiasis is endemic.
Prevention: Fresh produce should be washed thoroughly before it is consumed. No vaccine for cyclosporiasis is available.
Other Important Information: *C. cayetanensis* is known to be endemic in many resource-limited countries and has been reported as a cause of traveler's diarrhea. Most outbreaks reported in the U.S. have been associated with the consumption of imported fresh produce, including raspberries, basil, snow peas and lettuce. No commercially frozen or canned produce has been implicated as the source of an outbreak.

Cyclosporiasis: 2013 Data Summary	
Number of Cases:	4
5-Year Average Number of Cases:	1.4
% Change from 5-Year Average:	+186%
Incidence Rate per 100,000:	0.0

Four cases of cyclosporiasis were reported in 2013, which is the highest annual number of cases reported in the last 10 years. The four cases exceed the five-year average (1.4 cases) by 186%. Cases occurred in an adult male and female from the northwest region, an adult female from the northern region, and a male child in the central region. All of the case-patients reported consuming produce, but none of them reported international travel.

All four Virginia case-patients were part of a national cyclosporiasis outbreak investigation which assessed 631 persons infected with *C. cayetanensis* reported from 25 states. Conclusions from the investigation indicated that two separate cyclosporiasis outbreaks were occurring in the U.S. from June through August of 2013. One outbreak was found to be related to consumption of cilantro, while the second outbreak was restaurant-associated and linked to the consumption of a salad mix. Both products were produced in Mexico.

Most detected cases and outbreaks of cyclosporiasis in the U.S. have occurred in spring and summer months, but not all cases identified during the same time of year are necessarily caused by the same exposure. CDC and other institutions are working to develop advanced molecular detection methods for *C. cayetanensis* that could distinguish among strains of this parasite. In the future, DNA fingerprinting methods could help public health investigators determine whether cases of cyclosporiasis are linked to each other and to particular food items or other sources of infection.

Diphtheria

Agent: Toxin secreted by strains of the bacterium *Corynebacterium diphtheriae*
Mode of Transmission: Person-to-person transmission via respiratory droplets. Rarely, transmission may occur from contact with skin lesions or articles soiled with discharges from the lesions of infected persons.
Signs/Symptoms: Sore throat, anorexia, nasal discharge, and formation of a bluish-white, grayish-green, or black adherent membrane in the throat. More severe cases can include swelling of the neck and airway passages.
Prevention: Diphtheria vaccine is available as part of the diphtheria/tetanus/pertussis (DTaP) vaccine for children and the combination tetanus/diphtheria/pertussis (Tdap) vaccine for adolescents and adults. One dose of Tdap should be given at 11 to 12 years of age with booster doses of tetanus/diphtheria (Td) every ten years thereafter.
Other Important Information: The overall case-fatality rate for diphtheria is 5%-10%, with higher death rates in young children and those over 40 years of age.

No cases of diphtheria were reported in Virginia during 2013. The last reported case occurred in 1989. Nationally, the most recent case of diphtheria was reported in 2012 and the preceding case occurred in 2003.

Ehrlichiosis/Anaplasmosis

Agent(s): Bacteria belonging to the family *Anaplasmataceae*. *Ehrlichia chaffeensis* infects monocytes (a type of white blood cell involved with immune function) and causes an illness called human monocytic ehrlichiosis (HME). *E. ewingii* infects granulocytes (a different category of white blood cells) and causes a disease referred to as an *E. ewingii* infection. *Anaplasma phagocytophilum* also infects granulocytes, causing an illness called human granulocytic anaplasmosis (HGA).

Mode of Transmission: Transmitted to humans through the bite of an infected tick. *E. chaffeensis* and *E. ewingii* may infect adult and nymph stage lone star ticks and be transmitted by them. *Anaplasma phagocytophilum* may infect nymph stage and adult blacklegged ticks (deer ticks) and is primarily transmitted by the nymph stage ticks. Transmission of these pathogens occurs when an infected tick bites a person and feeds on that person (i.e., remains attached) for more than 24 hours.

Signs/Symptoms: Illness symptoms commonly include the sudden onset of fever, accompanied by one or more of the following symptoms: headache, body aches, nausea, vomiting and rash. In cases of ehrlichiosis, a rash may occur in up to 30 % of adults and 60% of children; rashes are much less common in cases of anaplasmosis. Patients may exhibit signs of thrombocytopenia (low blood platelet count) and leucopenia (low white blood cell count) and elevated liver function tests. Severe forms of illness can result in meningitis/encephalitis, bleeding disorders, difficulty breathing, organ damage and death. Persons with weakened immune systems are prone to develop more severe disease. Asplenic persons have a high risk of death.

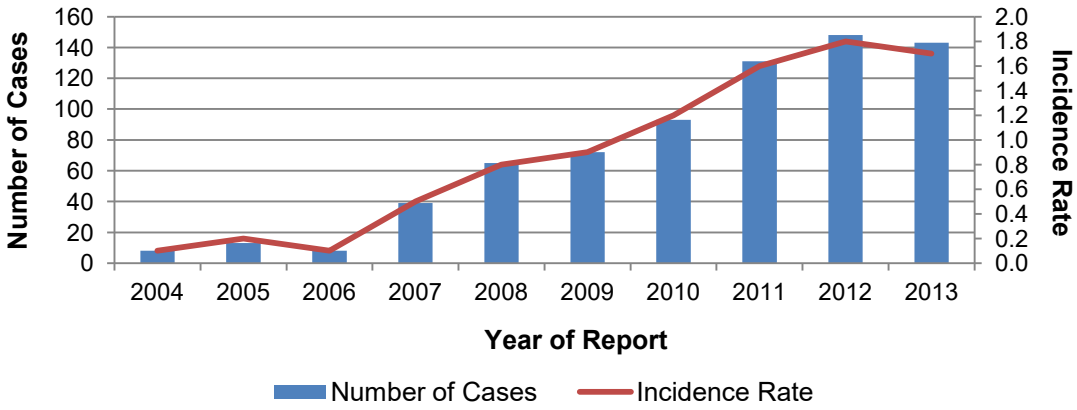
Prevention: Common practice should include minimizing tick bites by recognizing and avoiding the habitats of lone star ticks and blacklegged ticks. These habitats include humid forest environments with undergrowth or heavy leaf litter, and tall weeds and vegetative ground cover along forest margins, tree lines, forest trails and forest clearings. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and permethrin-based repellents should be applied to clothing, socks and shoes. After visiting tick habitats, a person should remove and wash clothing, thoroughly check all body surfaces for ticks and, if found, carefully remove attached ticks as soon as possible.

Other Important Information: Due to the many difficulties associated with diagnosis and testing of Rickettsial diseases, some cases of ehrlichiosis or anaplasmosis may be diagnosed as Rocky Mountain spotted fever (RMSF). Based on tick infection surveys, ehrlichiosis is thought to be much more common than RMSF in Virginia.

Ehrlichiosis/Anaplasmosis: 2013 Data Summary	
Number of Cases:	143
5-Year Average Number of Cases:	101.8
% Change from 5-Year Average:	+40%
Incidence Rate per 100,000:	1.7

A total of 143 cases of ehrlichiosis/anaplasmosis were reported in Virginia during 2013. This is a 3% decrease from the 148 cases seen in 2012, but is a 40% increase from the five-year average of 101.8 cases per year (Figure 13). The overall increase in reported cases over the past decade may be due to numerous factors, including increased knowledge of these diseases among healthcare providers, improvements in diagnosis and reporting, and increased tick populations. The increased tick populations result from increased deer populations, particularly in recently developed suburban areas where deer numbers are difficult to control through hunting. Adult lone star ticks and blacklegged ticks both feed primarily on deer blood for reproduction, and deer also serve as a reservoir for *E chaffeensis*. Among cases reported in 2013, 113 were specified as HME, 23 were specified as HGA, four were *E. ewingii* infections, and three were ehrlichiosis/anaplasmosis unspecified.

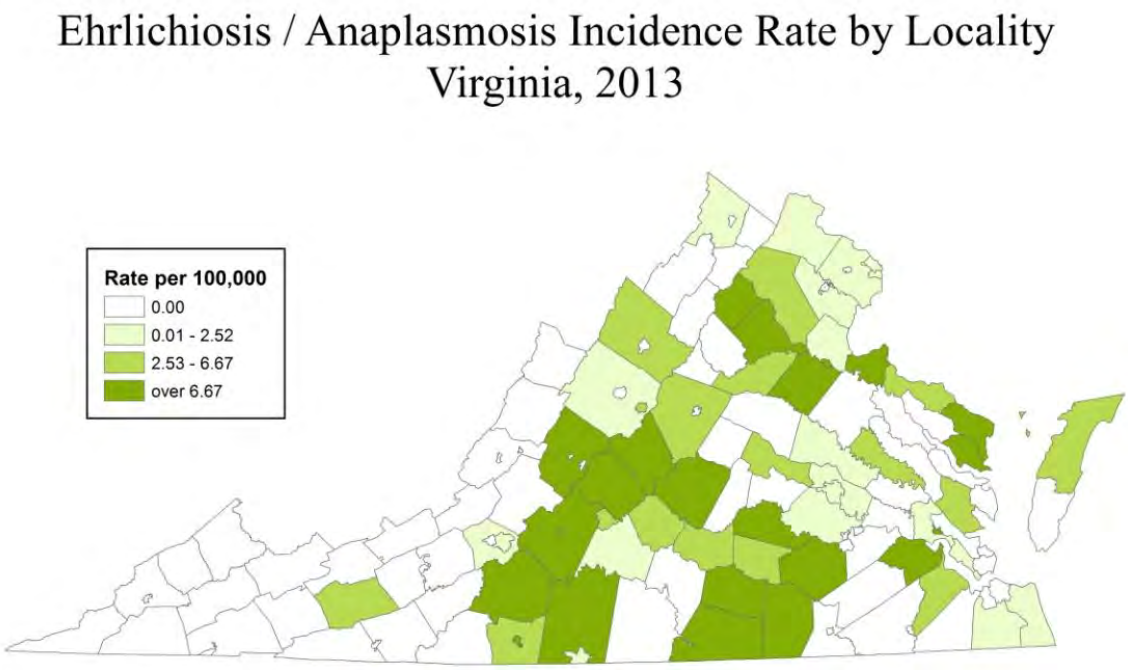
Figure 13. Ehrlichiosis/Anaplasmosis: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013



In 2013, ehrlichiosis/anaplasmosis incidence was highest in the 60 year and older age group, with 4.5 cases per 100,000, and second highest in the 50-59 year age group, with 2.4 cases per 100,000. Together, these two age groups accounted for 67% of all identified cases. From the high rates in these groups, incidence generally decreased with age, with no cases being reported in children less than 10 years of age. This pattern of age distribution, where infections occur predominantly among those over the age of 50 years, is typical of what is observed for ehrlichiosis and anaplasmosis in other endemic areas of the United States. Race information was not provided for 46% of the reported cases. Among the cases where race data were provided, incidence in the white population (1.2 per 100,000) was six times the rate in the black and "other" race populations (0.2 per 100,000, each). The incidence rate in males was higher than the rate in females (2.0 and 1.5 per 100,000, respectively).

In 2013, cases were reported from all regions of the state. The highest incidence rate (3.2 per 100,000) was seen in the southwest region, followed closely by the northwest region (3.0 per 100,000). Rates in the remaining three regions ranged from 0.8 to 1.7 cases per 100,000. Information on incidence by locality can be seen in the map below. The largest proportion of cases (48%) had symptom onset in the second quarter, while 43% had

symptom onset in the third quarter. The second and third quarters represent the spring and summer months, when ticks are most likely to feed. During 2013, one death was attributed to an *Ehrlichia chaffeensis* infection in an adult male in the 50-59 year age group who resided in the eastern region of Virginia.



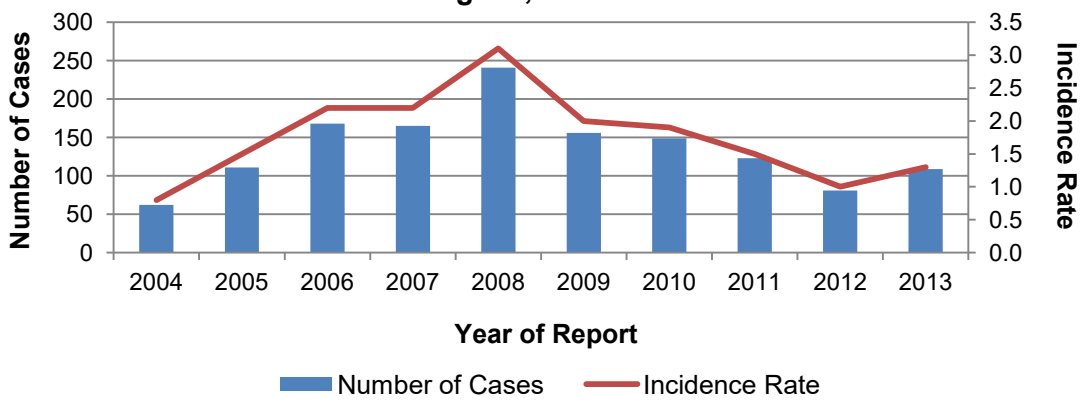
Escherichia coli Infection, Shiga Toxin-Producing

Agent: Shiga toxin-producing *Escherichia coli* (bacteria), also known as Verocytotoxin-producing *E. coli* (VTEC), enterohemorrhagic *E. coli* (EHEC) or STEC for short.
Mode of Transmission: Ingestion of food or water contaminated with human or animal feces, or direct transmission from infected persons or animals. Fomites and contaminated environments may also play a role in transmission.
Signs/Symptoms: Diarrhea, which may be bloody or non-bloody, and severe abdominal cramps with little or no fever. In some people, including children less than five years of age and older adults, the infection can cause a complication called hemolytic uremic syndrome (HUS), in which the red blood cells are destroyed and the kidneys fail.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. All ground beef should be cooked thoroughly to an internal temperature of at least 160°. Raw milk, unpasteurized dairy products, and unpasteurized juices should not be consumed.
Other Important Information: The most virulent serotype in the Shiga toxin-producing pathotype is *E. coli* O157:H7. In the U.S., *E. coli* O157:H7 is the serotype most commonly associated with hemolytic uremic syndrome (HUS). See the section on Hemolytic Uremic Syndrome in this report for more information. Shiga toxin-producing *E. coli* infection has been a reportable condition in Virginia since 1999.

***Escherichia coli* Infection, Shiga Toxin-Producing: 2013 Data Summary**	
Number of Cases:	109
5-Year Average Number of Cases:	150.0
% Change from 5-Year Average:	-27%
Incidence Rate per 100,000:	1.3

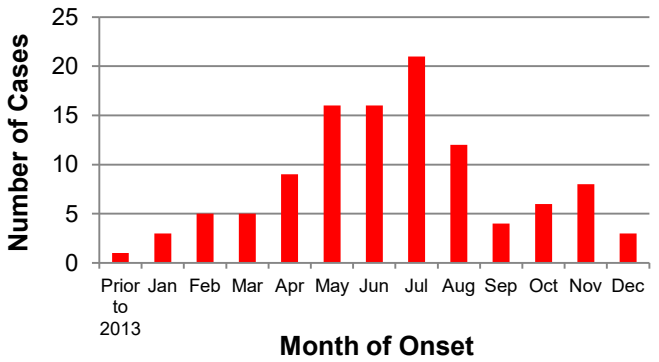
There were 109 cases of Shiga toxin-producing *Escherichia coli* (STEC) infection reported in 2013. This is a 35% increase from the 81cases reported in 2012, but a 27% decrease from the five-year average of 150 cases per year (Figure 14).

Figure 14. *Escherichia coli* Infection, Shiga Toxin-Producing: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013



STEC may infect any age group but the majority of cases occur in children. Children and the elderly are also more likely to develop severe illness. The highest rate of infection was seen in the less than one year age group (7.9 per 100,000), followed by the 1-9 year age group (4.2 per 100,000). Other age groups had incidence rates between 0.3 and 2.1 per 100,000. Race was reported for 71% of the cases. Among those with a reported race, the incidence rate was higher in the white population (1.1 per 100,000) than in the black and "other" populations (0.4 to 0.5 per 100,000, respectively). Females and males had a similar incidence of infection (1.3 per 100,000, each).

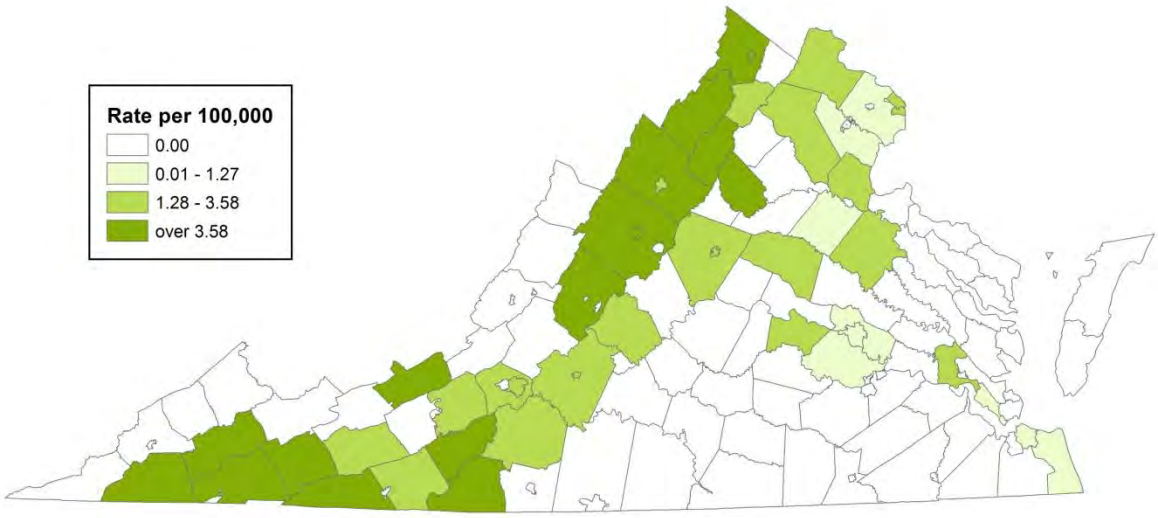
Figure 15. *Escherichia coli* Infection, Shiga Toxin-Producing: Month of Onset, Virginia, 2013



The northwest region experienced the highest incidence rate (3.1 per 100,000), followed by the southwest region (2.0 per 100,000). Incidence rates in the other regions were between 0.3 and 1.3 per 100,000. Incidence by locality can be seen in the map below.

While infections occurred throughout the year, reported cases peaked during the warmer months of May through August (Figure 15). Two outbreaks attributed to STEC were reported during 2012. These two outbreaks involved multi-state clusters with Virginia having one case involved in each outbreak. Both outbreaks were food-borne. Another suspected outbreak of *E. coli* infection in 2013 was related to recreational water exposure at a camp. Five cases were involved in this outbreak; however, these cases are not reflected in the Virginia count of 2013 STEC infections, as the only confirmed case resided out of state and the remaining four cases did not meet the national surveillance case definition for STEC.

Escherichia coli Infection, Shiga Toxin-Producing Incidence Rate by Locality, Virginia, 2013

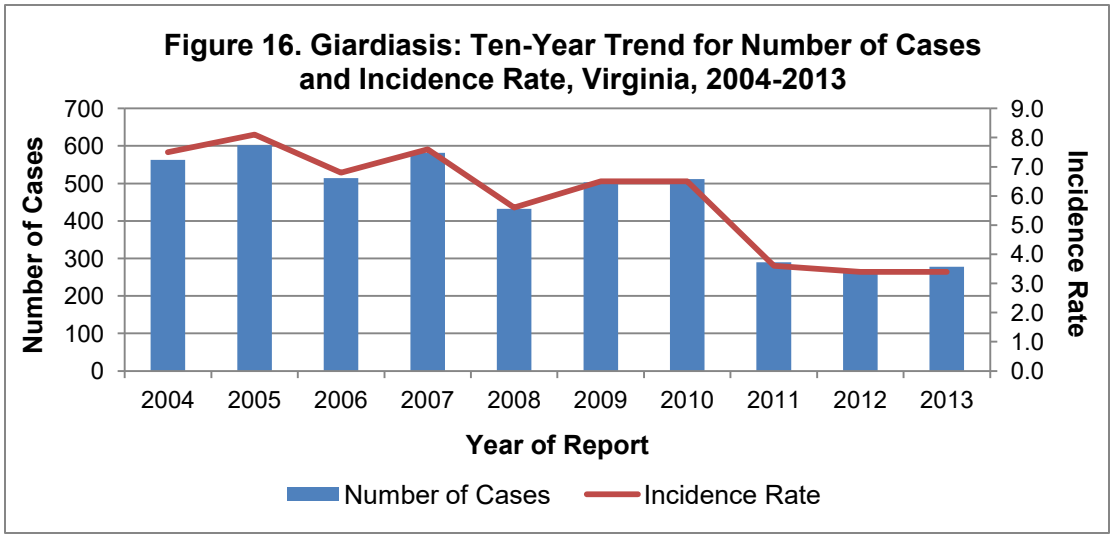


Giardiasis

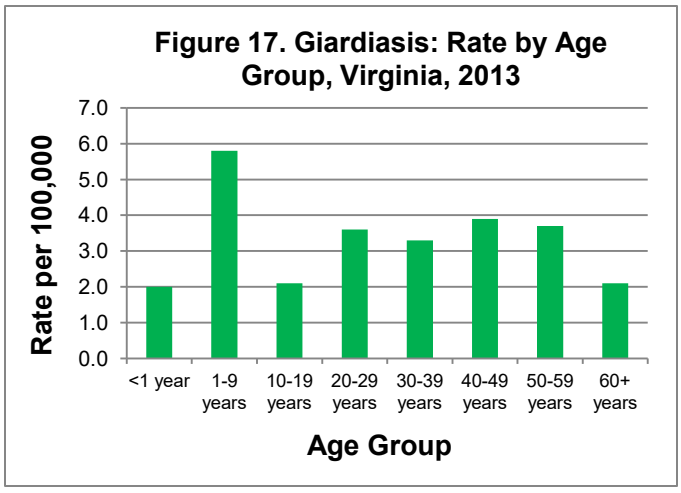
Agent: *Giardia intestinalis* (parasite)
Mode of Transmission: Person-to-person transmission by hand-to-mouth transfer of cysts from the feces of an infected person. Localized outbreaks are more often due to ingestion of cysts in fecally-contaminated drinking and recreational water (e.g., lakes, rivers, springs, ponds, and streams) than from fecally-contaminated food.
Signs/Symptoms: Symptoms may include diarrhea, abdominal pain, bloating, nausea and vomiting. A person may be asymptomatic or develop chronic illness.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. Recreational water or untreated water from shallow wells, lakes, rivers, springs, ponds or streams should not be consumed. Persons with diarrhea should not swim at recreational water venues.

Giardiasis: 2013 Data Summary	
Number of Cases:	278
5-Year Average Number of Cases:	401.8
% Change from 5-Year Average:	-31%
Incidence Rate per 100,000:	3.4

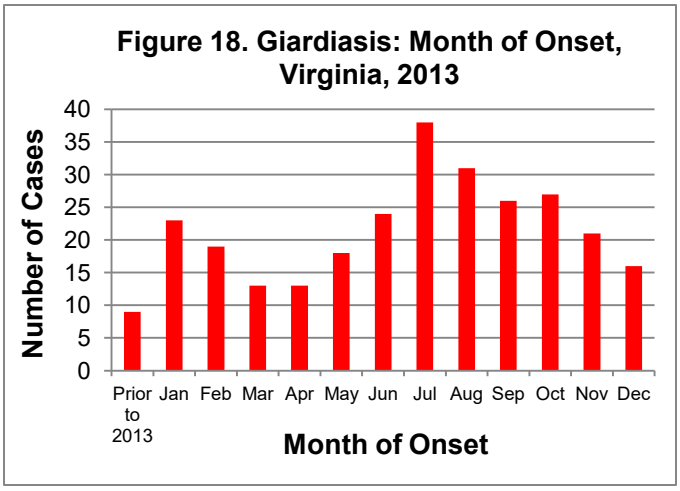
During 2013, 278 cases of giardiasis were reported in Virginia. This is very similar to the 272 cases reported in 2012 but much lower than the 5-year average of 401.8 cases per year. When examining giardiasis cases over a ten year period (Figure 16), it is evident that the 2011-2013 disease pattern is very different from that seen in 2004-2010. The lower average annual number of cases for 2011-2013 can be attributed to a change in the surveillance case definition. Prior to 2011, surveillance case counts included anyone with a positive laboratory result for *Giardia*. Beginning in 2011, documentation of clinically compatible illness was required in addition to a positive laboratory result for a case to be counted for public health surveillance purposes.



The 1-9 year age group had a much higher incidence rate for giardiasis than any other age group (5.8 per 100,000). The incidence rate in the other age groups ranged from 2.0 to 3.9 per 100,000 (Figure 17). Race was not reported for 58% of giardiasis cases in 2013. Among those cases with information on race, the rate was higher in the "other" race group (2.1 per 100,000) than in the white population (1.4 per 100,000) or the black population (1.1 per 100,000). A higher rate was seen among males (4.5 per 100,000) than females (2.3 per 100,000).

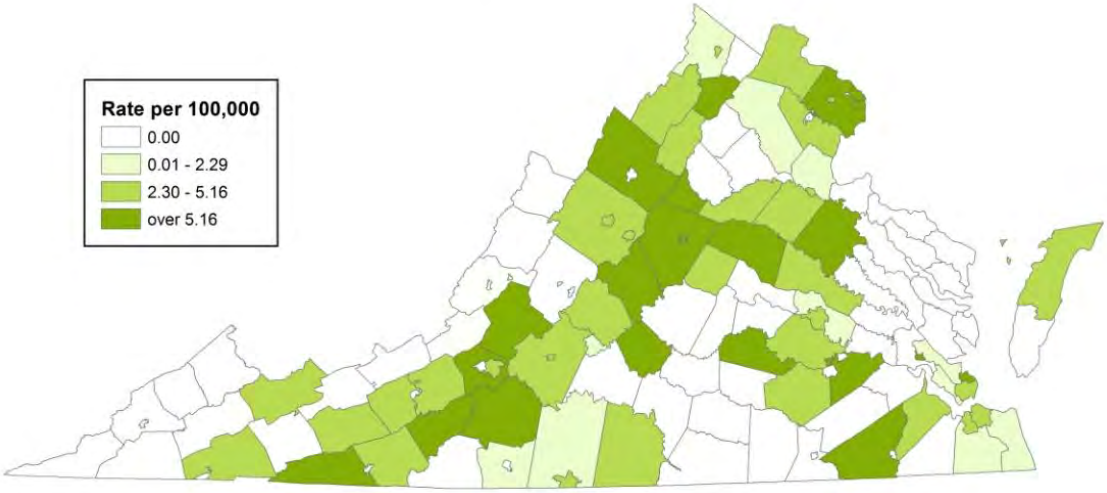


With 129 cases, the northern region experienced the largest proportion of cases and highest incidence rate (5.5 per 100,000). Rates in the other regions ranged from 1.7 to 3.6 per 100,000. The map of incidence rates by locality, presented below, illustrates that the western localities in Virginia were more affected by this disease than the eastern localities, which reflects an ongoing pattern for this condition. Cases occurred throughout the year, with higher rates in the warmer months (Figure 18).



While the source of exposure for sporadic cases cannot usually be determined, 109 (39%) of the persons reported with giardiasis in 2013 had traveled prior to illness onset, 102 (37%) reported contact with an animal, 59 (21%) had recreational water exposure, 40 (14%) knew of similarly ill persons, and 18 (6%) had consumed untreated water. One outbreak of giardiasis was reported in 2013. It involved four residents from the central region whose illness was associated with water exposures at an out-of-state summer camp.

Giardiasis Incidence Rate by Locality
Virginia, 2013

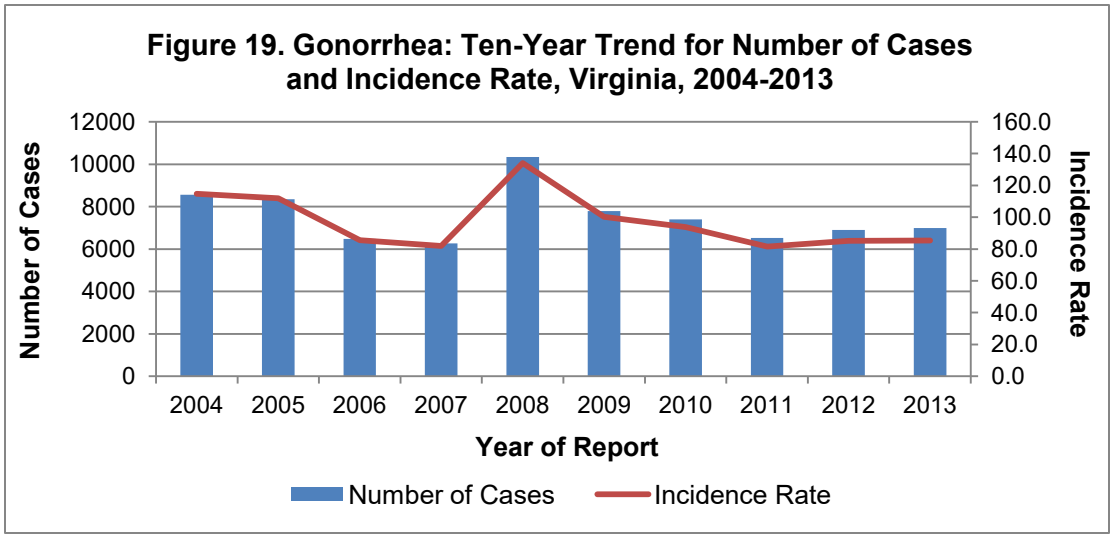


Gonorrhea

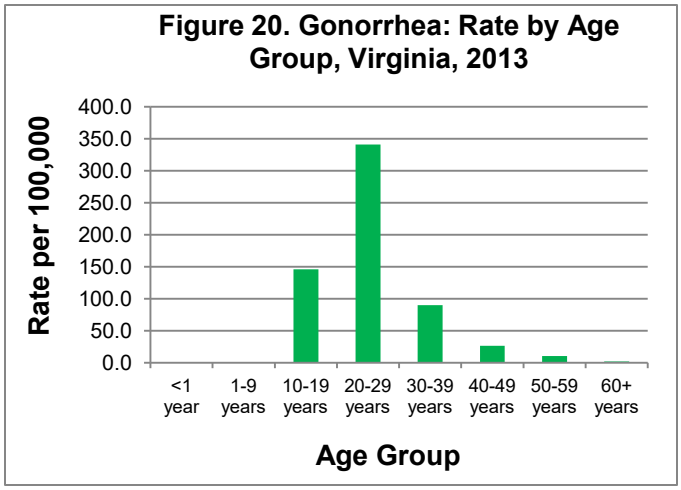
Agent: *Neisseria gonorrhoeae* (bacteria)
Mode of Transmission: Sexually transmitted through direct contact with secretions from an infected person.
Signs/Symptoms: Infected men can have a burning sensation while urinating and a yellowish white discharge from the urethra. Infected women are usually asymptomatic, although vaginal discharge, burning while urinating, abdominal pain and/or bleeding after intercourse may occur. Symptoms usually appear within a week, but could take up to 30 days. Untreated gonorrhea among women can lead to pelvic inflammatory disorder and infertility.
Prevention: Preventive measures include safe sexual practices and ensuring that infected sexual contacts are treated with antibiotics.
Other Important Information: The progressive development of antibiotic resistance continues to plague gonorrhea prevention efforts. Antibiotic resistance undermines treatment success, heightens the risk of complications and facilitates transmission of infection. Since April 2007, the CDC has advised against the use of fluoroquinolones for the treatment of gonorrhea, based on data indicating widespread drug resistance in the United States. Furthermore, as of August 2012, the CDC no longer recommends cefixime (an oral cephalosporin) at any dose as a first-line regimen for treatment of gonococcal infections. The CDC now recommends combination therapy for gonorrhea with ceftriaxone administered intramuscularly and either azithromycin or doxycycline given orally for 7 days.

Gonorrhea: 2013 Data Summary	
Number of Cases:	6,992
5-Year Average Number of Cases:	7,788.6
% Change from 5-Year Average:	-10%
Incidence Rate per 100,000:	85.4

According to the CDC, gonorrhea is substantially underdiagnosed and underreported, and approximately twice as many new infections are estimated to occur as are reported each year. While 334,826 cases were reported nationally in 2012, the CDC estimates that 820,000 cases of gonorrhea occur yearly. Virginia continues to stay well below the national gonorrhea incidence rate (107.5 per 100,000) at 85.4 cases per 100,000. In Virginia, there was a small (1%) increase in the number of reported gonorrhea cases from 6,894 in 2012 to 6,992 in 2013. However, this still represents a 10% decrease from the 5-year average of 7,788.6 cases per year (Figure 19). Over the last ten years, the annual number of reported cases of gonorrhea in Virginia has fluctuated. In 2006 and 2007 case counts were notably low, followed by an elevated number of cases in 2008. The marked change in one year can be partly attributed to changes in data handling and data entry protocols. Because of the substantial underdiagnosis of this condition, it is not clear whether the general declines observed since 2008 indicate decreases in actual disease incidence or are a reflection of reduced diagnosis and screening.

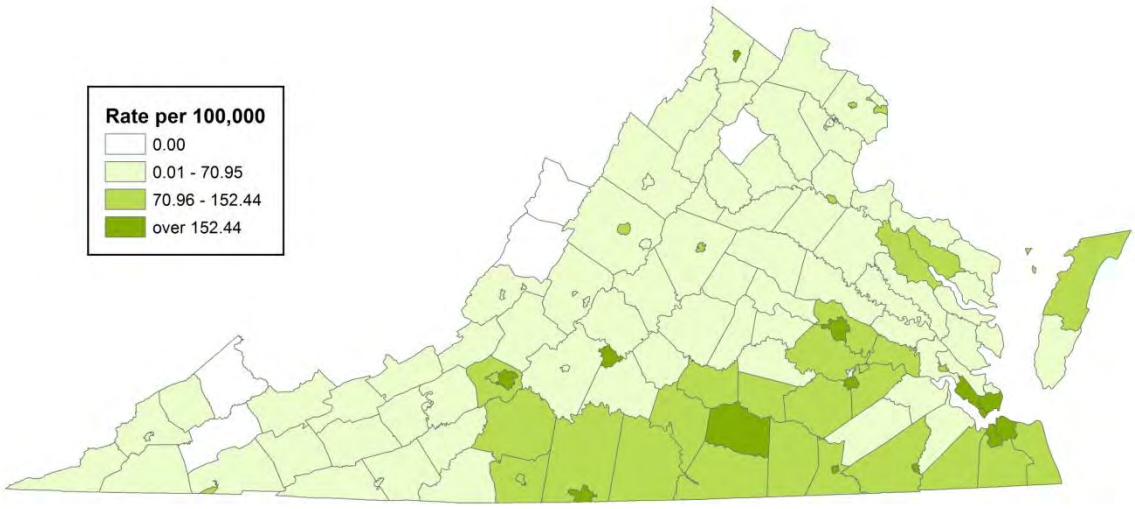


The distribution by age group indicates that gonorrhea incidence is highest in the 20-29 year age group (341.0 per 100,000 population), followed by the 10-19 year age group (146.0 per 100,000 population) (Figure 20). Since 1989 these two age groups have led the state for highest incidence rates. Gonorrhea remains the sexually transmitted disease with the most significant racial disparity in Virginia and at the national level. In 2012, the most recent year for which national data are available, the CDC reported gonorrhea incidence rates at 462.0 per 100,000 for the black population, while incidence rates among other races ranged from 16.9 to 124.9 per 100,000. Virginia trails in comparison to the United States, with a rate of 260.8 per 100,000 in the black population. The incidence rate among blacks was almost 16 times the rate in the white population (16.4 per 100,000) and over 6 times the rate in the "other" race category (40.7 per 100,000). Similar to the national pattern, Virginia gonorrhea incidence rates were only slightly higher among females than males (88.9 and 81.7 per 100,000, respectively).



Since 2008, the eastern region has experienced the largest proportion of reported cases, as well as the highest incidence of gonorrhea (see map below). In 2013, 2,723 cases were reported from the eastern region (39% of the total statewide), resulting in an incidence rate of 148.7 per 100,000. The central region had the second highest rate, with 1,869 cases (27%), and an incidence rate of 134.7 per 100,000. Among the other regions in Virginia, incidence rates ranged from 32.4 to 90.5 per 100,000.

Gonorrhea Incidence Rate by Locality
Virginia, 2013



Granuloma Inguinale

Agent: *Calymmatobacterium granulomatis* (bacteria)
Mode of Transmission: Presumably by sexual activity; specifically, exposure to the bacteria from an open lesion in the genital area. Young children can become infected by contact with infectious secretions.
Signs/Symptoms: Blisters or lumps in the genital area. These skin lesions can enlarge and become open sores. If left untreated, the bacteria can lead to the destruction of genital organs and spread to other parts of the body through autoinoculation.
Prevention: Sexual partners should be examined, counseled to practice safe sex, and offered antimicrobial therapy, when needed.

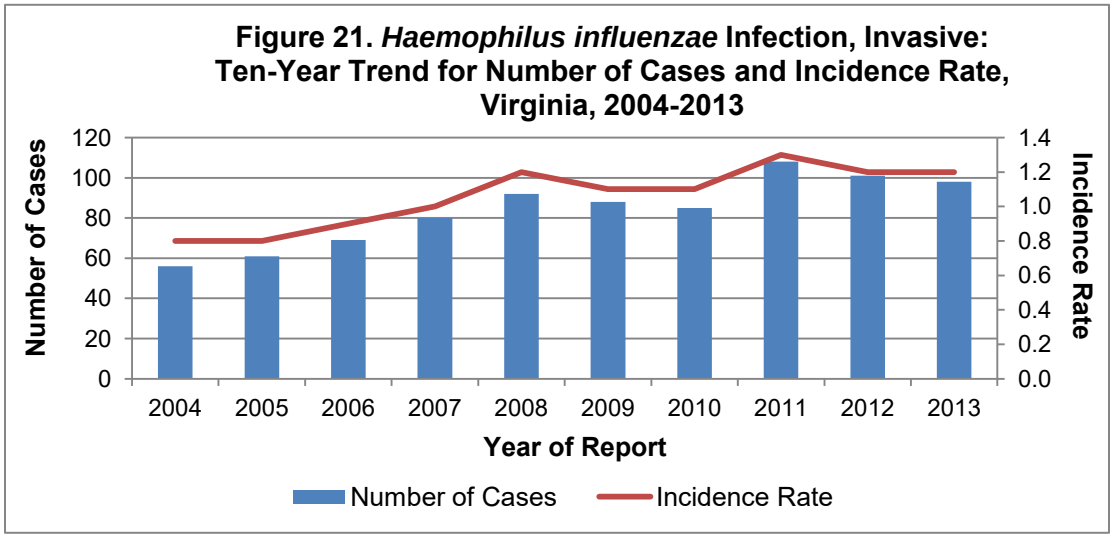
During 2013, no cases of granuloma inguinale were reported in Virginia. The last reported case occurred in 2001.

***Haemophilus influenzae* Infection, Invasive**

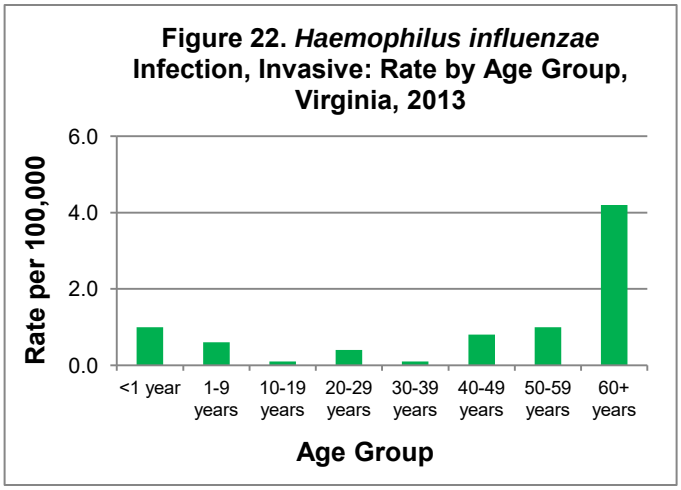
Agent: *Haemophilus influenzae* (bacteria)
Mode of Transmission: Person-to-person transmission by inhalation of respiratory droplets or direct contact with nose and throat secretions from an infected person or an asymptomatic carrier.
Signs/Symptoms: Inflammation of the lining of the brain and spinal cord (i.e., meningitis), inflammation of the epiglottis which may lead to blockage of upper airway and death, pneumonia, deep skin infection, arthritis, or bloodstream infection.
Prevention: Vaccination with a 3-4 dose series (depending on manufacturer) of conjugate *Haemophilus influenzae* type b (Hib) vaccine beginning at 2 months of age and concluding with a booster at 12 to 15 months of age. If vaccination is delayed, children 7 months of age and older may not require a full series of three or four doses. The total number of doses a child needs to complete the series depends on the child's age at the time the first dose is administered.
Other Important Information: *Haemophilus influenzae* is categorized into two major groupings: encapsulated and non-encapsulated. Encapsulated strains are more virulent and produce a polysaccharide capsule which is further characterized into six antigenically distinct serotypes (types a though f). Nontypable serotype results indicate a non-encapsulated strain. Vaccine is currently only available for one serotype, type b. In the prevaccine era, type b organisms accounted for 95% of all strains that caused invasive disease. Since the licensure of conjugate Hib vaccine in the late 1980s, the incidence of invasive Hib disease in the U.S. has declined by more than 99% compared with the pre-vaccine era.

***Haemophilus influenzae* Infection, Invasive: 2013 Data Summary**	
Number of Cases:	98
5-Year Average Number of Cases:	94.8
% Change from 5-Year Average:	+3%
Incidence Rate per 100,000:	1.2

In 2013, 98 cases of invasive *H. influenzae* were reported in Virginia representing a 3% decrease in cases compared to 2012. Despite this drop, there was a 3% increase from the five-year average of 94.8 cases per year. The growing elderly population is thought to be a contributing factor for the gradual increase in case counts observed in Figure 21.



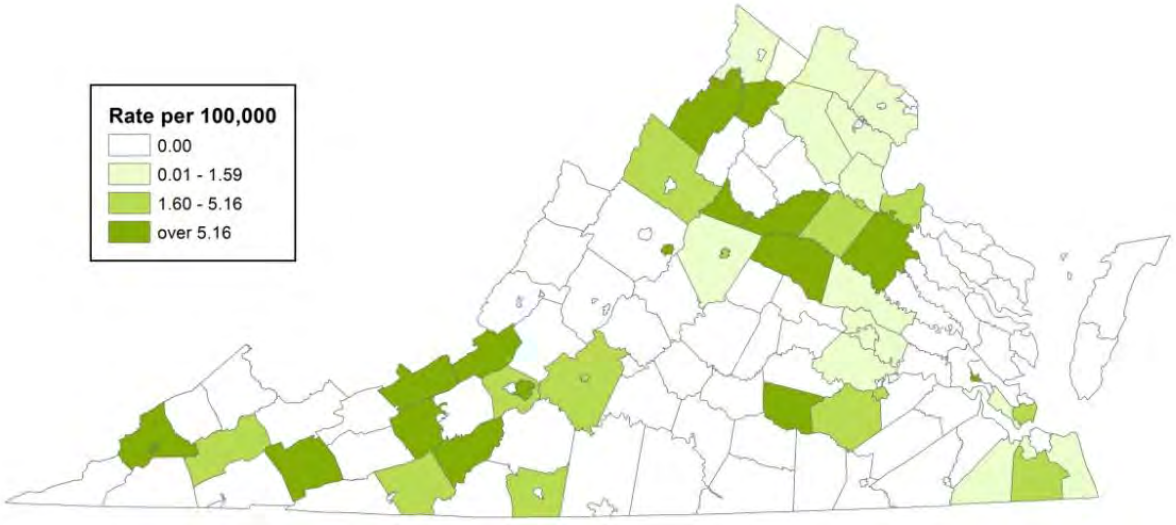
In 2013 more cases (64, 65%) occurred in the 60 year and older age group than any other age group (Figure 22). While the 60 year and older age group experienced an incidence rate of 4.2 cases per 100,000, the next highest rate was 1.0 case per 100,000, which occurred in both the 50-59 year and less than one year age groups. Incidence rates for all other age groups ranged from 0.1 to 0.8 cases per 100,000.



Incidence was similar for females and males (1.3 and 1.0 cases per 100,000, respectively). Race was unknown for 29% of cases. Of those with race reported, the white population had a slightly higher incidence, with 1.0 case per 100,000, followed by the black population, with 0.6 cases per 100,000. Incidence rates varied among regions. The northwest and southwest regions had incidence rates of 2.3 and 2.0 cases per 100,000, respectively. This is more than twice the rate observed in the other regions, where the rates ranged from 0.7 to 0.9 cases per 100,000. Rates by locality can be seen in the map below. Cases occurred throughout the year with little seasonal variability, and no outbreaks attributed to *H. influenzae* were reported in 2013. Five deaths from invasive *H.* influenza were reported in 2013. Two deaths occurred in the 50-59 year age group while the rest were among the 60 year and older age group.

Of the 98 reported cases, 91 (93%) were tested for serotype. No cases of vaccine preventable *H. influenzae* type b were reported. Non-encapsulated strains were the most common, at 70% of tested cases. Identified encapsulated strains were type f (23%), type e (4%), type a (1%), and type d (1%).

Haemophilus influenzae Infection, Invasive Incidence Rate by Locality, Virginia, 2013



Hantavirus Pulmonary Syndrome

Agent: Hantavirus family
Mode of Transmission: Several different types of hantaviruses that can cause hantavirus pulmonary syndrome (HPS) have been identified in the United States and each is associated with a different rodent species. Rodents infected with hantavirus do not become ill, but they can transmit the virus to humans when their urine, feces, or saliva are aerosolized and inhaled. While uncommon, other ways in which people may be exposed to the virus are rodent bites and direct contact between contaminated materials and a person's nose or mouth. Person-to-person transmission does not occur.
Signs/Symptoms: Early symptoms include fever and muscle pain, and may also include gastrointestinal complaints, headaches and dizziness. These symptoms may be accompanied by or followed by an abrupt onset of respiratory distress and decreased blood pressure. Respiratory failure and shock follow quickly.
Prevention: Rodents should be excluded from houses and other buildings. Protective measures include disinfecting rodent-contaminated areas with a spray disinfectant solution prior to cleaning. Approved respirators should be used to avoid inhalation of dust when cleaning or removing potentially infected materials, particularly in areas of heavy rodent infestation. Contaminated areas should be cleaned with a wet mop and not be vacuumed or swept so as to decrease the likelihood of creating an aerosol containing the virus.
Other Important Information: Although most common in the southwestern part of the country, hantavirus infections can occur anywhere. The most important hantavirus in the United States is the Sin Nombre virus for which the deer mouse (*Peromyscus maniculatus*) is the primary reservoir.

No cases of hantavirus pulmonary syndrome (HPS) were reported in Virginia during 2013. The only hantavirus case reported in Virginia occurred in 1993. In 2004, a resident of southwest Virginia died due to HPS following an exposure that occurred in West Virginia. For surveillance purposes, that case was attributed to West Virginia.

Hemolytic Uremic Syndrome (HUS)

Agent: Serious sequelae associated with infection from Shiga toxin-producing bacteria (*E. coli* or *Shigella). E. coli* O157:H7 is the bacterium most commonly associated with HUS.
Mode of Transmission: Ingestion of food or water contaminated with human or animal feces, or direct transmission from infected persons or animals. Fomites and contaminated environment may also play a role in transmission of Shiga toxin-producing bacteria.
Signs/Symptoms: Classic signs of hemolytic uremic syndrome include red blood cell destruction (hemolytic anemia), low number of platelets (thrombocytopenia), and acute kidney failure. Symptoms include decreased frequency of urination, fatigue, progression to kidney failure often requiring dialysis, as well as neurological impairment (e.g., stroke or seizures). HUS, if it occurs, develops on average seven days after the first symptoms of infection.
Prevention: Hands should be washed carefully after using the bathroom, after changing diapers or cleaning a child who has used the bathroom, after handling animals or their feces, and before preparing and eating food. All ground beef should be cooked thoroughly to an internal temperature of at least 160°. Raw milk, unpasteurized dairy products, and unpasteurized juices should not be consumed. Persons with diarrhea caused by *E. coli* O157:H7 should not use recreational waters for 2 weeks after symptoms have resolved. Outbreaks occurring in child care centers should immediately involve public health assistance to prevent further disease.
Other Important Information: Five to ten percent of persons diagnosed with Shiga toxin-producing *E. coli* infection develop HUS. The syndrome occurs in up to 15% of children with *E. coli* O157:H7 infection. For more information, see the section of this report on *E. coli* Infection, Shiga Toxin-Producing.

Hemolytic Uremic Syndrome (HUS): 2013 Data Summary	
Number of Cases:	6
5-Year Average Number of Cases:	2.4
% Change from 5-Year Average:	+150%
Incidence Rate per 100,000:	0.1

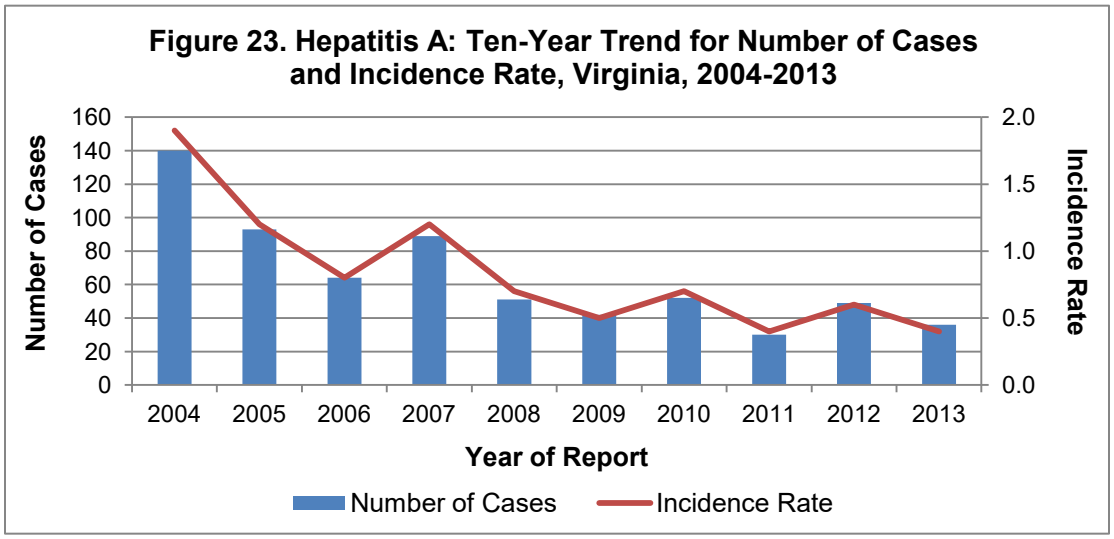
Six cases of HUS were reported during 2013. This doubles the three cases reported in 2012, and represents a 150% increase from the five-year average of 2.4 cases per year. Three of the reported cases occurred following an infection with Shiga toxin-producing *E. coli* O157:H7, and one occurred following infection with Shiga toxin-producing *E. coli* O104:H4. The two remaining cases had bacterial testing performed and were found to be Shiga toxin positive, but the laboratories were unable to isolate the actual Shiga toxin-producing organism. Two cases occurred in the 60 year and older age group, while the remaining cases occurred in persons less than 30 years of age. Four cases were female and two were male. Three cases were reported from the northwest region, two were from the northern region, and the remaining case was from the southwest region. Cases occurred throughout the year with three having onset during the third quarter. No deaths occurred as a result of the infections.

Hepatitis A

Agent: Hepatitis A virus (HAV), a member of the Picornavirus family
Mode of Transmission: HAV is spread when fecal matter enters the mouth, such as by consuming contaminated food or water. Most infections result from close contact with an infected household member or sex partner.
Signs/Symptoms: Fever, malaise, nausea, abdominal discomfort, dark urine, joint pain, and jaundice. In older children and adults, symptoms usually occur for several weeks, though prolonged or relapsing liver disease can last up to six months. Younger children often exhibit no symptoms.
Prevention: Preventive measures include immunization, safe food preparation, and good personal hygiene (e.g., washing hands with soap after using the bathroom, after changing diapers, and before preparing and eating food). Administration of immune globulin (IG) after exposure to hepatitis A can protect against symptomatic infection.
Other Important Information: This is an acute illness only; chronic infection does not occur. A vaccine was first introduced in 1995 and is currently recommended for all children at the age of one year, persons who are at increased risk of infection (i.e., international travelers), and persons who are at increased risk for developing complications from hepatitis A.

Hepatitis A: 2013 Data Summary	
Number of Cases:	36
5-Year Average Number of Cases:	44.8
% Change from 5-Year Average:	-20%
Incidence Rate per 100,000:	0.4

In 2013, 36 cases of hepatitis A were reported in Virginia. This represents a 27% decrease from the 49 cases reported in 2012, and is 20% lower than the five-year average of 44.8 cases per year (Figure 23).



Reported cases ranged in age from three to 93 years. The highest incidence rate occurred in the 60 year and older age group (0.8 per 100,000) and no cases occurred among infants. Rates among the other age groups ranged from 0.1 to 0.7 per 100,000 (Figure 24). Race data were available for 61% of cases. Among those cases with race information available, the rate in the "other" race group was slightly higher (0.5 per 100,000) than the rates in the white and black race groups (0.3 and 0.2 per 100,000, respectively). The rate in females (0.5 per 100,000) was comparable to the rate in males (0.4 per 100,000).

By region, incidence was highest in the central region (0.7 per 100,000) and lowest in the eastern region (0.1 per 100,000). Incidence by locality can be seen in the map below. Cases occurred throughout the year with January being the most frequently reported month of onset (Figure 25). Risk factors were identified in 36% of cases, all of whom had traveled outside of the country. One individual also had known exposure to a confirmed hepatitis A case.

Figure 24. Hepatitis A: Rate by Age Group, Virginia, 2013

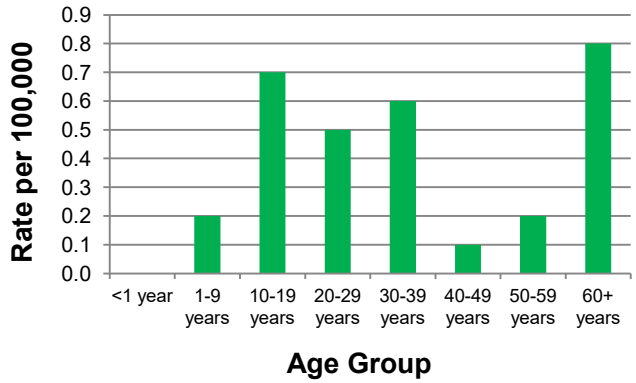
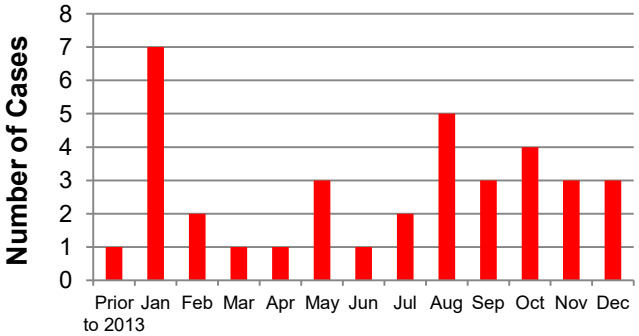
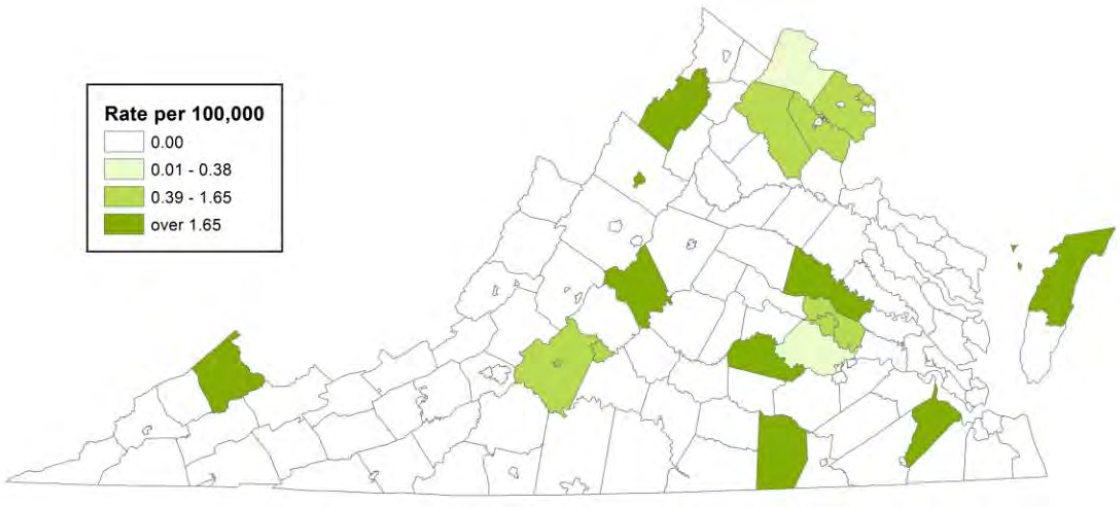


Figure 25. Hepatitis A: Month of Onset, Virginia, 2013



Hepatitis A Incidence Rate by Locality
Virginia, 2013



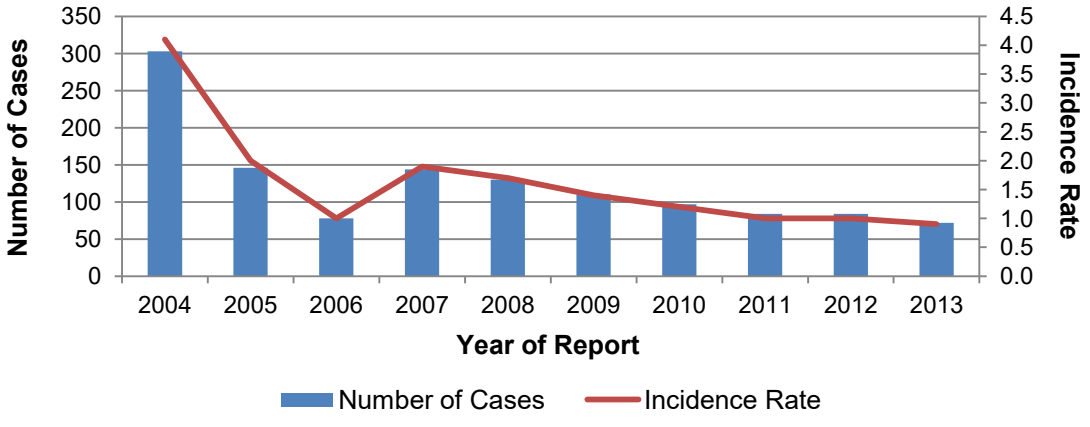
Hepatitis B, Acute

Agent: Hepatitis B virus (HBV), a hepadnavirus
Mode of Transmission: Person-to-person transmission through infected blood or body fluids (e.g., sexual, perinatal, or through the skin by nonsterilized needles or syringes).
Signs/Symptoms: Fever, fatigue, loss of appetite, nausea, abdominal pain, and jaundice. Infection can be asymptomatic. The likelihood of developing symptoms is age-dependent with adults and children over the age of five years being more likely to develop symptoms.
Prevention: Preventive strategies include immunization of people at increased risk of infection; screening of all pregnant women and treatment of children born to women who test positive; routine immunization of infants; routine immunization of adolescents who have not previously been immunized; and screening of donated blood and organs.
Other Important Information: Infection with hepatitis B virus may lead to chronic (i.e., long-term) infection. The risk of chronic infection is inversely related to the age of the patient at the time of infection. Death from liver disease occurs in 15%-25% of those with chronic infection. A nationwide strategy to eliminate hepatitis B infection was initiated in 1991. It included vaccination of infants at birth, prevention of perinatal hepatitis B infections, vaccination of children and adolescents, and vaccination of adults at high risk of infection.

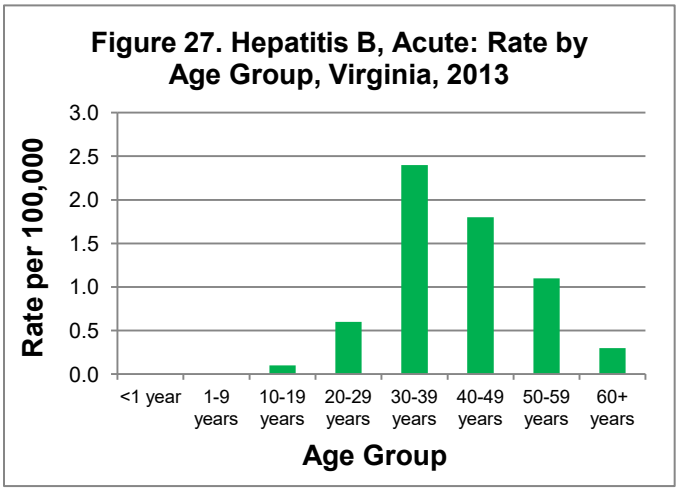
Hepatitis B, Acute: 2013 Data Summary	
Number of Cases:	72
5-Year Average Number of Cases:	101.0
% Change from 5-Year Average:	-29%
Incidence Rate per 100,000:	0.9

In 2013, 72 cases of acute hepatitis B infection were reported in Virginia, a decrease from the 84 cases reported in both 2012 and 2011. This represents a 29% decrease from the five-year average of 101.0 cases per year (Figure 26), and a substantial reduction from routine incidence of over 500 cases per year in the mid-1980s. The general 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.

Figure 26. Hepatitis B, Acute: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013

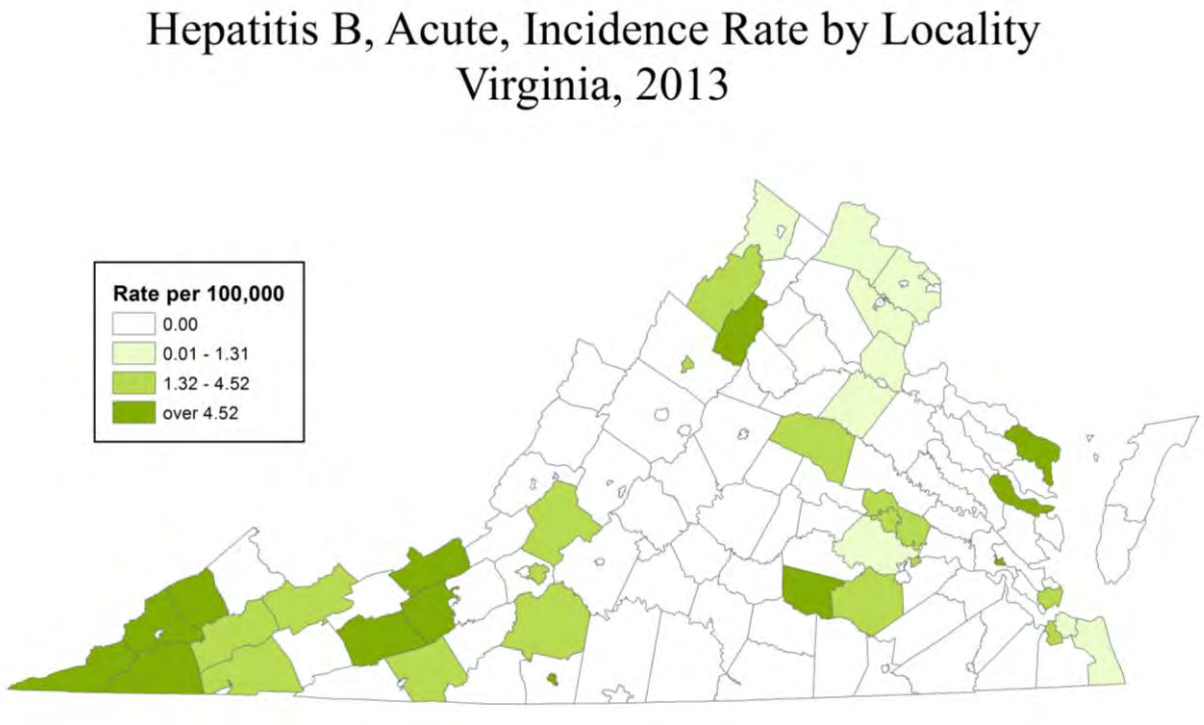


The highest incidence rate was observed in the 30-39 year age group (2.4 per 100,000), followed by the 40-49 year age group (1.8 per 100,000) (Figure 27). Unlike the two prior years, in 2013 there was one case reported in a person under the age of 20 years. Over one third of cases (39%) had missing or unknown race information. Among the 61% of cases for whom information on race was available, incidence rates were similar in the "other", black, and white race populations, ranging from 0.3 to 0.6 per 100,000. Rates were also similar in males and females (1.0 and 0.8 per 100,000, respectively).



The southwest region had a notably higher incidence rate for acute hepatitis B infections in 2013 (2.3 per 100,000) than the other regions in Virginia (range 0.3 to 1.1 per 100,000). In particular, rates in the far southwest were among the highest, with one locality having a rate of 23.6 per 100,000 in 2013 (refer to map below). Disease onset occurred throughout the year.

No new hepatitis B outbreaks were reported in Virginia in 2013. Six cases identified in 2013 were connected to a 2012 community-wide outbreak associated with injection drug use in the southwest region. Risk factors were identified in 42% of cases, with multiple risks listed for some individuals. Of those with risk factor information, recreational drug use and contact with a person with hepatitis B virus infections were the most frequently reported risk behaviors (63% and 37% of cases, respectively). No deaths were reported in 2013 that were attributable to acute hepatitis B infection.

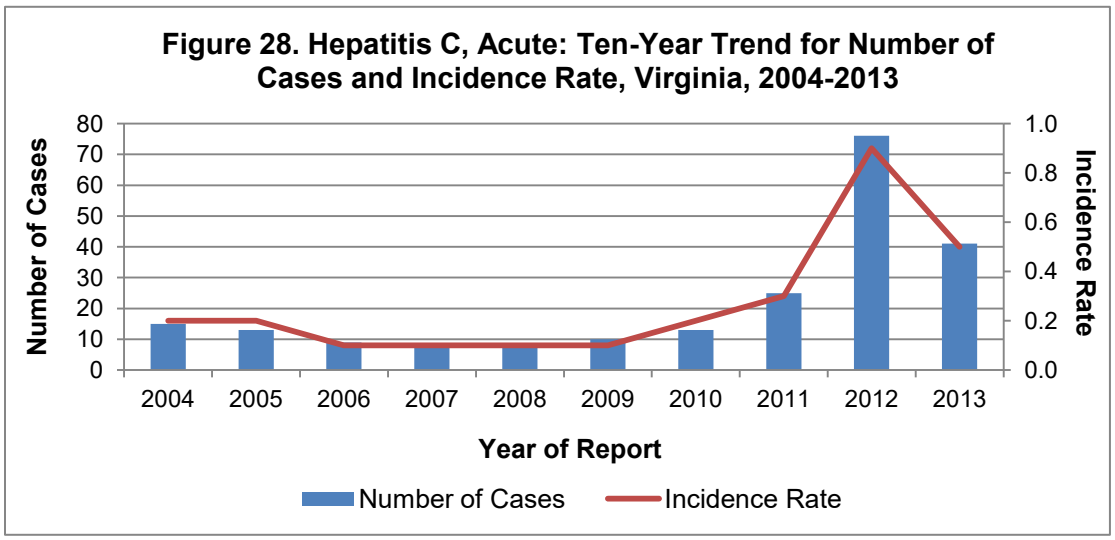


Hepatitis C, Acute

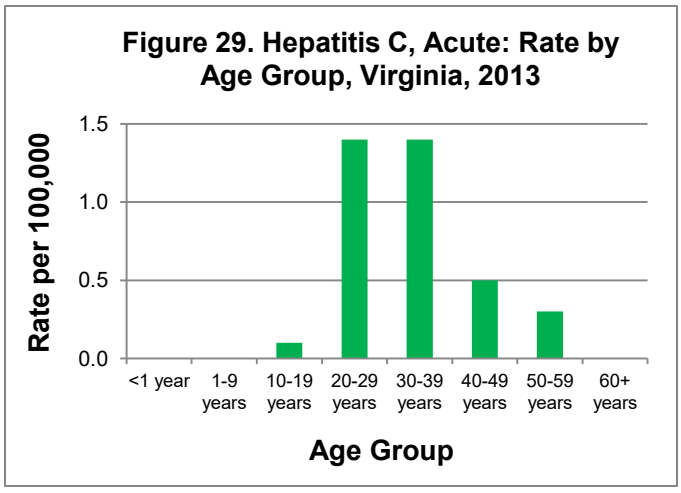
Agent: Hepatitis C virus (HCV), a member of the Flavivirus family
Mode of Transmission: Infection is spread when blood of someone with HCV enters the body of another person. Infection can occur during injection drug use if needles, syringes, or other equipment are shared or during healthcare procedures if needle-stick injuries occur. Infrequently, HCV can be spread through sex with a person infected with hepatitis C, through the sharing of personal items contaminated with infectious blood, such as razors or toothbrushes, through healthcare involving invasive procedures, or during delivery if the expectant mother has hepatitis C. Before 1992 when blood screening for HCV became available, receipt of donated blood, blood products, and organs was a common means of transmission, but now is a less common risk factor.
Signs/Symptoms: Fever, fatigue, loss of appetite, nausea, abdominal discomfort, or jaundice.
Prevention: Preventive measures include avoidance of the following: contact with blood; sharing of needles or other equipment used for injecting drugs; sharing of personal items such as razors, toothbrushes, nail clippers, or glucose monitoring equipment; or obtaining a tattoo or body piercing from an unlicensed facility or in an informal setting. Additional preventive measures include practicing safe sexual practices and proper infection control during medical and dental procedures and avoidance of donating blood if infection with HCV is known.
Other Important Information: Approximately 20-30% of new infections cause symptoms. HCV infections become chronic in 75-85% of cases. As people with chronic HCV infection age, they are at higher risk for developing chronic liver disease, cirrhosis, and liver cancer. No vaccine is available to prevent HCV.

Hepatitis C, Acute: 2013 Data Summary	
Number of Cases:	41
5-Year Average Number of Cases:	26.4
% Change from 5-Year Average:	+55%
Incidence Rate per 100,000:	0.5

Forty-one cases of acute hepatitis C infection were reported in 2013, which is less than the 76 cases reported in 2012, but 1.5 times the 5-year average of 26.4 cases per year (Figure 28). This increase may be partially attributed to changes in the acute hepatitis C surveillance case definition in January 2012. These changes allow a case of acute hepatitis C to be counted in a person who tests positive, even in the absence of symptoms, if that person had tested negative for hepatitis C within the preceding six months. Additionally, the new case definition no longer requires negative tests for hepatitis A and hepatitis B, but instead states that if those tests were conducted then the results must be negative.



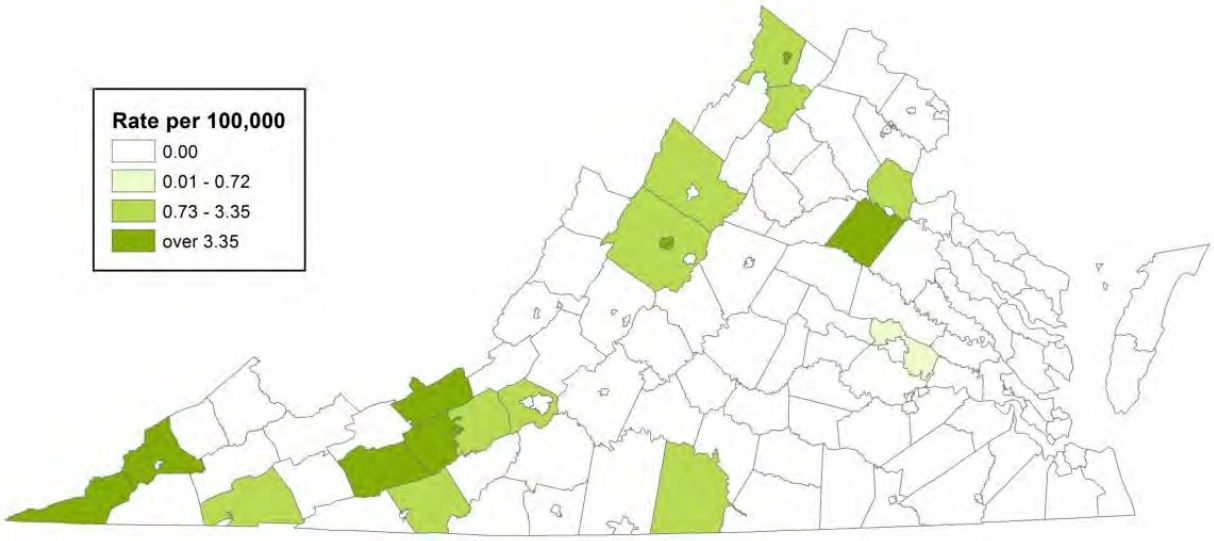
The highest incidence rate (1.4 per 100,000) occurred in both the 20-29 and 30-39 year age groups. No cases of hepatitis C infection were reported in children less than 10 years of age or in adults 60 years and older (Figure 29). Among the 32 cases for which race information was available, the incidence rate was higher in the white population than in the black population (0.5 per 100,000 and 0.1 per 100,000, respectively). No cases were reported within the "other" race category. The rate of acute hepatitis C infection was the same for males and females (0.5 per 100,000).



Acute hepatitis C incidence was highest in the southwest region (1.6 per 100,000), followed by the northwest region (1.3 per 100,000) and the central region (0.1 per 100,000). No cases of acute hepatitis C were reported in the northern or eastern regions. Rates by locality can be seen in the map below. Disease onset occurred throughout the year with no apparent seasonal variation. No acute hepatitis C outbreaks were reported in Virginia in 2013.

Risk factor data were available for 34% of the cases, with some individuals reporting more than one risk factor. Among persons providing risk information, 86% reported intravenous drug abuse and 14% had sexual contact with a known hepatitis C infected partner. No reported deaths in 2013 were attributable to acute hepatitis C infection.

Hepatitis C, Acute, Incidence Rate by Locality
Virginia, 2013



Human Immunodeficiency Virus (HIV) Disease and Acquired Immunodeficiency Syndrome (AIDS)

Agent: Human Immunodeficiency Virus (retrovirus)
Mode of transmission: Person-to-person via unprotected sexual intercourse, use of contaminated needles, blood transfusions and transplants with organs from infected donors, from mother-to-child before or during birth or through breastfeeding, or contact of cut or abraded skin with body secretions carrying the virus.
Signs/Symptoms: Initial infection with HIV can cause an acute illness or fever, muscle pain, enlarged lymph nodes, and/or a rash which occurs approximately 2-4 weeks post-exposure; however, a person can be asymptomatic for several years. When the immune system is affected, the infection develops into AIDS.
Prevention: Preventive measures include safe sexual practices; screening of blood and plasma; and among infected mothers, antiretroviral prophylaxis, cesarean delivery before labor, and avoidance of breastfeeding.
Other Important Information: Data analysis methods for HIV/AIDS were changed in 2009. Statistics are now presented for HIV disease rather than HIV and AIDS as separate conditions, as explained below. Additional information regarding the changes in analytical methods is available on the following web address: http://www.vdh.virginia.gov/epidemiology/DiseasePrevention/DAta/documents/Technical%20Notes%20and%20Glossary%20of%20Terms_Revised_04-2010.pdf. More detailed epidemiologic analyses of HIV/AIDS, as well as other sexually transmitted infections, is located at http://www.vdh.virginia.gov/epidemiology/DiseasePrevention/DAta/. Rapid tests (which provide results within 30 minutes) are becoming more widely available and are used at various testing sites in Virginia. For more information, call your local health department, or contact the Virginia Department of Health HIV/STD/Viral Hepatitis Hotline at 1-800-533-4148.

HIV Disease: 2013 Data Summary	
Number of Cases:	1,151
5-Year Average Number of Cases:	1,192.8
% Change from 5-Year Average:	-4%
Incidence Rate per 100,000:	14.1

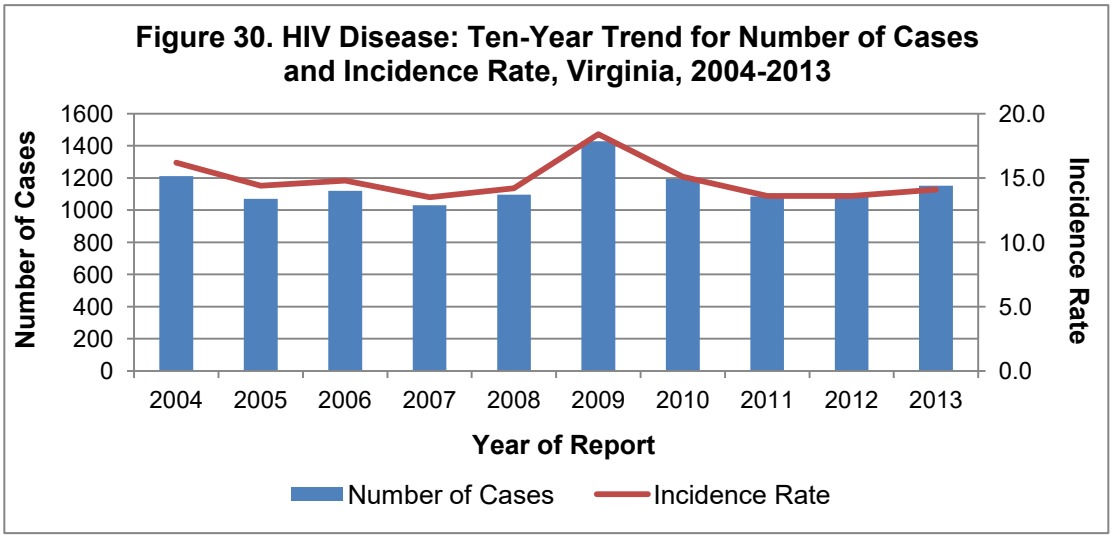
Change in Epidemiologic Analyses of HIV Disease

Beginning in 2009, VDH reassessed the way HIV and AIDS surveillance data were reported in order to better illustrate the epidemic in Virginia. Instead of approaching HIV and AIDS as two separate conditions of the same disease, it was found to be more helpful for epidemiologic and community planning purposes to evaluate all HIV and AIDS cases as one encompassing group: persons diagnosed or living with **HIV disease**. Before 2009, cases that were reported as having an AIDS-defining condition were excluded from the count of newly diagnosed HIV infections. Due to this change in methodology from previous years, those calculations pre-2009 are not comparable to calculations from 2009 and later, where HIV and AIDS are treated as one disease without considering disease

progression. Currently, any case that presents as having HIV or an AIDS-defining condition at the time of diagnosis is considered a newly diagnosed HIV disease case. It is not considered an incident case, however, as the person may have had HIV for a significant time prior to diagnosis. HIV incidence is measured through a separate surveillance process, which provides estimates for the state. The Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) method in combination with HIV testing and antiretroviral use history data are used to estimate HIV incidence. The STARHS method uses a laboratory test to classify newly diagnosed HIV cases as either recent (occurring approximately within the last five months) or long-standing HIV cases.

Figure 30 displays the trend in new HIV diagnoses for the previous 10 years when the current methodology is applied to the entire 2004-2013 period. For a more thorough discussion of the changes in the analysis of HIV and AIDS surveillance data, please refer to the web site address listed in the "Other Important Information" section above.

Figure 30. HIV Disease: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013



HIV Disease

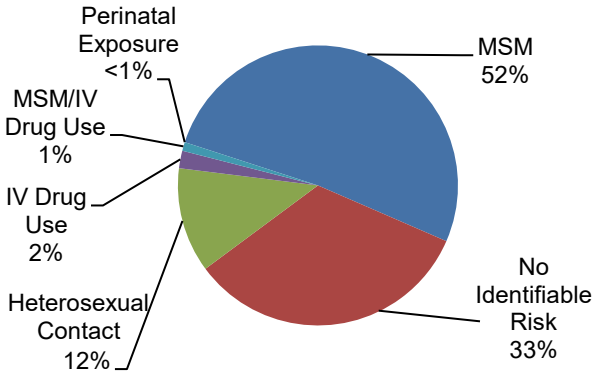
In 2013, 1,151 cases of HIV disease were reported in Virginia, as illustrated in Figure 30. Although this is a slight increase (4%) from the 1,105 reported cases in 2012, the number of cases reflects the stability of new HIV disease diagnoses over the last several years. The statewide rate of new HIV diagnoses was 14.1 per 100,000 in 2013.

The highest HIV diagnosis rates in 2013 occurred in the 20-29 year age group (35.6 per 100,000), followed by the 30-39 and 40-49 year age groups (21.8 and 20.5 per 100,000, respectively). The 20-29 year age group has consistently experienced the highest rate of new diagnoses since 2007. The HIV diagnosis rate for the black population was 40.1 per 100,000, approximately seven times the rate of the white population (5.7 per 100,000) and almost twice the rate of those in the "other" race category (21.5 per 100,000). The "other" race category includes Asian/Hawaiian/Pacific Islanders, American Indian/Alaska Natives, and those cases categorized as multi-racial. Rates by race and ethnicity have remained relatively stable over the past few years. Males have

consistently shown higher diagnosis rates of HIV disease than females across time, and were over four times as likely than females to be diagnosed with HIV disease in 2013 (23.2 and 5.3 per 100,000, respectively). Among the five health regions in Virginia, the highest incidence rate of new HIV diagnosis was observed in the eastern region, with 22.8 per 100,000, followed by the central region, at 16.2 per 100,000. The lowest rate among newly diagnosed cases in 2013 occurred in the northwest region (6.9 per 100,000). The localities that reported the five highest diagnosis rates in 2013 were all located within the eastern or central regions of the state, as displayed in the map below of HIV diagnosis rates by locality in Virginia.

In 2013, the most frequently reported transmission category for HIV disease was men who have sex with men (MSM), which represented over half (51%) of the cases in Virginia. Among identified MSM cases, 47% were 20-29 years of age, a 7% increase from 2012 (44%), and 52% were black. Twelve percent of the newly diagnosed cases for 2013 were attributed to heterosexual contact, and 2% to intravenous (IV) drug use. No specific risk factors for transmission were identified for 33% of new HIV disease diagnoses (Figure 31).

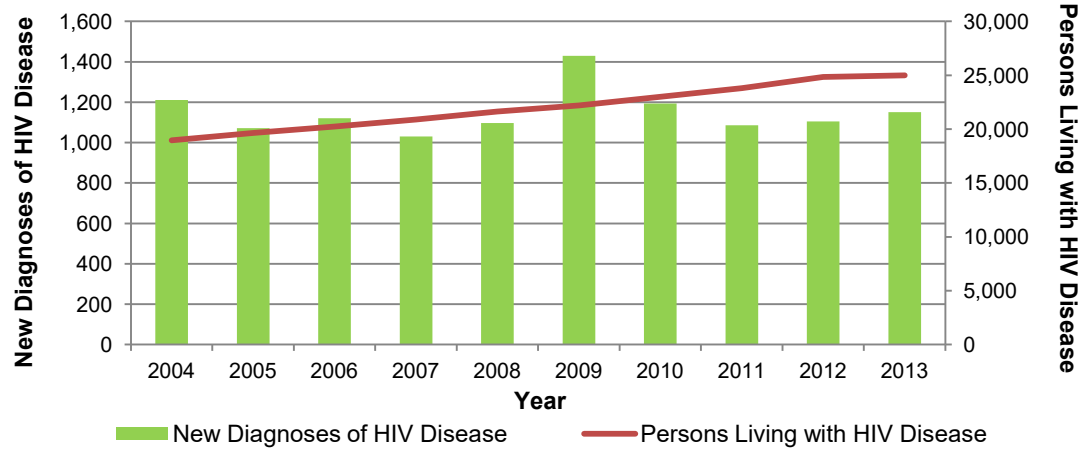
Figure 31. HIV Disease: Mode of Transmission, Virginia, 2013



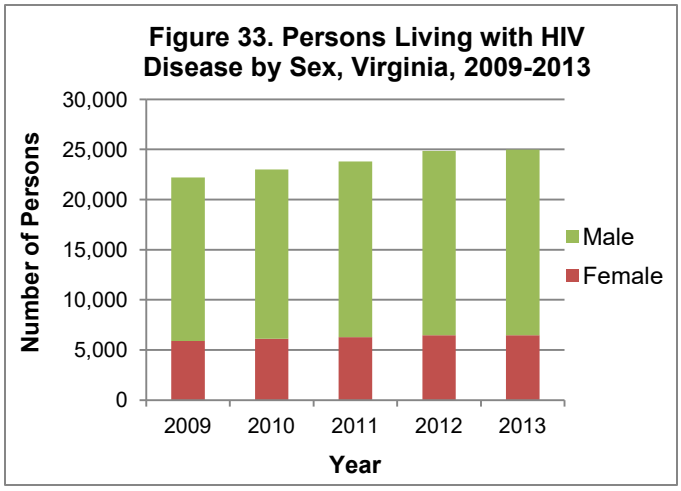
Persons Living with HIV Disease

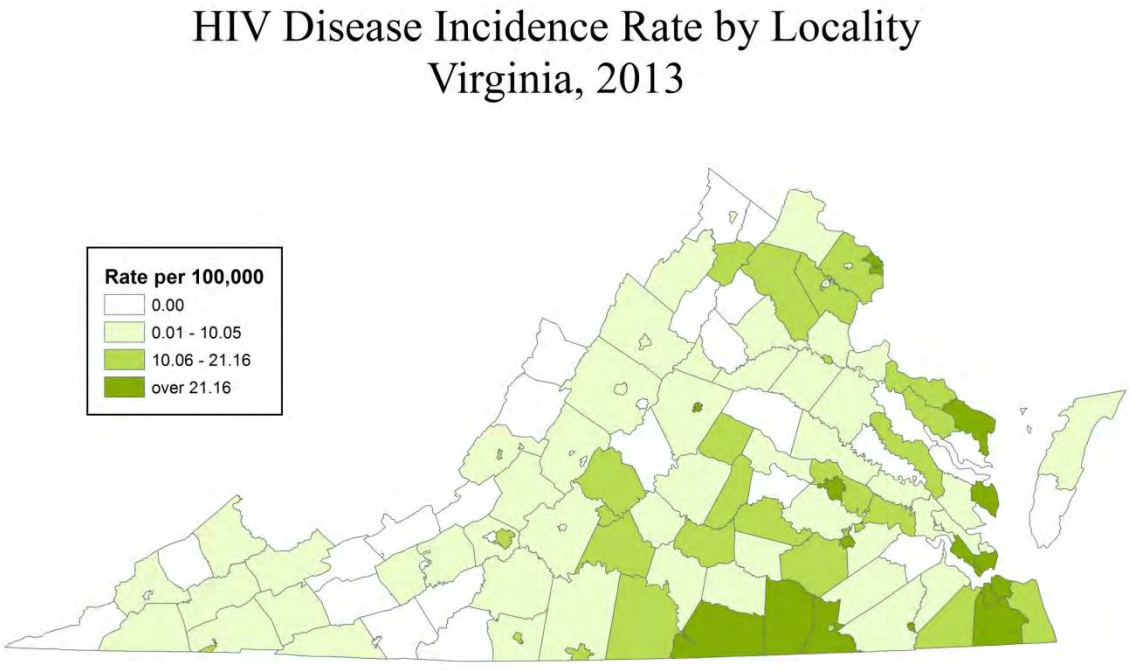
Due to advances in medical therapies and care strategies, the number of persons living with HIV disease (PLWHA) has continued to increase. As of the end of 2013, 24,977 persons were known to be living with HIV disease in Virginia (Figure 32).

Figure 32. New Diagnoses of HIV and Persons Living with HIV Disease, Virginia, 2004-2013



Approximately three-quarters of PLWHA are male (Figure 33), 61% are between 40-59 years of age, 60% are black, 46% are attributed to male-to-male sexual contact, and approximately 60% are living with HIV disease in the eastern and northern regions of the state. Half of those living with HIV disease have also been diagnosed with an AIDS-defining condition.





Influenza

Agent: Influenza virus; Types A, B and (rarely) C cause human disease.
Mode of Transmission: Directly from person-to-person, primarily through inhalation of droplets released through coughing or sneezing. Less commonly, the influenza virus can be transmitted by contact with a contaminated object or surface and then touching one's mouth or nose.
Signs/Symptoms: Fever, headache, muscle pain, fatigue, sore throat and cough; influenza can also lead to pneumonia, especially in those with underlying medical conditions (e.g., lung or heart disease).
Prevention: Annual vaccination is the primary prevention strategy; antiviral medications are sometimes used with high-risk populations (e.g., nursing home residents) to prevent illness or lessen illness severity. Transmission may be reduced by washing hands frequently or using alcohol-based hand-sanitizers; avoiding touching the eyes, nose, and mouth with contaminated hands; and covering the nose and mouth with a tissue or the bend of the elbow when coughing or sneezing. Persons who are sick with influenza symptoms are encouraged to stay home to avoid spreading the disease to others.
Other Important Information: The influenza virus changes slightly from year to year (antigenic drift), making it necessary to prepare a new vaccine each year. Periodically, the virus will change to form a completely new subtype (antigenic shift), which can lead to pandemics.

Influenza Surveillance

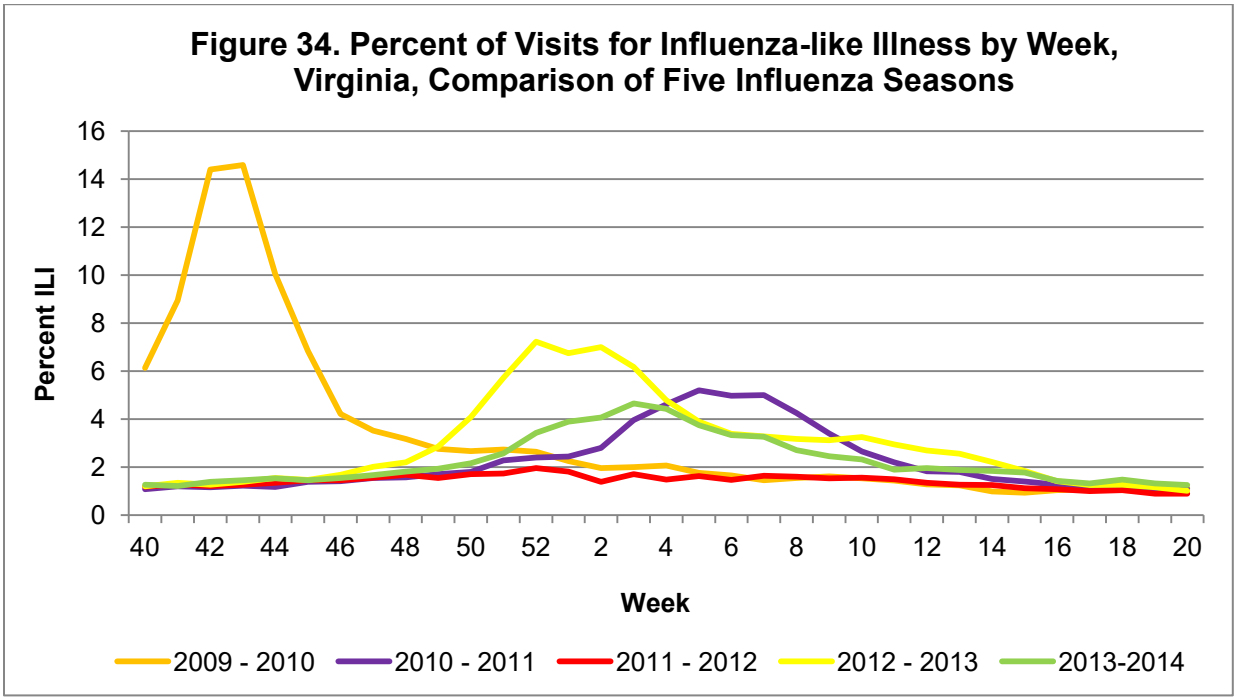
The seasonal influenza virus subtype that predominantly circulated during the 2013-2014 season was A/2009 pH1N1 (the subtype responsible for the 2009 pandemic). Small numbers of A (H3) and B were also identified.

Influenza surveillance is conducted throughout the year in Virginia. However, efforts are most intensively focused during the period of highest disease activity, which normally begins in early October (week 40) and ends in late May (week 20). Surveillance efforts in Virginia do not count every individual with influenza but instead monitor indicators of illness within the community. For the 2013-2014 influenza season, data sources included visits for influenza-like illness to hospital emergency departments and urgent care centers, laboratory reports, evaluations of outbreak investigations, influenza-associated pediatric deaths, and school absenteeism data. These data sources are used to determine weekly influenza levels, provide insight on the severity of illness, and characterize influenza virus subtypes circulating in the community.

Influenza-like Illness Surveillance

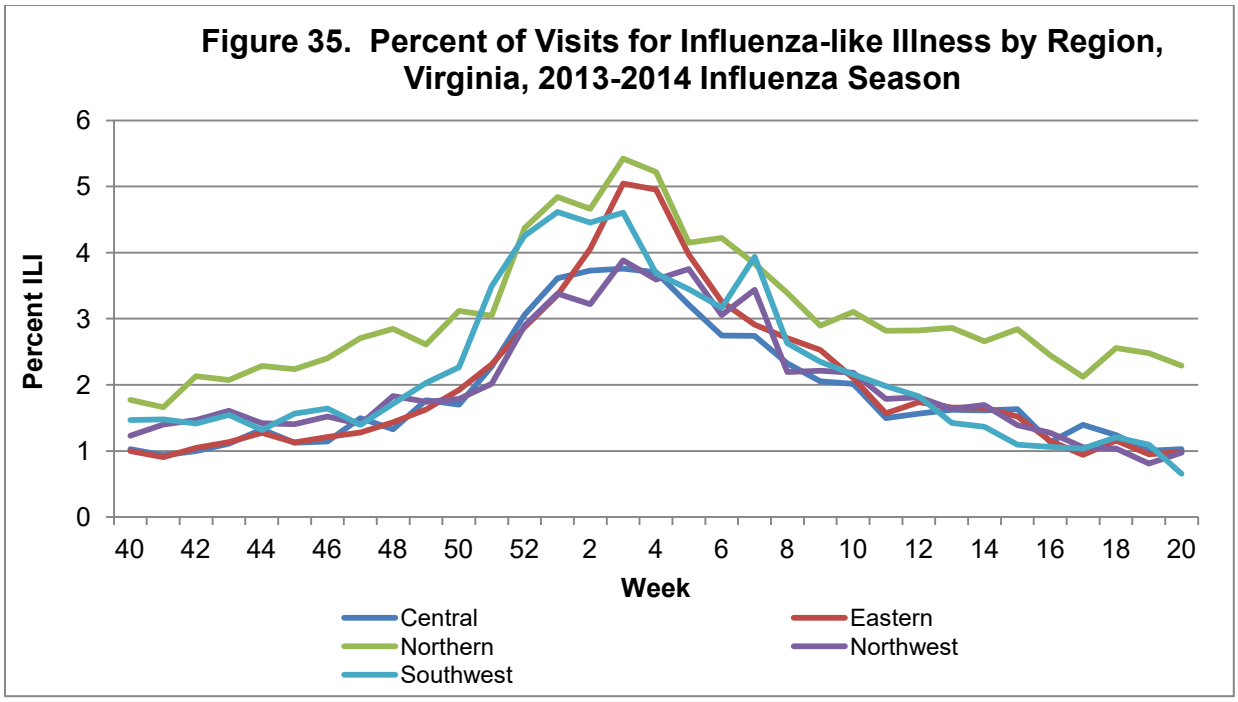
The Virginia Department of Health (VDH) receives information regarding patient visits to emergency departments and urgent care facilities for influenza-like illness (ILI) symptoms. ILI symptoms include a complaint of fever and cough or fever and sore throat. Other illnesses may show similar symptoms, but the strategy has proven to be a reliable indicator of influenza activity during flu season. During the 2013-2014 influenza season, 118 emergency department and urgent care facilities provided data to VDH for surveillance monitoring.

According to the Centers for Disease Control and Prevention (CDC), the 2013-2014 influenza season was the first since the 2009 pH1N1 pandemic in which pH1N1 viruses predominated. The season was characterized overall by lower levels of outpatient illness and mortality than influenza A (H3N2)-predominant seasons, but nationally higher rates of hospitalization among adults aged 50-64 years were observed when compared with recent years. Nationally, the weekly percentage of outpatient visits for ILI to healthcare providers participating in the U.S. Outpatient Influenza-Like Illness Surveillance Network (ILINet) was at or above the national baseline level of 2.0% for 15 consecutive weeks during the 2013-2014 influenza season. Across the U.S., the peak percentage of outpatient visits for ILI was 4.6%, and occurred in late December (week 52). In Virginia, the proportion of patient visits for ILI during the 2013-2014 season peaked at 4.6% during the week ending January 18, 2014 (week 3) (Figure 34).



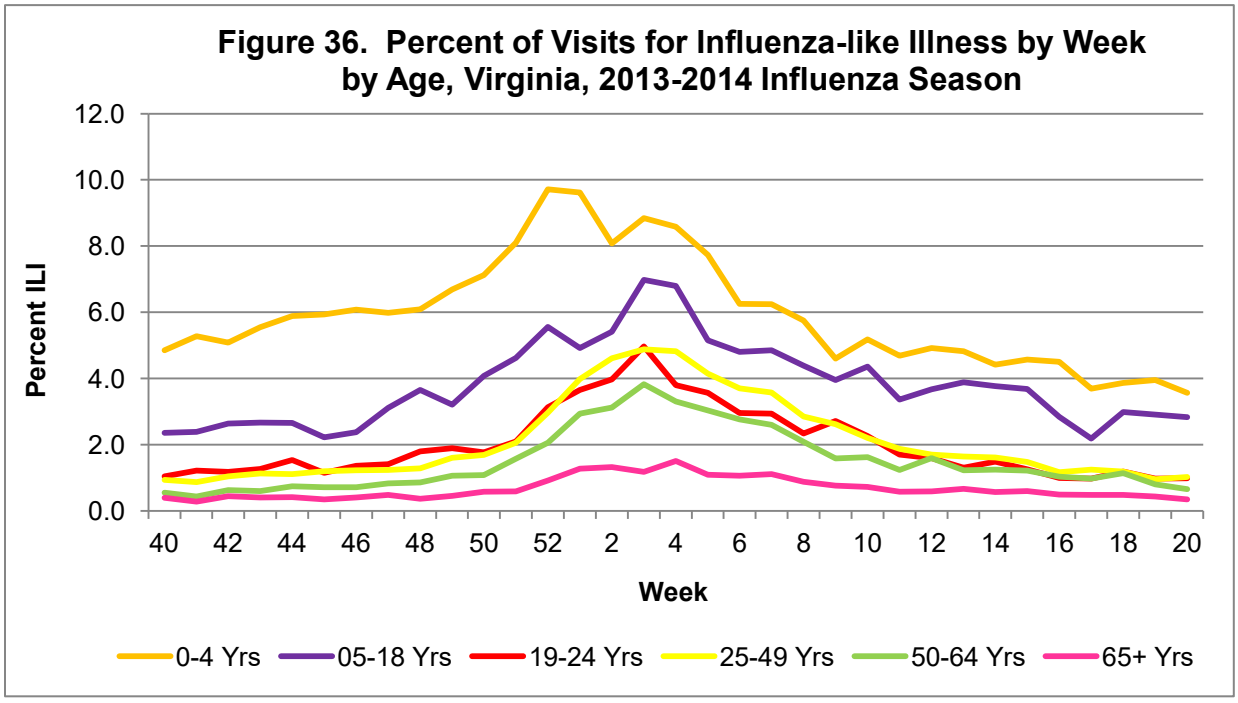
Influenza-like Illness by Region

In Virginia, ILI activity varied by region throughout the 2013-2014 season. Peak activity occurred first in the southwest region of the state during early January (week 1). The remaining health planning regions (central, eastern, northern, and northwest) followed, peaking in mid-January (week 3) (Figure 35). The northern region experienced the highest proportion of visits for ILI (5.4%). The highest proportion of visits for ILI in the remaining regions follow: eastern, 5.0% (week 3); central, 3.8% (week 3); northern, 3.9% (week 3); and northwest, 4.6% (week 1).



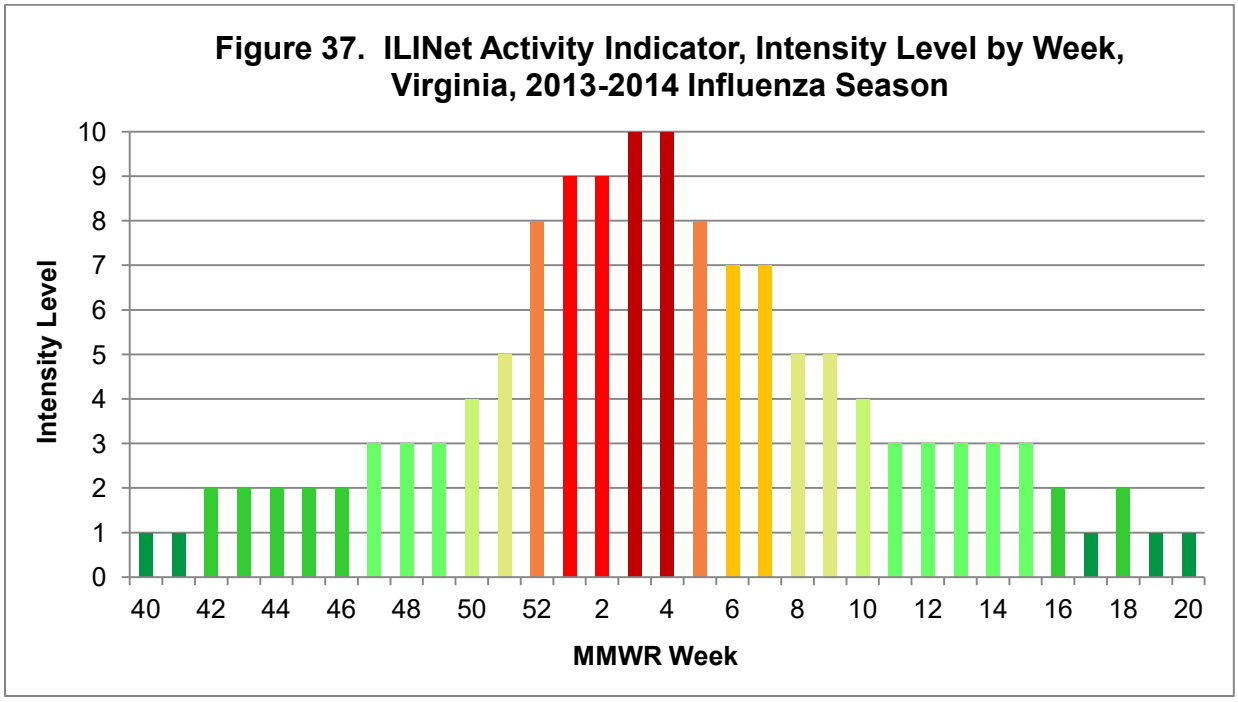
Influenza-like Illness by Age

Analyzing ILI activity by age provides additional insight into disease patterns. While influenza vaccination efforts have historically often targeted the elderly due to concerns over complications of infection, the youngest age groups show the largest proportions of healthcare visits to emergency departments and urgent care facilities for ILI. The largest proportion of visits due to ILI occurred in the 0-4 year age group. The smallest proportion of visits for ILI occurred in the 65 years and older age group (Figure 36).



Influenza Intensity Levels

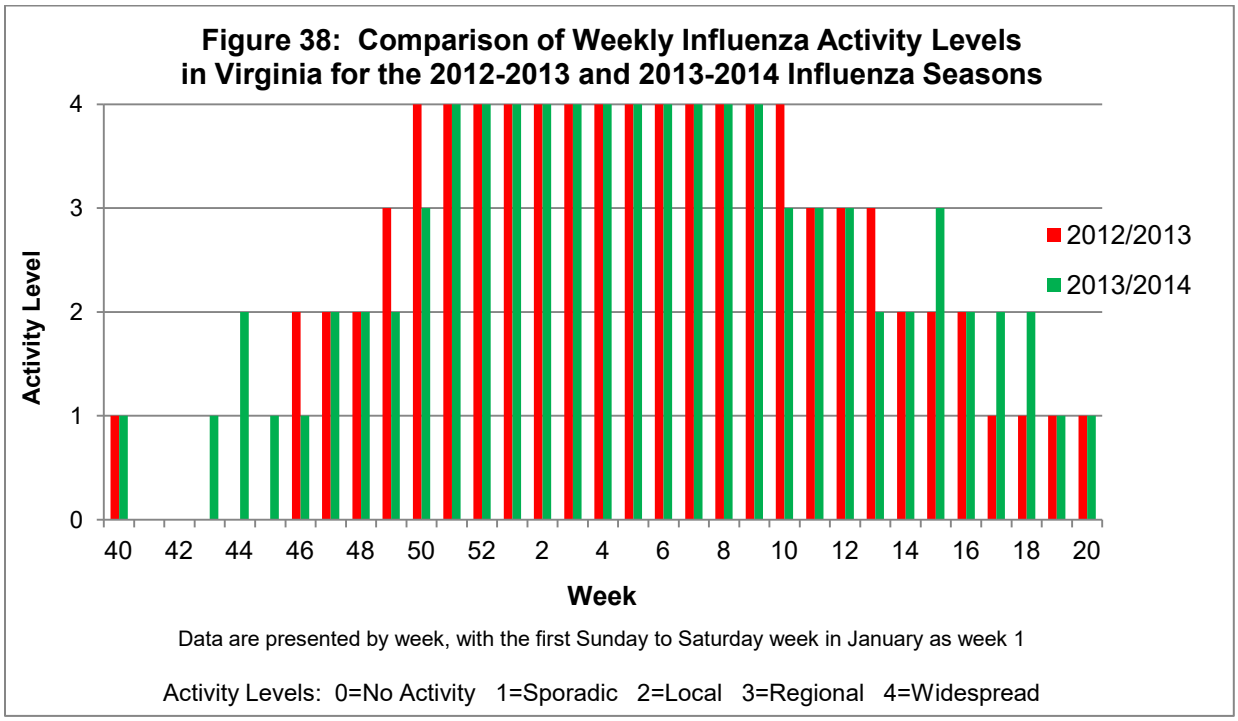
CDC reported weekly influenza intensity levels (ranging from 1 to 10) by state. This measure, introduced during the 2010-2011 season, is calculated by comparing the percent of patient visits due to ILI for that week to the average proportion of ILI visits that occurred during a designated baseline period for which there is minimal or no influenza virus circulation. During the 2013-2014 season, influenza intensity in Virginia slowly increased during the fall and reached high intensity levels in late December, with a significant increase from low to high during week 52. The level remained at high intensity for a six week period, although the level stayed at 10 for only two weeks in January. In early February, the intensity level decreased to moderate and remained there until late February. During the previous 2012-2013 season, influenza intensity slowly increased during the fall and reached high intensity levels in mid-December. The level remained at 10 for a six week period, decreased to moderate in early February and remained there until late March. Virginia's intensity levels for the 2013-2014 season are presented by week in Figure 37.



Influenza Activity Levels

Virginia follows CDC guidelines to describe the geographic distribution of influenza activity. The weekly activity level is based on ILI data, laboratory findings, and outbreak occurrences, and is classified into the following categories: no activity, sporadic, local, regional, or widespread. The levels are not indicators of the severity of influenza illness but instead serve as a gauge for the geographic distribution of influenza activity around the state. Six weeks of ILI data, collected during the summer months of July through September, are used to establish baseline thresholds for the five health planning regions. ILI activity is considered elevated when a region exceeds its threshold.

The 2013-2014 influenza season began with a level of sporadic influenza activity in early October and returned to no activity for two weeks (weeks 41 and 42). The level increased to local during week 44, dropped to sporadic for two weeks, and then remained at local from mid-November to early December (weeks 47-49). Virginia reached widespread activity in late December and remained widespread for 11 weeks (Figure 38). The prior season, 2012-2013, reported 13 weeks of widespread activity. During the 2011-2012 season, only three weeks of widespread influenza activity were reported.



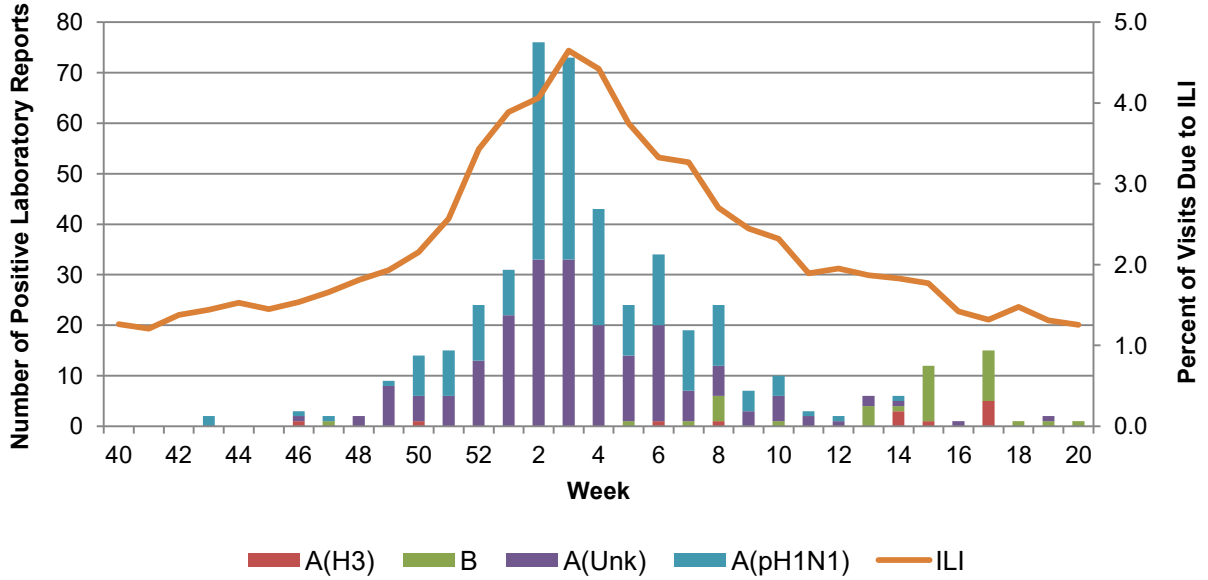
Laboratory Surveillance

Laboratory surveillance for influenza uses findings from three testing procedures: DFA (direct fluorescent antibody), PCR (polymerase chain reaction) and viral culture. Rapid antigen tests are not included. Information comes from specimens submitted by sentinel providers, specimens from outbreaks, influenza reporting by private laboratories, and findings from Virginia facilities participating in the National Respiratory and Enteric Virus Surveillance System (NREVSS).

Sentinel providers include private physicians and medical facilities located throughout the Commonwealth. Statewide representation is achieved through the efforts of health districts to enlist providers from their area. During the influenza season, sentinel providers submit specimens from patients with ILI to the Virginia Division of Consolidated Laboratory Services (DCLS) for analysis. Regular sentinel providers were asked to submit two specimens per week from patients exhibiting influenza-like illness.

During the season, influenza A(unknown), A(H3), A(pH1N1) and B were all circulating in the state, as shown in Figure 39. It is important to note that A(unknown) does not represent a new or unknown strain; rather, the confirmatory tests that were used were unable to distinguish between types of influenza A. Influenza A(pH1N1) viruses predominated during the 2013-2014 influenza season. Laboratory tests indicated that 92% of positive influenza findings were influenza A (all subtypes) and 8% were influenza B. In comparison, in the previous flu season, 72% of viruses were identified as influenza A (all subtypes) and 28% as influenza B. As more providers have gained access to quicker, more reliable testing methods such as PCR, the volume of confirmatory testing has increased substantially. During the 2013-2014 season, Virginia received 461 unique confirmatory influenza laboratory reports.

Figure 39. Positive Laboratory Reports and ILI Visits by Week, Virginia, 2013-2014 Influenza Season



Influenza Outbreaks

During the 2013-2014 season, 30 influenza outbreaks were reported to VDH. In comparison, 163 outbreaks of influenza were reported during the 2012-2013 season, and 17 were reported during 2011-2012. Specimens from 26 of these influenza outbreaks tested positive for the influenza virus, confirming 18 (69%) as influenza A-associated, 5 (19%) as influenza B-associated and 3 (12%) as unspecified subtype. The first confirmed outbreak was reported in mid-December and occurred in a school in the southwest region. During the previous season, the first outbreak occurred much earlier in the season (late October). During the 2013-2014 season, outbreaks were reported from 9 schools (K-12), 5 assisted living facilities, 1 pre-school facility, 1 military facility, 4 correctional facilities, and 5 medical facilities that were not long-term care-related. One third of the reported influenza outbreaks (33%, 10 outbreaks) occurred in healthcare facilities. By region, the largest percentage (30%, 9 outbreaks) were reported from

the northwest region, followed by the central region (23%, 7 outbreaks), northern region (20%, 6 outbreaks), southwest region (13%, 4 outbreaks), and eastern region (13%, 4 outbreaks). The number of cases associated with outbreaks ranged from 3 to 76 individuals, with a total of 41 reported hospitalizations.

Influenza-associated Deaths

Virginia disease reporting regulations require physicians and directors of medical care facilities to report suspected or confirmed influenza-associated deaths in children less than 18 years of age to allow monitoring of this severe outcome of influenza illness. Four pediatric influenza-associated deaths were reported to VDH during the 2013-2014 influenza season. The first occurred in a pre-school age child (0-4 years) from the northern region and was due to influenza A(pH1N1). The second occurred in a young school-age child (5-12 years) from the northern region due to influenza A(H3). The third occurred in a teenage child (13-17 years) from the eastern region due to influenza A (rapid test). The fourth occurred in a teenage child (13-17 years) from the southwest region. The child tested positive for influenza B by PCR and invasive Group A *Streptococcus*. During the previous influenza season, two pediatric influenza-associated deaths were reported.

School Absenteeism

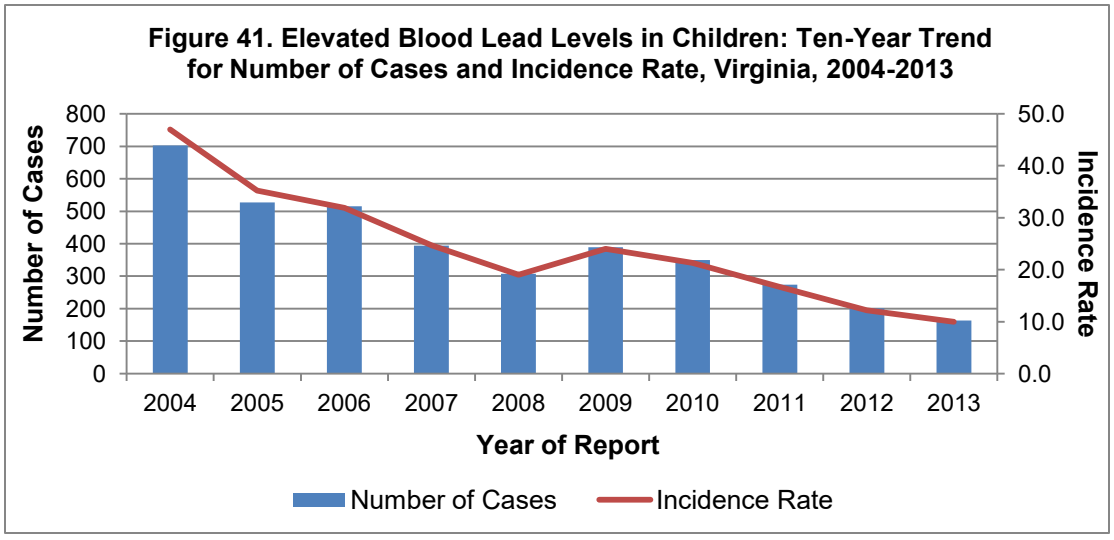
School absenteeism surveillance was added to influenza surveillance in Virginia during the 2009-2010 pandemic season, and continues because of the valuable insights it provides. Information on absenteeism is voluntarily submitted by school divisions on a daily basis and made available to the health districts to identify emerging problems and monitor potential influenza activity in their communities. Centrally, it is evaluated by region and school level (elementary, middle, and high school) for unusual patterns. During the 2013-2014 season, school divisions provided absenteeism data for 681 schools. While school absenteeism provides a general, but not influenza-specific, measure of illness, it was useful for monitoring illness activity and identifying schools with possible outbreaks during the influenza season.

Lead - Elevated Blood Levels in Children

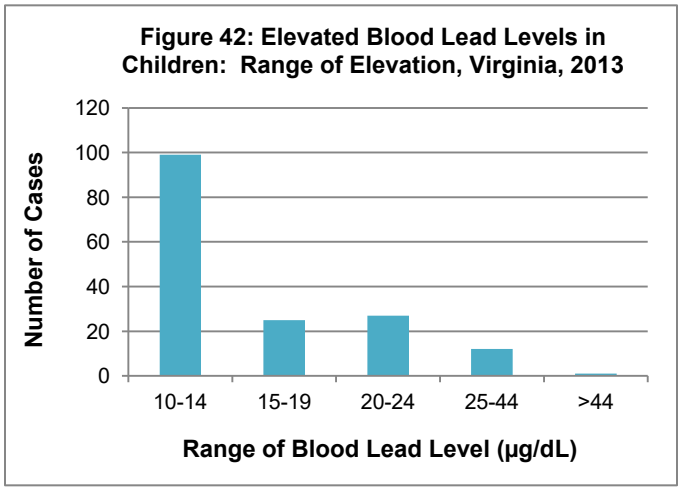
Agent: Lead (metal)
Mode of Transmission: Chewing objects painted with lead paint; ingesting contaminated soil, food, or water; inhaling contaminated air or dust; or using glassware, healthcare products or folk remedies containing lead.
Signs/Symptoms: Even at low levels, lead in children can cause nervous system damage, learning disabilities (decreases in intelligence quotient, attention deficit hyperactivity disorder), behavior problems (withdrawn behavior, issues with sociability), muscle weakness, decreased growth, delays in puberty, hearing damage, or anemia. Children who ingest large amounts of lead can develop kidney and brain damage. Furthermore, children can appear healthy despite having high levels of lead in their blood.
Prevention: Ingestion of lead-contaminated materials and use of lead-containing objects should be avoided. Education of healthcare professionals and parents is important in detecting and reducing lead exposure. Some recommendations for parents include refraining children from playing in bare soil and providing them with sandboxes; cleansing children's hands and faces often in order to eliminate lead dust and soil; and having children tested for lead as a general precaution.
Other Important Information: Children are more sensitive than adults to the toxic effects of lead. There is no proven safe level of lead in blood. Elevated blood lead levels at or above 10 micrograms per deciliter (μg/dL) are reportable in children aged 15 years or younger in Virginia. The primary source of lead for children is exposure to deteriorated paint in housing built before 1978. There is a need for increased awareness of additional sources of lead exposures, including improper renovation of older homes; imported toys manufactured with lead paints or components; candies popular among some ethnic groups; traditional Hispanic, Indian, and Middle Eastern folk remedies; and ceramics from foreign countries that use lead glazes.

Lead – Elevated Levels in Children: 2013 Data Summary	
Number of Cases:	164
5-Year Average Number of Cases:	304.2
% Change from 5-Year Average:	-46%
Incidence Rate per 100,000:	10.0

In 2013, there were 164 newly reported cases of elevated blood lead levels in children. This is an 18% decrease from the 201 cases reported in 2012, and a 46% decrease from the five-year average of 304.2 cases per year (Figure 41). The overall decline in the number of reported cases since 2004 is the result of both lower incidence and better data quality. The continued improvement in reporting of specimen type (e.g., capillary or venous) by physicians and laboratories has enhanced interpretation of test findings, reduced ambiguity, and yielded more accurate information on the number of children with confirmed elevated blood lead levels.

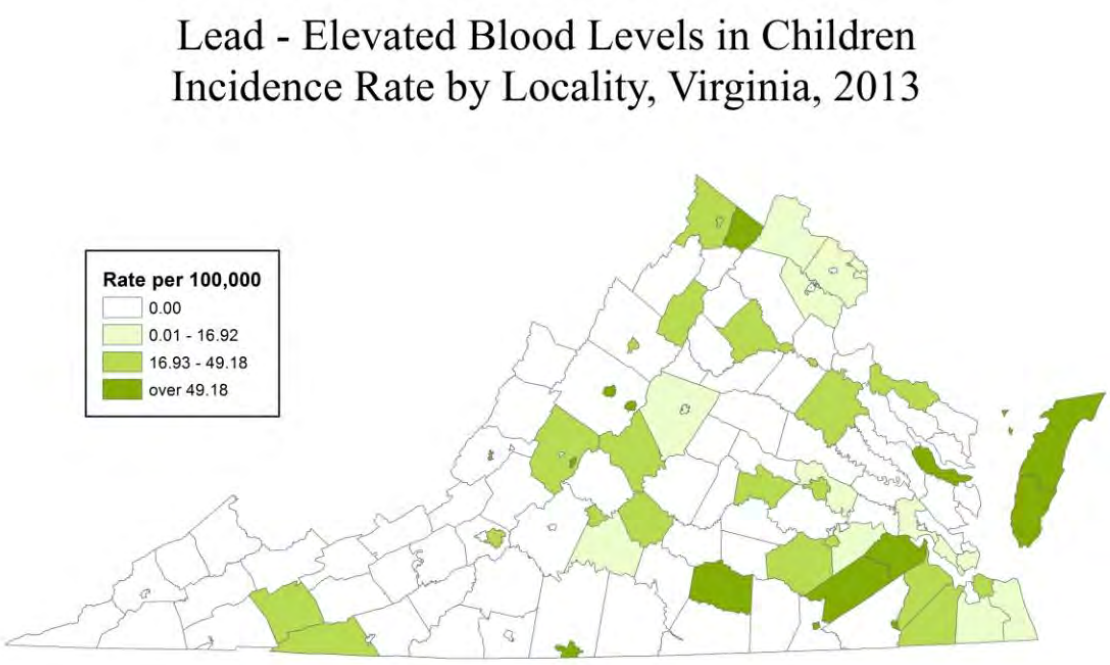


Based on the guidance in place in 2013, blood lead levels in the 10-14 µg/dL range were considered above normal, but only required lead awareness education and follow-up monitoring. Blood lead levels in the 15-19 µg/dL range required nutritional and environmental education, as well as additional testing to ascertain if the blood lead level was increasing or remained elevated. Blood lead levels greater than 20 µg/dL required greater degrees of case management, the initiation of an environmental investigation to identify and eliminate lead hazards, and the possibility of medical intervention. Among the 164 children reported with elevated blood lead levels in 2013, 99 (60%) had confirmed blood lead levels in the 10-14 µg/dL range, 25 (15%) had levels in the 15-19 µg/dL range, 27 (16%) had levels in the 20-24 µg/dL range, 12 (7%) had levels in the 25-44 µg/dL range, and 1 (<1%) had a level above 44 µg/dL (Figure 42).



By age, the majority (95%) of elevated blood lead levels and the highest incidence rate occurred in those aged 1-9 years (155 cases, 16.7 per 100,000), followed by infants (5 cases, 5.0 per 100,000). Rates were lower in 10-15 year olds (0.6 per 100,000). Fifty-two percent of reports were missing race data. However, among reports with race information, the black population had an incidence rate more than twice that of the white population (8.7 versus 3.2 per 100,000, respectively), while the "other" race population had an intermediate incidence rate of 6.8 per 100,000. Males and females had similar incidence rates (10.3 and 9.4 per 100,000, respectively). Geographically, incidence rates ranged from a high of 13.4 per 100,000 in the northwest region to a low of 5.8 per 100,000 in the northern region, resulting in a statewide incidence rate of 10.0 per 100,000

for children less than sixteen years of age. As seen in the incidence map below, no cases of elevated blood lead levels in children were reported from many of the localities in southwestern Virginia.

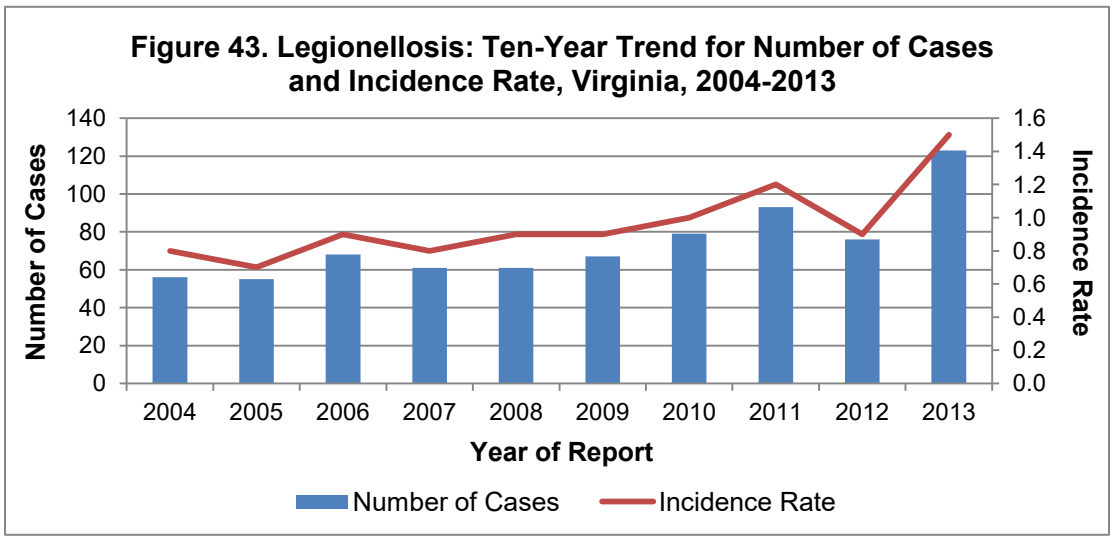


Legionellosis

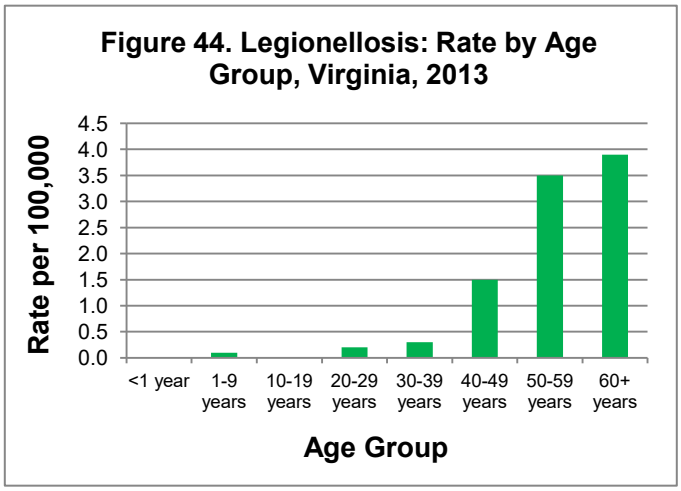
Agent: *Legionella* species (bacteria); most infections in the United States are caused by *Legionella pneumophila*
Mode of Transmission: Inhalation of contaminated aerosolized water (e.g., sprays, mists).
Signs/Symptoms: Infection with *L. pneumophila* causes two distinct illnesses: Legionnaires' disease, characterized by fever, muscle aches, headaches, malaise, cough, and pneumonia with progressive respiratory distress; and Pontiac fever, a milder influenza-like illness without pneumonia characterized by quick onset. Pontiac fever and Legionnaires' disease are referred to as "legionellosis", separately or together.
Prevention: For outbreaks, control measures include disinfection of contaminated water sources by chlorination or superheating of water from 160° to 170°F, and appropriate mechanical cleaning.
Other Important Information: Legionellosis is more common among people who are elderly, are immunocompromised, or have underlying lung disease. Virginia has experienced a pattern seen nationally, in which there was an increase in legionellosis cases in 2003, followed by a higher incidence in the post-2003 period than in the pre-2003 period. The cause of this increase is not clearly understood. Factors that may contribute to the higher number of cases in 2003 and later include an increasing population of older persons and persons at high risk for infection, as well as improved diagnosis and reporting of the condition. Additional factors may include CDC's call for more active and timely surveillance of travel-associated legionellosis and changing weather patterns.

Legionellosis: 2013 Data Summary	
Number of Cases:	123
5-Year Average Number of Cases:	76.2
% Change from 5-Year Average:	+61%
Incidence Rate per 100,000:	1.5

During 2013, 123 cases of legionellosis were reported, the highest number ever reported for a single year in Virginia. This represents a 61% increase from the 76 cases reported in 2012, as well as a 61% increase from the five-year average of 76.2 cases per year (Figure 43). Preliminary CDC data indicate that several other states in the US saw a similar increase in legionellosis cases in 2013, especially in the mid-Atlantic region. One reason for this rise in incidence could be the unusually warm and humid weather experienced during the summer by many states throughout the country, as there is some evidence that legionellosis incidence may be influenced by certain weather conditions.



Legionellosis incidence is closely associated with age. In 2013, the highest incidence occurred in the 60 year and older age group (3.9 per 100,000), followed closely by the 50-59 year age groups (3.5 per 100,000). One case occurred in a child in the 1-9 year age group, which is the first time a legionellosis case was reported in this age group in Virginia since 2007 (Figure 44). Although information on race was missing for 30% of cases, the available information suggests that incidence was higher in the black population than the white population (1.5 and 1.0 per 100,000, respectively). Additionally, incidence was higher among males than females (1.8 and 1.2 per 100,000, respectively).

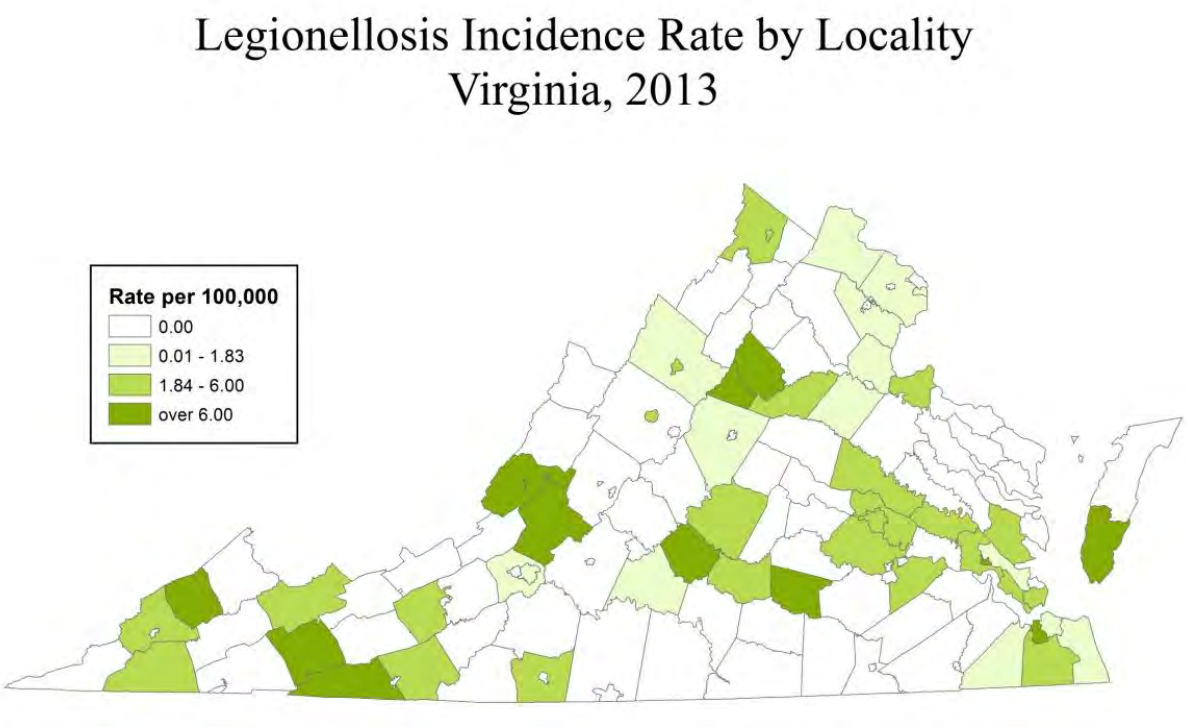


The highest incidence rate occurred in the central region (2.2 per 100,000), followed by the eastern region (2.0 per 100,000), and the northwest and southwest regions (1.4 per 100,000 each). The lowest rate was seen in the northern region (0.9 per 100,000). Geographically, cases were dispersed among localities throughout the state, although there were several localities with high incidence rates in the southwest region (refer to map below). While cases occurred throughout the year, a marked seasonality existed with 72% of cases occurring in the second and third quarters of the year (37% and 35%, respectively).

One possible outbreak reported in 2013 was attributed to *Legionella pneumophila*. This cluster of eight confirmed cases and one suspect case occurred over a short period of time within two districts in the eastern region. Four of these cases were a family group that reported recent travel to the same out-of-state hotel, and an additional three cases reported recent travel to different states. After extensive interviews, no exposures or locations were found in common for all nine cases, although the four in the family group shared potential exposures. It is possible that some of these cases may have acquired their infections from

another state. Additionally, local weather conditions may have led to an increase in *Legionella* bacteria in the environment, leading to an increase in disease occurrence not attributable to a single source.

The four deaths (3%) attributed to legionellosis in 2013 occurred in two males and two females, all in the 60 year and older age group.



Leprosy (Hansen Disease)

Agent: *Mycobacterium leprae* (bacteria)
Mode of Transmission: Person-to-person transmission, probably through inhaling respiratory droplets that are released when a person with the disease coughs or sneezes.
Signs/Symptoms: A chronic disease with varying symptoms, including skin lesions (tuberculoid leprosy); discolored, flat spots on the skin (lepromatous leprosy); nasal congestion; nosebleeds; and nerve damage. The bacteria that cause this condition grow very slowly and signs and symptoms may take 2-10 years to appear.
Prevention: Early diagnosis and treatment is important. Hand washing when in contact with patients with lepromatous leprosy and disinfection of surfaces contaminated with infectious nasal secretions should be performed until treatment is established.

No cases of leprosy were reported in Virginia during 2013. The most recent case in Virginia was diagnosed in 2011 in a young adult female who had initially developed symptoms years earlier while she lived in Asia. Since 2000, five cases of leprosy have been diagnosed in Virginia, averaging less than one case every two years.

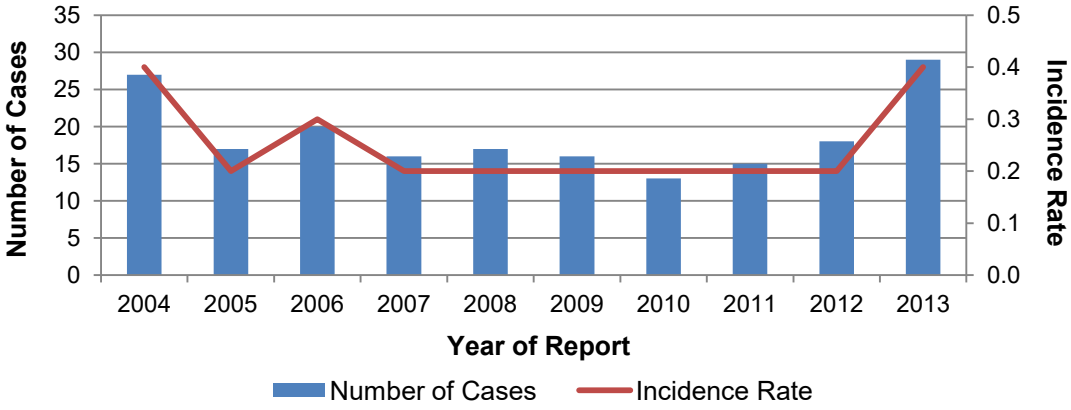
Listeriosis

Agent: *Listeria monocytogenes* (bacteria)
Mode of Transmission: Ingestion of contaminated foods or beverages.
Signs/Symptoms: Typically, fever, headache, muscle aches, and sometimes gastrointestinal symptoms, such as nausea, diarrhea, and vomiting. Infection can lead to serious disease, including shock and inflammation of the brain and the fluid surrounding the brain and spinal cord (i.e., meningitis). Among infected pregnant women, miscarriage, stillbirth, premature delivery, or neonatal infection may occur.
Prevention: Preventive measures include safe food preparation (e.g., thoroughly cooking or reheating food from animal sources and washing raw vegetables). High risk foods (e.g., unpasteurized dairy products) should be avoided.
Other Important Information: Persons at higher risk include pregnant women and their unborn babies and newborns, older adults, and persons with weakened immune systems.

Listeriosis: 2013 Data Summary	
Number of Cases:	29
5-Year Average Number of Cases:	15.8
% Change from 5-Year Average:	+83%
Incidence Rate per 100,000:	0.4

Twenty-nine cases of listeriosis were reported in Virginia during 2013. This is the highest number of cases reported in the state since listeriosis was first tracked as a separate reportable condition in 1990. The rate of listeriosis in 2013 was 0.4 cases per 100,000 persons, which was the highest rate since 2004, when the rate was also 0.4 per 100,000 (Figure 45). Between 2009 and 2011, the average annual incidence of listeriosis in the United States was 0.3 cases per 100,000 persons (CDC).

Figure 45. Listeriosis: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013

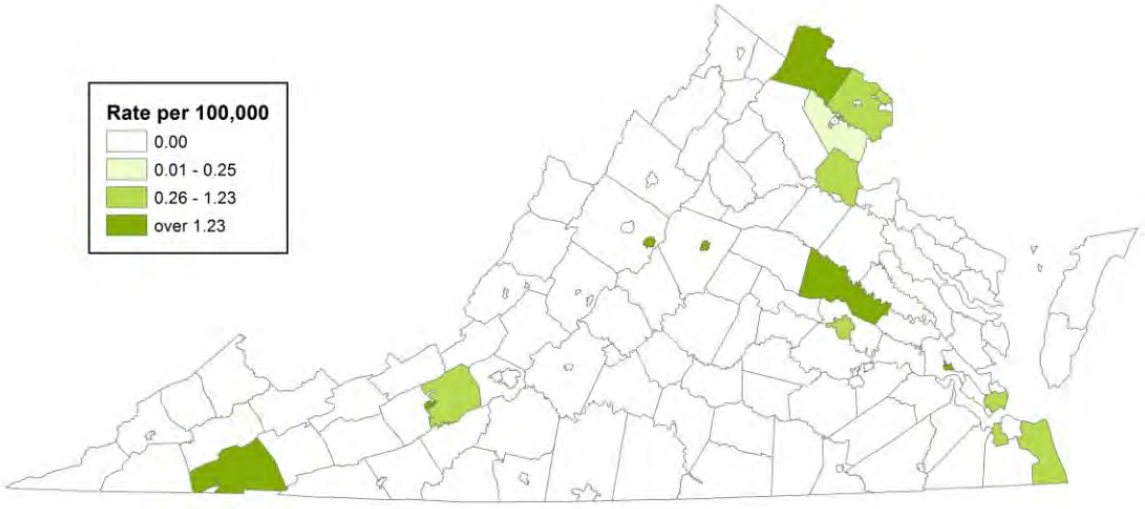


The 60 year and older age group had the most listeriosis cases in 2013, with 16 (incidence of 1.0 per 100,000), but the highest rate occurred among infants (4 cases, 4.0 per 100,000). Six cases were reported in the 50-59 year age group (incidence 0.5 per 100,000). No cases were reported in the 1-9 or 10-19 year age groups, and one case each was reported in the 20-29, 30-39, and 40-49 year age groups. Rates were similar in the black and white populations (0.5 and 0.3 per 100,000, respectively), and among females and males (0.3 and 0.4 per 100,000, respectively).

Incidence rates were below the 2013 statewide rate of 0.4 per 100,000 in all regions except the northern region, which had a rate of 0.6 per 100,000. Incidence by locality can be viewed in the map below. Although cases occurred consistently throughout the year, 13 (45%) cases occurred between July and September.

Six cases were associated with pregnancy, including four cases in neonates and two infections confirmed in mothers. During 2013, five case-patients were known to have died after testing positive for listeriosis, including one female neonate and four males in the 60 year and older age group.

Listeriosis Incidence Rate by Locality
Virginia, 2013

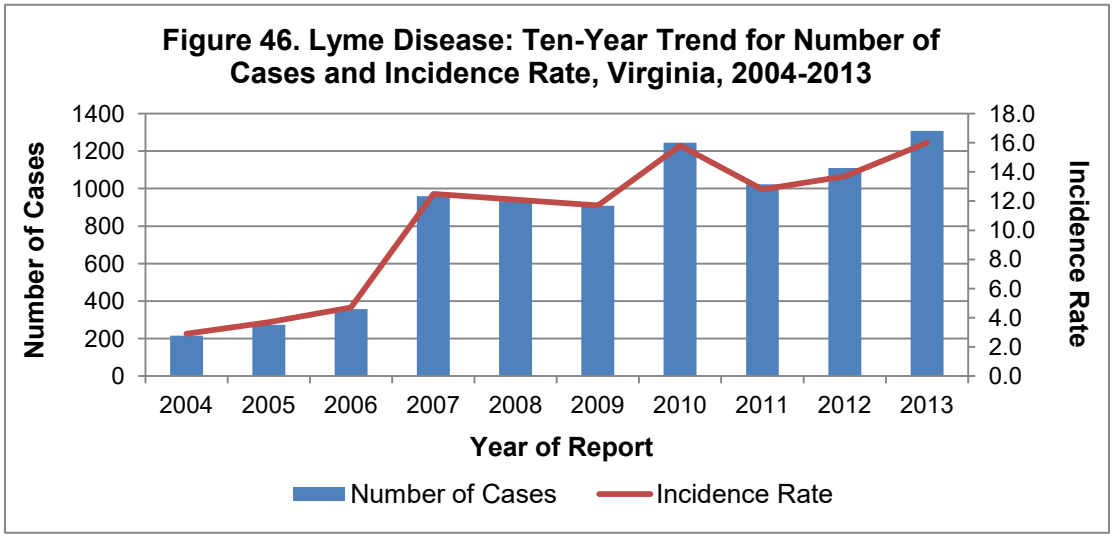


Lyme Disease

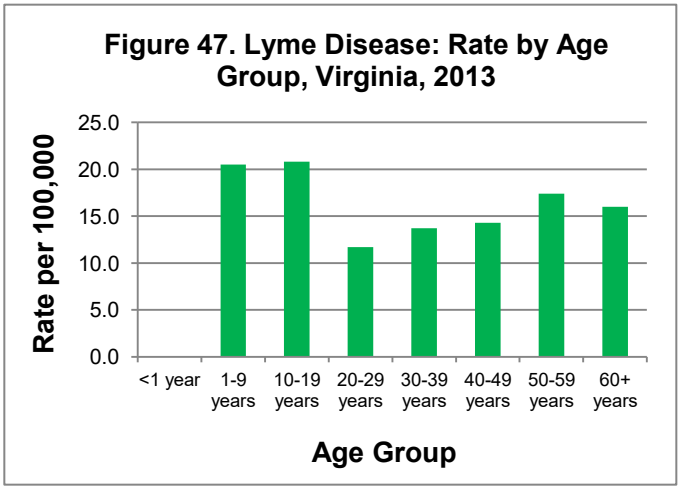
Agent: *Borrelia burgdorferi* (spirochete bacteria)
Mode of Transmission: Transmitted to humans through the bite of infected nymph or adult blacklegged ticks (formerly known as deer ticks). No other tick species plays a role in Lyme disease transmission in the eastern United States. Infected ticks must bite a person and remain attached for a minimum of 36 hours to be able to transmit the bacteria.
Signs/Symptoms: Initial symptoms include fever, headache, fatigue, joint pains, chills and a characteristic "bulls-eye" skin rash called erythema migrans, or EM rash. If untreated, infection can affect a person's joints, heart or nervous system.
Prevention: Minimize tick bites by avoiding tick habitats such as humid forest environments with dense undergrowth or heavy forest leaf litter, as well as tall weeds or vegetative ground cover along forest margins, tree lines, forest trails and forest clearings. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus as active ingredients are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and permethrin-based repellants should be applied to clothing, socks and shoes. After visiting tick-prone habitats, a person should thoroughly check all body surfaces for ticks and, if found, attached ticks should be carefully removed as soon as possible. Pets should also be examined for ticks; pets can bring ticks into the home and are also susceptible to disease.
Other Important Information: Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and laboratory evidence of infection. The EM rash is the only physical manifestation/symptom that is distinctive enough to allow a diagnosis in the absence of laboratory testing. The EM rash causes little or no sensation, and may be missed or overlooked in up to 30% of persons with Lyme disease.

Lyme Disease: 2013 Data Summary	
Number of Cases:	1,307
5-Year Average Number of Cases:	1,043.8
% Change from 5-Year Average:	+25%
Incidence Rate per 100,000:	16.0

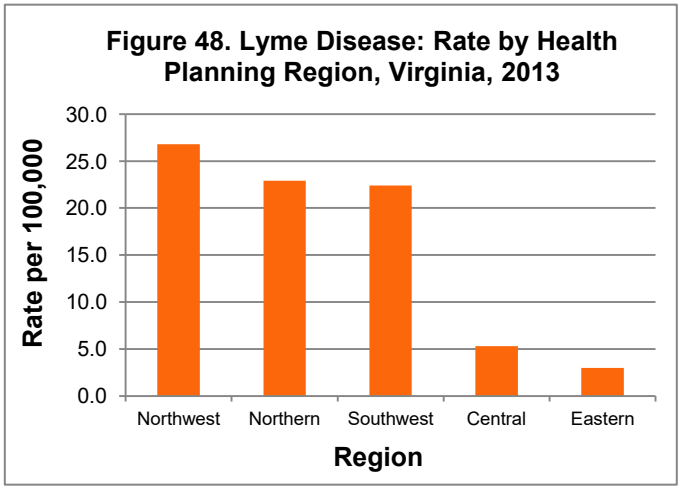
The 1,307 cases reported in 2013 are an 18% increase from the 1,110 cases reported in 2012, and a 25% increase from the five-year average of 1,043.8 cases per year (Figure 46). The dramatic increase in the number of reported Lyme disease cases since 2006 is attributable to an increase in Lyme disease occurrence, increased case follow-up by local health departments, and a change from voluntary to mandatory reporting of Lyme-positive findings by laboratories. The increase in incidence beginning in 2007 appears to be linked mainly to suburbanized areas around towns and cities. Suburbanization can enhance the environment for white-tailed deer, which are crucial for tick reproduction, and suburban forests appear to favor populations of white-footed mice, which play an important role in transmission of the Lyme disease agent to ticks. As land becomes suburbanized, deer populations increase while deer hunting activities decrease. Suburban developments may also bring the human population into more frequent contact with tick habitats.



In 2013, there was a bimodal distribution of cases by age group, with the highest incidence in children in the 10-19 and 1-9 year age groups (20.8 and 20.5 per 100,000, respectively), followed by adults in the 50-59 year age group (17.4 per 100,000) (Figure 47). This bimodal age distribution for Lyme disease is typical of what is observed in other Lyme-endemic regions of the United States.

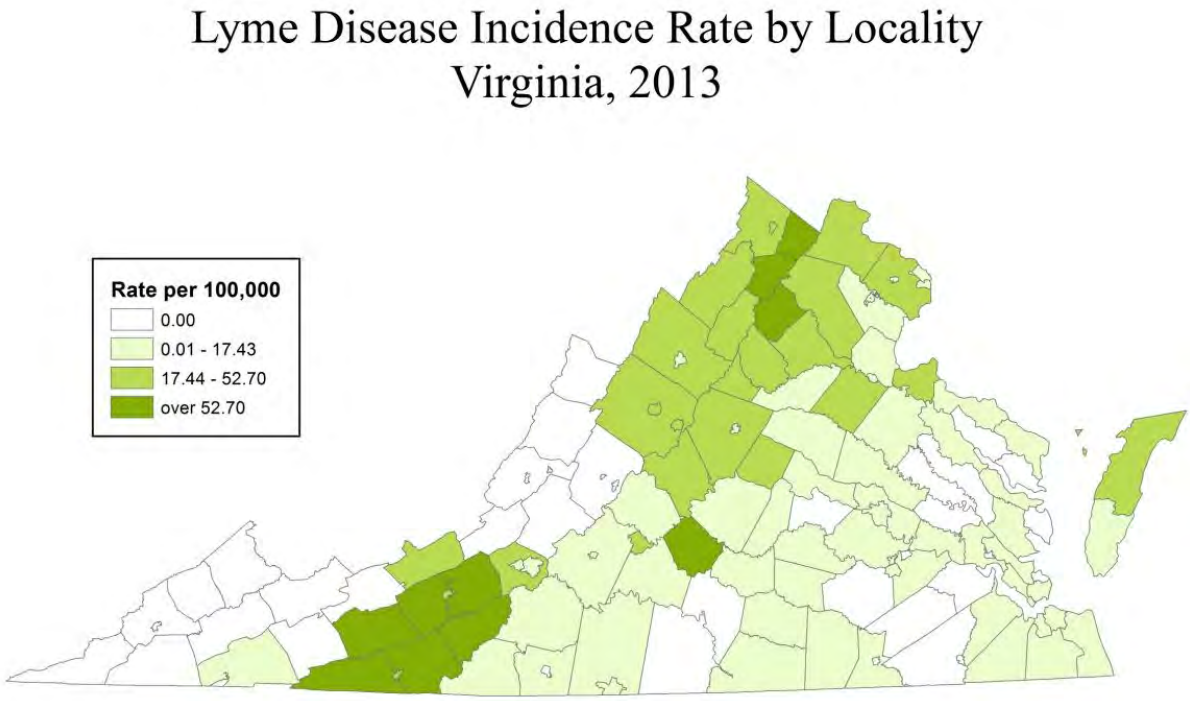


Among the 50% of cases for which race was recorded, the white population had the highest incidence (10.4 cases per 100,000), followed by the "other" race population (4.8 per 100,000), and the black population (1.0 per 100,000). Racial differences may be related in part to differences in access to healthcare for diagnosis, variation in exposure to suburban and rural tick habitats, and potentially easier detection of the EM rash in individuals with lighter skin pigmentation. The incidence rate was somewhat higher in males than in females (17.5 and 14.5 per 100,000, respectively).



Cases were reported from all regions of the state; however, the incidence of Lyme disease was highest in the northwest region (26.8 cases per 100,000), followed by the northern region (22.9 per 100,000) and the southwest region (22.4 per 100,000) (Figure 48). Rates in the remaining two regions were much lower and ranged from 3.0 to 5.3 per 100,000,

with the eastern region having the lowest incidence rate in Virginia. A comparison of incidence rates by locality can be viewed in the map below. Although Lyme disease cases were reported in every quarter during 2013, there was a seasonal pattern, with 70% of cases occurring in the warmer months of April through September. In 2013, the peak in occurrence was in June and is correlated with the period when the majority of nymph stage black-legged ticks, the primary vectors of Lyme disease, are actively feeding.



Lymphogranuloma Venereum

Agent: Specific strains of the bacterium *Chlamydia trachomatis*
Mode of Transmission: Sexually transmitted through direct contact with the lesions of an infected person.
Signs/Symptoms: Ulcerative lesions on the penis or vulva which can go unnoticed, and inflammation of the lymph nodes in the genital area; rectal ulcers may also be present. Fever, chills, headache, anorexia, and joint pain may also be present. Some infections are asymptomatic, especially in females.
Prevention: Preventive measures include adhering to safe sexual practices.
Other Important Information: Lymphogranuloma venereum has historically been rare in developed countries. Recent outbreaks have occurred in Europe and North America, primarily among men who have sex with men.

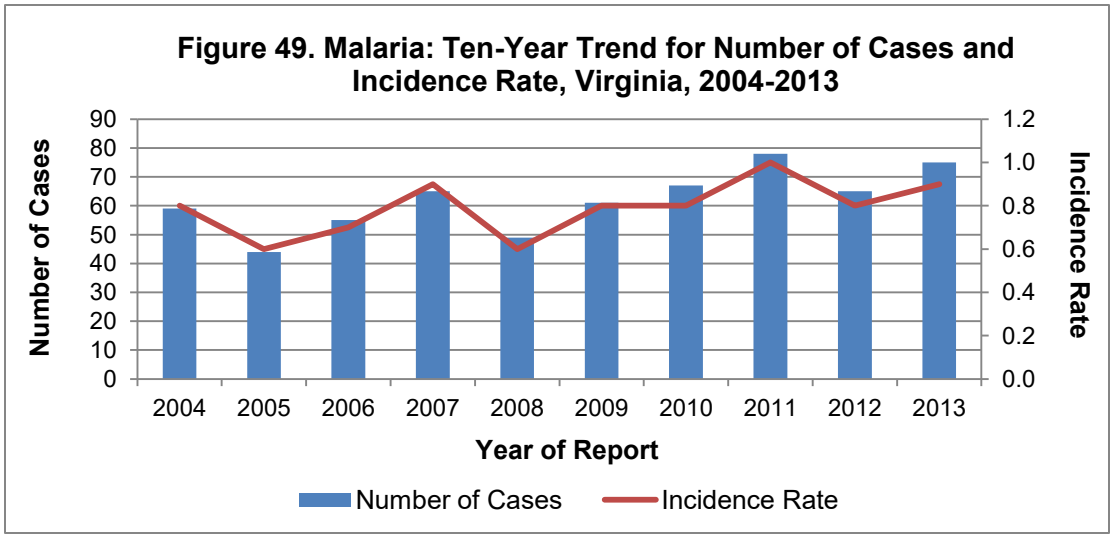
No cases of lymphogranuloma venereum were reported in Virginia in 2013. The last two reported cases occurred in 2005.

Malaria

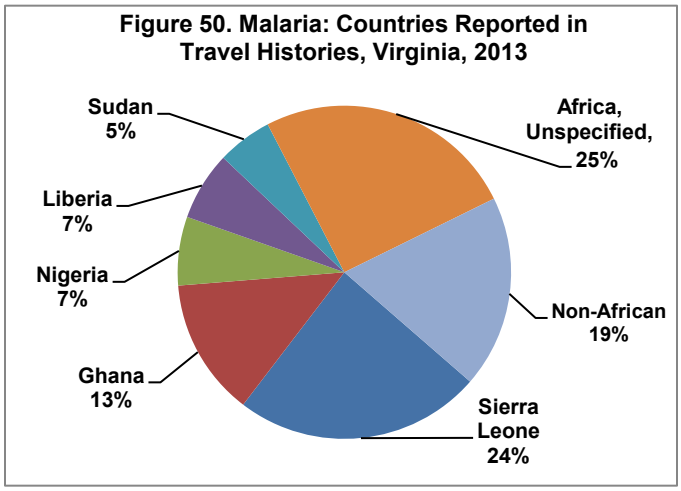
Agent(s): Four different species of protozoan parasites: *Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale,* and *Plasmodium malariae*
Mode of Transmission: Transmission through the bite of an infected female *Anopheles* mosquito. Transmission might also occur from infected mother to child during pregnancy or delivery, by blood product transfusion or through transplanted organs from infected donors. Humans and certain *Anopheles* mosquito species are the only natural reservoirs for malaria.
Signs/Symptoms: Typically, high fevers, chills, sweats, severe headache, muscle and joint pain, anorexia, nausea, flu-like illness, anemia and an enlarged spleen. *P. falciparum* infections may progress to severe malaria if not treated promptly; symptoms include acute alteration of brain structure and function (i.e., cerebral malaria), severe anemia, jaundice, renal failure and coma.
Prevention: Appropriate medication for malaria prophylaxis should be taken by travelers when traveling to malaria-endemic countries. Anopheline mosquitoes bite only at dusk, dawn or during night-time hours and tend to enter buildings. Control measures include staying in structures with adequate screening and bed nets, and when outdoors, wearing long-sleeved, loose-fitting, light-colored clothing and mosquito repellents.
Other Important Information: Almost all infections reported in Virginia occur in persons who were infected in other countries. Although malaria is not endemic to Virginia, it may be brought to this region by travelers or immigrants with dormant or inapparent infections. Malaria might also arrive in Virginia with infected mosquitoes transported in aircraft or ships arriving from foreign destinations. Two potential mosquito vectors for malaria are present in Virginia: *Anopheles quadrimaculatus* and *An. punctipennis*.

Malaria: 2013 Data Summary	
Number of Cases:	75
5-Year Average Number of Cases:	64.0
% Change from 5-Year Average:	+17%
Incidence Rate per 100,000:	0.9

During 2013, 75 cases of malaria were reported in Virginia. This is a 15% increase from the 65 cases reported in 2012, and a 17% increase from the five-year average of 64.0 cases per year (Figure 49). Incidence was highest in the 30-39 year age group (1.8 per 100,000), followed by the 1-9 and 10-29 year age groups (1.2 and 1.1 cases per 100,000, respectively). Race was not reported for 20% of cases. Where race information was reported, incidence in the black population (2.8 per 100,000) was substantially higher than rates for the "other" race population (0.7 per 100,000) and the white population (0.2 per 100,000). Males had a higher rate than females (1.2 and 0.6 per 100,000, respectively).



The majority of cases (68%) were reported from the northern region. Incidence by locality can be viewed in the map below. Cases occurred throughout the year. Because malaria is almost always acquired outside the United States, any observed temporal patterns are related to patterns of travel to endemic countries.

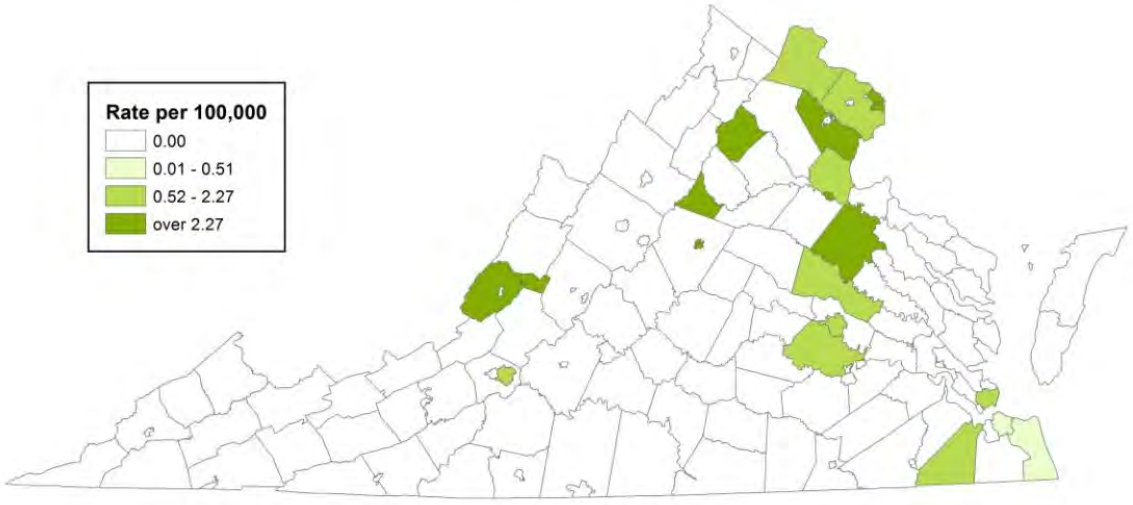


All cases reported a history of travel outside of the United States within the two years prior to disease onset. The majority of those with travel outside the U.S. (81%) had visited countries on the African continent. The African countries most frequently referenced included Sierra Leone (18 cases), Ghana (10 cases) and Liberia and Nigeria (5 cases each) (Figure 50). Non-African countries mentioned in travel histories included India (5 cases), Pakistan (3 cases), Honduras (2 cases), Brazil (2 cases) and Haiti and the Dominican Republic (1 case each).

The parasitic species of *Plasmodium* were identified in 69 individuals diagnosed with malaria in 2013. Specifically, 71% were infected with *P. falciparum*, 16% were infected with *P. vivax*, and 5% were infected with *P. malariae*. One case was infected with *P. ovale* and species could not be determined in 6 cases.

Information on malaria prophylaxis usage was obtained for 66 of the cases. Of these, only 20% (15 individuals) reported receiving prophylaxis for malaria, and 6 of the 15 individuals reported missing at least one dose. No deaths were known to be due to malaria in Virginia in 2013.

Malaria Incidence Rate by Locality
Virginia, 2013



Measles

Agent: Measles virus
Mode of Transmission: Primarily person-to-person transmission by inhalation of respiratory droplets or direct contact with nasal or throat secretions of infected people; however, airborne transmission via aerosolized droplet nuclei has been documented.
Signs/Symptoms: Fever, cough, conjunctivitis, coryza, and a typical rash on the third to seventh day after onset of symptoms.
Prevention: Measles vaccine should be given as part of the measles, mumps, and rubella (MMR) series beginning at 12-15 months of age followed by a second dose at age 4-6 years. Infants <12 months of age traveling internationally should be vaccinated with an additional dose if at least 6 months of age.
Other Important Information: Measles is highly communicable, with secondary attack rates greater than 90% among susceptible people who have close contact with the infected person. Measles elimination has been maintained in the United States since it was declared in 2000. However, an estimated 20 million cases of measles occur each year worldwide, and cases continue to be imported into the United States. Most imported cases originate in Asia and Europe and occur both among U.S. residents traveling abroad and persons visiting the United States from other countries. Individuals planning international travel should be aware of their immune status and obtain a vaccination if necessary.

For the second consecutive year, no cases of measles were reported in Virginia. This is a drop from both the 7 cases reported in 2011 and the previous five-year average of 2.4 cases per year. Prior to 2011, one case was reported each year in 2008 and 2009, and three cases were reported in 2010.

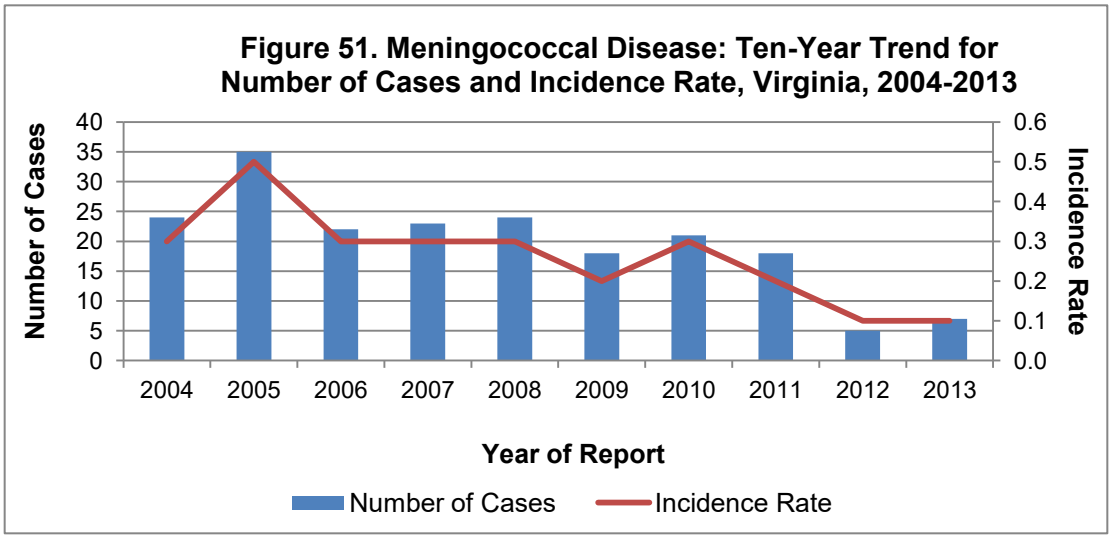
Nationally, the U.S. experienced 11 outbreaks in 2013, three of which had more than 20 cases, including an outbreak in New York City with 58 cases. Additional large outbreaks occurred in North Carolina and Texas. The North Carolina outbreak of 23 cases occurred within a community of persons not vaccinated because of personal belief exemptions. Cases were primarily located in counties that border Virginia. In these three outbreaks, transmission occurred after introduction of measles into communities with pockets of persons unvaccinated because of philosophical or religious beliefs. This allowed for spread to occur, mainly in households and community gatherings, before public health interventions could be implemented. Despite progress in global measles control and elimination, measles importations are likely to continue posing risks of measles outbreaks in unvaccinated communities.

Meningococcal Disease

Agent: *Neisseria meningitidis* (bacteria)
Mode of Transmission: Transmission occurs through contact with respiratory droplets from the nose or throat of an infected person (e.g., through coughing or kissing).
Signs/Symptoms: Meningitis is the most common presentation of invasive disease and includes sudden onset of fever, headache, and stiff neck, and often nausea, vomiting, sensitivity to light, and confusion. A rash may be present. A bloodstream infection may also occur (without meningitis), leading to abrupt onset of fever and a rash; it is often associated with shock and multi-organ failure. Less commonly, meningococcal disease can lead to pneumonia, arthritis, middle ear infections, or inflammation of the epiglottis.
Prevention: In the United States, there are two vaccines licensed to provide protection against meningococcal disease. The vaccines are protective against four of the five serogroups that cause disease (A, C, Y, and W-135, but not B). A serogroup B meningococcal vaccine that is licensed for use in Europe, Canada, and Australia was used in the United States recently to help control two meningococcal disease outbreaks; the FDA allowed the use of the vaccine under Investigational New Drug applications.
Other Important Information: Crowding, exposure to tobacco smoke, and preceding upper respiratory tract infections increase the risk of disease. Individuals with certain medical conditions, such as complement component deficiency (immunodeficiency disorders) and asplenia (no spleen), are also at increased risk for disease. Five to ten percent of people carry *N. meningitidis* in their nose without having any symptoms of disease; those who develop the disease are usually infected by a carrier who does not have symptoms.

Meningococcal Disease: 2013 Data Summary	
Number of Cases:	7
5-Year Average Number of Cases:	17.2
% Change from 5-Year Average:	-59%
Incidence Rate per 100,000:	0.1

During 2013, seven cases of meningococcal disease were reported in Virginia, with a statewide incidence rate of 0.1 per 100,000 (Figure 51). This is second only to the five cases reported in 2012, which were the fewest cases recorded since 1915 when Virginia first began tracking and

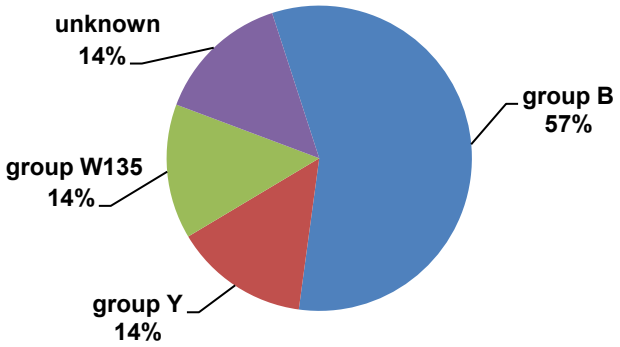


documenting this condition. The seven cases reported in 2013 represent a 59% decrease from the five-year average of 17.2 cases per year. Nationwide, in 2012 (the most recent year of available data), 551 cases of meningococcal disease were reported (incidence rate of 0.2 per 100,000).

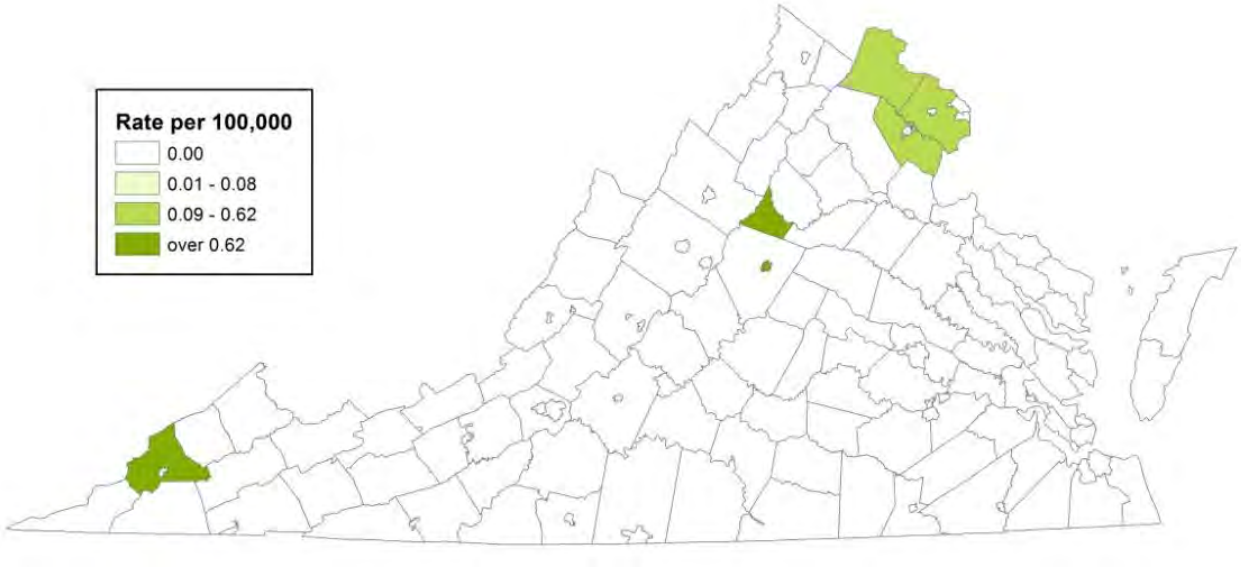
In Virginia, the 30-39 year age group had two cases and an incidence rate of 0.2 per 100,000. The remaining cases were distributed across the following age groups, with one case each: less than one year, 1-9 years, 10-19 years, 40-49 years, and 50-59 years. Race was reported for six of the seven cases and all occurred in the white population (0.1 per 100,000). Five cases occurred in males (0.1 per 100,000), and two cases occurred in females (0.05 per 100,000). By region, four cases occurred in the north (0.2 per 100,000), two cases in the northwest (0.2 per 100,000), and one case in the southwest (0.1 per 100,000). No cases were reported from the central or eastern regions (see map below). While cases occurred throughout the year, the highest proportions were observed during the first and fourth quarters.

Serogroup was identified as group B for the majority of cases (four cases, 57%). One case each (14%) was reported as serogroup W135, serogroup Y, and unknown serogroup (Figure 52). There was no indication that either of the cases reported with serogroup W135 or Y had received the meningococcal vaccine. No outbreaks or deaths attributed to meningococcal disease were reported in 2013 in Virginia.

Figure 52. Meningococcal Disease: Meningococcal Serogroups, Virginia, 2013



Meningococcal Disease Incidence Rate by Locality Virginia, 2013



Monkeypox

Agent: Monkeypox virus (genus *Orthopoxvirus*)
Mode of Transmission: Transmission to humans from an infected animal by bite or direct contact with lesions or body fluids. Though less common, infection can be transmitted directly from person to person by respiratory droplets or contact with body fluids of an infected person, or indirectly by contact with virus-contaminated objects, such as bedding.
Signs/Symptoms: Similar to smallpox, though more mild. Initial symptoms include fever, headache, backache, sore throat, cough and swollen lymph nodes. Three days after fever onset, a rash develops.
Prevention: Contact with exotic or wild mammals that originate from areas where monkeypox has occurred should be avoided.
Other Important Information: Monkeypox is a rare disease that occurs primarily in central and western Africa. In 2003, a monkeypox outbreak in the United States was identified among persons exposed to native prairie dogs that had contact with imported African rodents.

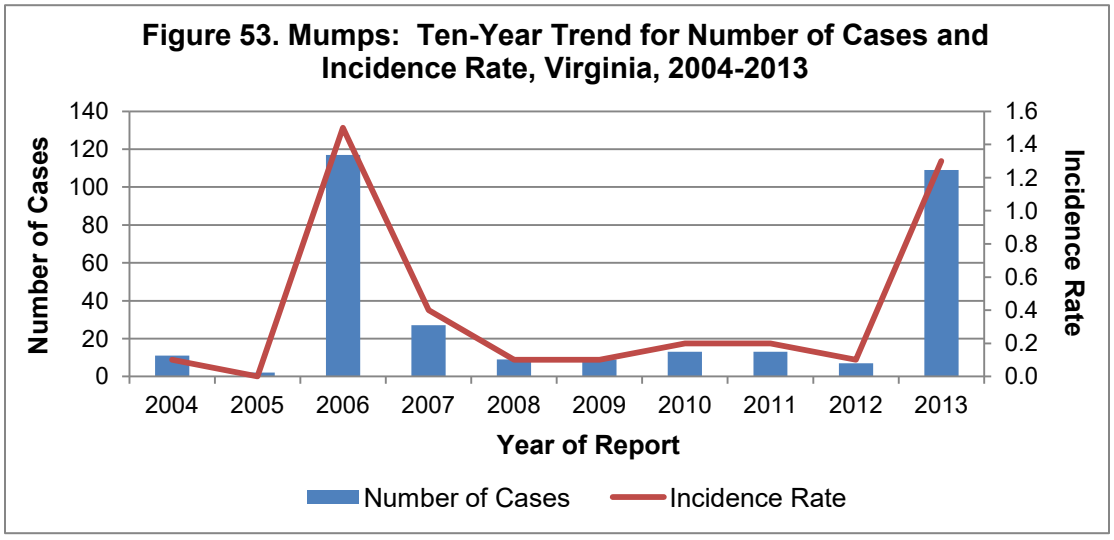
Monkeypox became a reportable disease in Virginia in 2004. No cases of monkeypox have ever been reported in Virginia.

Mumps

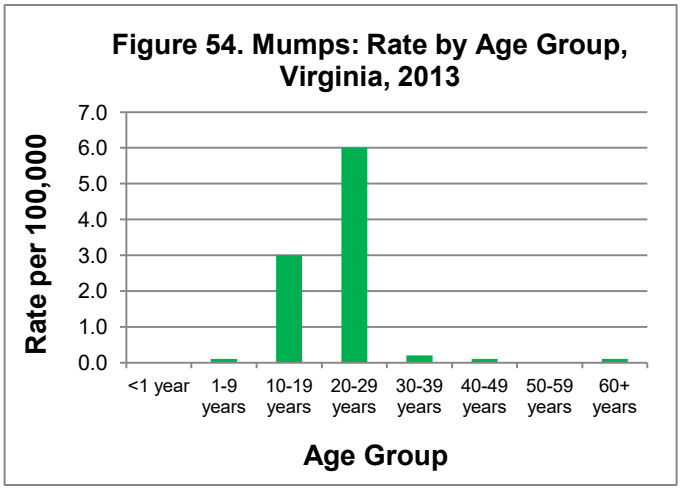
Agent: Mumps (virus)
Mode of Transmission: Person-to-person transmission through respiratory droplets, as well as through direct contact with saliva of an infected person.
Signs/Symptoms: Fever, swelling and tenderness of one or more salivary glands. Mumps infection may present with only nonspecific or primarily respiratory symptoms and as many as 20% of mumps infections are asymptomatic. Serious complications are rare but can occur in the absence of parotitis (inflammation of salivary glands).
Prevention: Vaccination, preferably as measles-mumps-rubella (MMR) vaccine, should be administered beginning at age 12 months. Two doses of mumps-containing vaccine are recommended for school-aged children, healthcare workers, international travelers, and college students. Although MMR vaccine is very effective, protection against mumps is not complete. Two doses are 88% effective at protecting against mumps; one dose is 78% effective. Outbreaks can still occur in highly vaccinated U.S. communities, particularly in close-contact settings. However, high vaccination coverage helps limit the size, duration, and spread of mumps outbreaks.
Other Important Information: In 2006, the United States experienced a multi-state mumps outbreak involving more than 6,500 reported cases. This resurgence predominantly affected college-aged students living in the Midwest, but led to college outbreaks in other states. This included Virginia, with cases occurring on multiple college campuses across the state. Between 2011 and 2013, several smaller mumps outbreaks were reported on campuses with high two-dose vaccination coverage in California, Maryland and Virginia. However, these outbreaks had limited spread, and national case counts for these years were at usual levels. In 2013, 438 people from 39 states in the U.S. were reported to have mumps.

Mumps: 2013 Data Summary	
Number of Cases:	109
5-Year Average Number of Cases:	10.2
% Change from 5-Year Average:	+969%
Incidence Rate per 100,000:	1.3

The dramatic increase in reported mumps cases in Virginia, a jump from 7 cases in 2012 to 109 in 2013, was primarily due to two college outbreaks, one significantly larger than the other. While the 2013 cases are well above the previous 5-year average of 10.2 cases, the 2013 case counts closely mirror those of 2006 when similar large-scale college outbreaks resulted in 117 cases in Virginia (Figure 53).

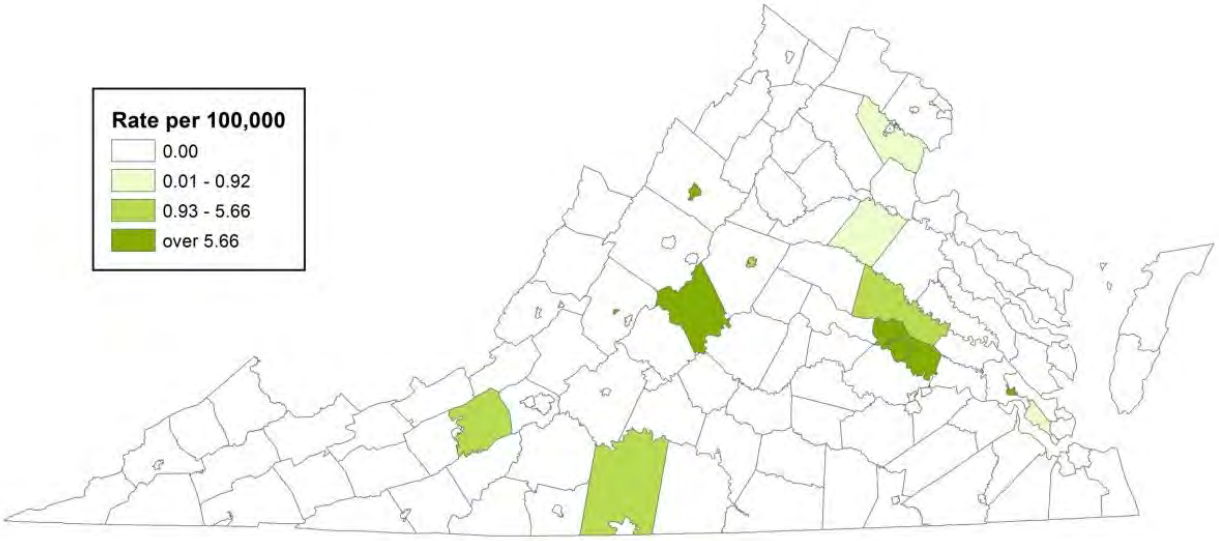


Among the 2013 cases, the highest incidence occurred in the 20-29 year age group (6.0 per 100,000), followed by the 10-19 year age group (3.0 per 100,000) with all other age groups having an incidence of 0.2 per 100,000 or less (Figure 54). Race was unknown for 29 cases (27%); however, when known, 88% of the cases occurred in whites followed by 6% each in the black and "other" race categories. Although more cases were reported among males than females (57 versus 52), incidence rates were similar for both sexes (1.4 and 1.2 per 100,000, respectively).



Due to the outbreaks, cases were clustered primarily in the second quarter of the year, and in the central and northwest regions. These regions housed the two colleges where outbreaks occurred, with the larger outbreak occurring in the central region. Incidence by locality can be seen in the map below.

Mumps Incidence Rate by Locality
Virginia, 2013



Ophthalmia Neonatorum

Agent: *Chlamydia trachomatis* (bacteria) or *Neisseria gonorrhoeae* (bacteria), although *C. trachomatis* is more common.
Mode of Transmission: Infants are exposed to the organism in the birth canal during childbirth.
Signs/Symptoms: Redness or swelling of one or both eyes beginning five to fourteen days after birth.
Prevention: All pregnant women should be screened for chlamydia and gonorrhea. Women who were infected with *C. trachomatis* or *N. gonorrhoeae* in the first trimester of pregnancy should be retested during the third trimester to prevent postnatal infection in the infant. A prophylactic agent should be instilled into the eyes of all newborn infants.

Ophthalmia Neonatorum: 2013 Data Summary	
Number of Cases:	4
5-Year Average Number of Cases:	8.6
% Change from 5-Year Average:	-53%
Incidence Rate per 100,000:	0.0

During 2013, four infants were reported with ophthalmia neonatorum caused by infection with *C. trachomatis* in Virginia. No cases caused by *N. gonorrhoeae* were reported. The four cases represent a 53% decrease from the five-year average of 8.6 cases statewide per year.

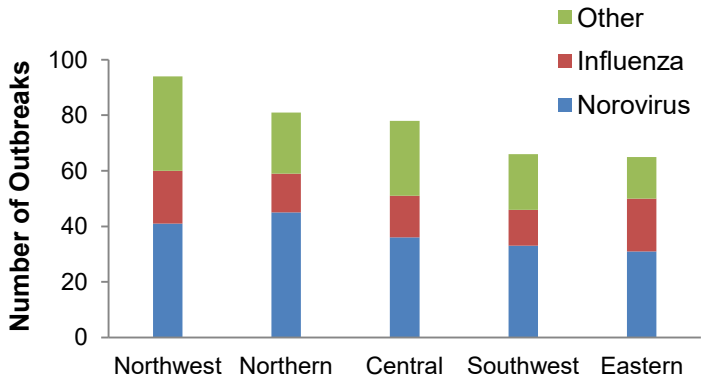
Outbreaks

Introduction

In 2013, a total of 396 outbreaks were reported to the Virginia Department of Health (VDH). Approximately two-thirds of the outbreaks (267, 67%) were suspected or confirmed to be caused by norovirus (187, 47%) or influenza (80, 20%). Other etiologic agents were suspected or confirmed to contribute to the remaining outbreaks (129, 33%).

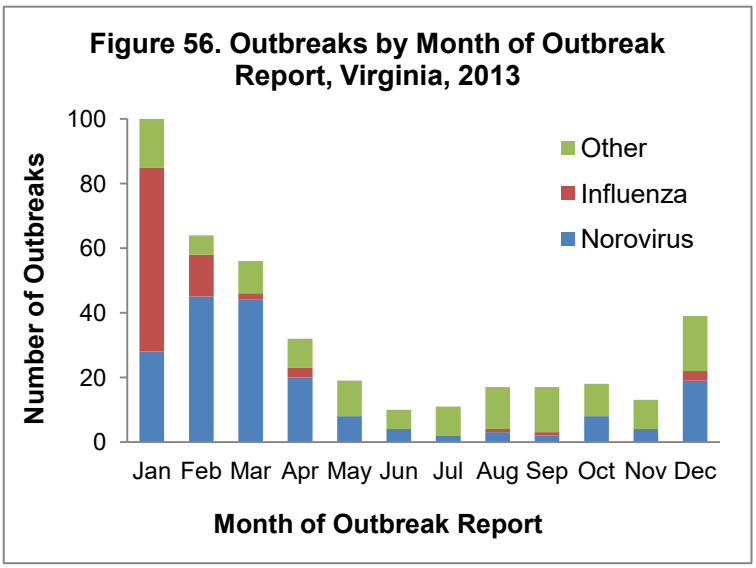
Geographically, 94 outbreaks (24%) were reported from the northwest health planning region, followed in frequency by the northern region (81 outbreaks, 20%), central region (78 outbreaks, 20%), southwest region (66 outbreaks, 17%), and eastern region (65 outbreaks, 16%) (Figure 55). In addition, the VDH Central Office led investigations in 10 multi-state or multi-jurisdictional outbreaks (3%) and other states led the investigation in two out-of-state outbreaks in which VDH provided assistance.

Figure 55. Outbreaks by Health Planning Region, Virginia, 2013



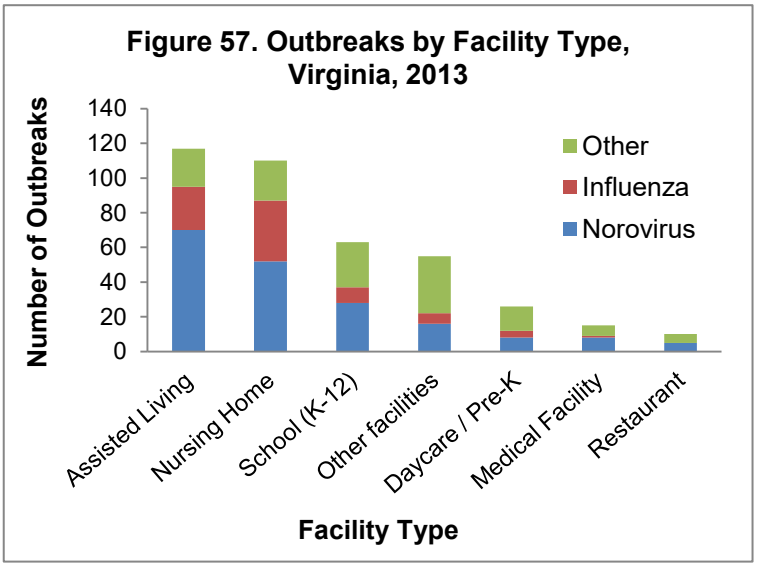
Outbreaks were reported throughout the year in 2013, but more outbreaks were reported in the colder months. Close to three-quarters of outbreaks occurred in January, February, March, April, or December of 2013 (291, 74%). A quarter of outbreaks occurred in January alone (100, 25%). Consistent with previous years, the majority of outbreaks during the colder months were confirmed or suspected to be caused by norovirus and influenza, reflecting the active circulation of these pathogens in colder months (Figure 56).

Figure 56. Outbreaks by Month of Outbreak Report, Virginia, 2013



Assisted living facilities reported the most outbreaks (118, 30%) in 2013, followed by nursing homes (110, 28%), schools (K-12) (63, 16%), and daycare centers (26, 7%). The majority of outbreaks reported from these facilities were confirmed or suspected to be caused by influenza or norovirus. Outbreaks were also reported from medical facilities (15, 4%), restaurants (10, 3%), and other settings, including colleges (6, 2%), correctional facilities (6, 2%), independent living facilities (6, 2%), workplaces

(5, 1%), adult daycare centers (3, 1%), camps (3, 1%), convenience stores (2, 1%), hotels (2, 1%), private homes (2, 1%), and a military base (1, 0.3%) (Figure 57).



The following sections describe norovirus outbreaks that were transmitted through person-to-person contact, influenza outbreaks, outbreaks transmitted through foodborne, waterborne, or zoonotic mechanisms, vaccine-preventable disease outbreaks, outbreaks that occurred in healthcare facilities, and outbreaks related to other types of illnesses.

Person-to-person Norovirus Outbreaks

Norovirus was suspected or confirmed as the cause of nearly half of all outbreaks (187, 47%) that were reported in Virginia in 2013, down from 51% in 2012. Among these 187 outbreaks, 179 were transmitted through person-to-person contact, five through food and one through recreational water exposure. The mode of transmission could not be determined in two outbreaks.

Please see the Foodborne Outbreaks section below for a description of norovirus outbreaks that had a foodborne route of transmission.

The average number of persons who became ill in person-to-person norovirus outbreaks was 37, with a range of 1 to 213. The outbreak with only one ill Virginia resident was part of a larger multi-state investigation (only Virginia cases were counted in outbreaks led by CDC or another state).

Person-to-person norovirus outbreaks were reported from all regions in Virginia in 2013. Overall, the northern area of the state reported close to half of all person-to-person norovirus outbreaks, with 45 outbreaks (25%) reported in the northern region and 37 outbreaks (21%) reported in the northwest region. The central, southwest and eastern regions reported 33 (18%), 32 (18%), and 31 (17%) person-to-person norovirus outbreaks in 2013, respectively.

The most frequent settings for person-to-person norovirus outbreaks were assisted living facilities (68, 38%), nursing homes (52, 29%) and schools (K-12) (27, 15%). Outbreaks from these three settings accounted for the majority (147, 82%) of all person-to-person norovirus outbreaks in 2013. This distribution pattern was similar to that of 2012, in which 39%, 29%, and 17% of person-to-person norovirus outbreaks occurred at assisted living facilities, nursing homes, and schools (K-12), respectively. Person-to-person norovirus outbreaks also occurred in

other types of settings, including daycare facilities (8, 4%), medical facilities (8, 4%), restaurants (3, 2%), adult daycare centers (2, 1%), workplaces (2, 1%), correctional facilities (2, 1%), and independent living facilities (2, 1%). In addition, a college, military base, golf club, and community park each reported one person-to-person norovirus outbreak. One norovirus outbreak was associated with an out-of-state hotel.

Although person-to-person norovirus outbreaks occurred throughout the year in 2013, the majority of these outbreaks occurred in colder months of January (28, 16%), February (44, 25%), March (44, 25%), April (19, 11%), and December (16, 9%).

Norovirus was confirmed by laboratory testing in over half (109, 61%) of the 179 person-to-person norovirus outbreaks. Sequencing analysis was performed for 95 of the 109 confirmed outbreaks, which revealed that norovirus genotype *Sydney* (76, 80%) predominated among all norovirus with sequencing data in 2013. Other strains identified included *Shindlesham* (6, 6%), *Miami* (3, 3%), *Potsdam* (2, 2%), *Beijing* (2, 2%), *Otofuke* (1, 1%), *Ascension* (1, 1%), *VA173* (1, 1%), *Milwaukee* (1, 1%), *Minerva* (1, 1%), and *New Orleans* (1, 1%). Sequencing data were not available for 14 (13%) of the confirmed outbreaks.

In addition to the 179 person-to-person norovirus outbreaks, there were two norovirus outbreaks in 2013 for which the transmission route could not be determined. Both outbreaks occurred in the northwest region and one was associated with a restaurant and the other was associated with a workplace.

Influenza Outbreaks

After norovirus, influenza (80, 20%) was the most common suspected or confirmed etiologic agent responsible for causing outbreaks in Virginia in 2013. An average of 26 people became ill in each influenza outbreak, although the range was 3 to 200 people.

Influenza outbreaks were reported from all regions in Virginia in 2013. The northwest region and the eastern region each had 19 (24%) influenza outbreaks, followed by the central (15, 19%), northern (14, 18%), and southwest (13, 16%) regions. Of note, the northwest region consistently reported more influenza outbreaks than most other regions in both 2012 (28, 28%) and 2013 (19, 24%).

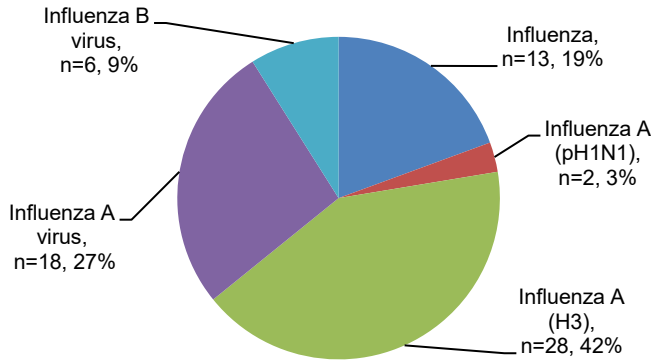
More than three-quarters of influenza outbreaks were reported from nursing home (35, 44%) and assisted living facility (26, 33%) settings in 2013. Schools (K-12) reported 9 (11%) influenza outbreaks in 2013, which was very different from 2012, during which schools (K-12) reported over half of all influenza outbreaks (59, 58%). Influenza outbreaks were also occasionally reported by other facilities, including daycare centers (4, 5%), correctional facilities (2, 3%), independent living facilities (2, 3%), an adult daycare center (1, 1%), and a medical facility (1, 1%).

Close to three-quarters of influenza outbreaks (57, 71%) were reported in January 2013, which was followed by a sharp drop in February (13, 16%). After February, scattered influenza outbreaks were reported in March (2, 3%), April (3, 4%), August (1, 1%), September (1, 1%),

and December (3, 4%). The high number of influenza outbreaks reported in January, 2013 was likely a continuation of active circulation of influenza from December 2012, the month when an abrupt, substantial increase in influenza activity was observed in both outbreaks and sporadic cases. In December 2012 alone, 80 influenza outbreaks were reported, which equals the total number of influenza outbreaks reported in the entire 2013 calendar year.

Among the 80 influenza outbreaks occurring in 2013, 67 (84%) were confirmed by laboratory testing. Influenza A virus predominated (48, 72%). Specifically, among laboratory-confirmed influenza outbreaks, influenza A(H3) was identified in 28 (42%) outbreaks, influenza A (not further specified) was identified in 18 (27%) outbreaks, influenza A (pH1N1) was identified in 2 (3%) outbreaks, and influenza B was identified in 6 (9%) outbreaks. Influenza was identified by rapid test in another 13 (19%) outbreaks but information on the virus subtype was not available (Figure 58).

Figure 58. Strain of Influenza Virus in Confirmed Influenza Outbreaks, Virginia, 2013



For information on influenza outbreaks that occurred in the 2013-2014 influenza season (rather than calendar year 2013, as described above), please see the "Outbreaks" section of the "Influenza" chapter of the annual report.

Foodborne Outbreaks

During 2013, 20 foodborne outbreaks were reported in Virginia. This represents a 38% reduction from the 32 outbreaks reported in 2012, and is similar to the 19 outbreaks reported in 2011 (Table 8). The average number of ill persons per outbreak was 18 and ranged from one to 115 Virginians affected.

The foodborne outbreaks occurred throughout the year, although 9 (45%) had illness onset between April and June. Geographically, five (25%) outbreaks occurred in the central health planning region, followed by four (20%) in the northwest, two (10%) in the northern, one in the eastern (5%), and one (5%) in the southwest regions. The other seven (35%) outbreaks were multi-state outbreaks that involved cases from Virginia and other states.

Thirteen (52%) of the suspected or confirmed etiologic agents were bacterial, five (25%) were viral, and two (10%) were related to other types of agents (one parasite, one chemical). Etiologic agents were confirmed by laboratory testing in 16 of the 20 outbreaks. These confirmed etiologic agents include *Salmonella* (6), norovirus (4), *Escherichia coli (E. coli)* (2), *Campylobacter jejuni* (1), *Staphylococcus aureus* (1), *Vibrio parahaemolyticus* (1), and

Cyclospora (1). In the remaining four outbreaks without laboratory confirmation, *Clostridium perfringens, Bacillus cereus,* norovirus, and histamine (scombroid) were each suspected in one outbreak. Seven outbreaks were multistate (similar to the eight reported in 2012), of which three were attributed to *Salmonella*, two were attributed to *E. coli*, and single outbreaks were attributed to *Cyclospora* and *Vibrio parahaemolyticus*. Most foodborne outbreaks occurred in restaurant (9, 45%) or private home (5, 25%) settings. The remaining outbreak settings included two assisted living facilities, two convenience stores, a college, a school (K-12), and a group residential setting. Contributing factors were identified in eight (40%) of these outbreaks, including cross-contamination of ingredients, glove-hand contact by an infected food handler, foods contaminated by a non-food handler who was suspected to be infectious, storage in a contaminated environment, failure to control food temperature or the length of time food was out of temperature control, improper cold holding or hot holding due to improper procedure or protocol, improper/slow cooling, and insufficient time and/or temperature control during initial cooking/heat processing or during reheating.

Table 8. Foodborne Outbreaks Reported in Virginia, 2013

Onset Date	Health District	Number of Cases	Etiologic Agent	Vehicle	Place Where Outbreak Occurred
12/15/2012	Multi-state	1 VA 14 US	*Salmonella* ser. Javiana	Unknown	Convenience Store
2/11/2013	Multi-state	1 VA 35 US	*Escherichia coli*	Frozen food products	Private Home
2/20/2013	Henrico	115	Norovirus GII.4 Sydney	Unknown	Assisted Living
2/22/2013	Multi-state	3 VA 84 US	*Salmonella* ser. Saintpaul	Cucumbers	Private Home
3/26/2013	Fairfax	15	*Campylobacter*	Crispy roasted chicken, fried rice	Restaurant
4/17/2013	Multi-state	4 VA 574 US*	*Salmonella* ser. Heidelberg	Chicken	Restaurant/ Private Home
4/21/2013	Fairfax	18	*Salmonella*	Unknown	Restaurant
4/26/2013	Multi-state	1 VA 14 US	*Escherichia coli* O157:H7	Prepackaged leafy greens	Private Home
5/10/2013	Chesterfield	6	*Clostridium perfringens* suspected	Unknown	Restaurant
5/13/2013	Lord Fairfax	4	*Staphylococcus aureus*	Pulled pork	Convenience Store
5/14/2013	New River	68	Norovirus GII.4 Sydney	Unknown	Restaurant
5/16/2013	Henrico	35	Norovirus GII.4 Sydney	Sandwiches, feta salad	School (K-12)
6/16/2013	Multi-state	2 VA 30 US	*Vibrio parahaemolyticus*	Raw shellfish	Restaurant
6/30/2013	Multi-state	4 VA 631 US	*Cyclospora*	Fresh produce	Private Home

Table 8. Foodborne Outbreaks Reported in Virginia, 2013 (cont.)

Onset Date	Health District	Number of Cases	Etiologic Agent	Vehicle	Place Where Outbreak Occurred
8/7/2013	Western Tidewater	9	*Salmonella* ser. Newport	Blue crab, gazpacho soup with crab	Restaurant
9/19/2013	Henrico	7	*Bacillus cereus* suspected	Curry chicken, spinach with cheese/cream sauce, rice	Other
11/10/2013	Thomas Jefferson	7	*Salmonella* ser. Typhimurium	Unknown	College / University
11/19/2013	Rappahannock	17	Norovirus suspected	Turkey, stuffing, mashed potatoes	Other
12/6/2013	Henrico	30	Norovirus	Unknown; Food handler implicated	Assisted Living
12/9/2013	Thomas Jefferson	3	Histamine (scombroid) suspected	Tuna melt sandwich	Restaurant

***This investigation is ongoing; new cases continue to be added. Count is current as of 5/27/2014.**

Outbreak spotlight: Vibrio parahaemolyticus

In 2013, two outbreaks caused by *Vibrio parahaemolyticus* were reported to VDH. One involved two Virginia cases and the other involved only out-of-state cases (it was not counted as a Virginia outbreak). The outbreak with two Virginia cases affected a total of five states including Virginia. Oyster consumption was believed to be the contributing factor for this outbreak because it was the common exposure among the cases. The genetic pattern of the *Vibrio parahaemolyticus* identified in this outbreak appeared to be the same as the one seen in a 2012 *Vibrio* outbreak in the country.

In the other outbreak that did not involve Virginia cases, illness caused by *Vibrio parahaemolyticus* was identified in four out-of-state residents. This outbreak involved raw shellfish that came from a growing site located in Virginia and as a result, the site was closed for several months. In this outbreak, VDH was involved in assessing conditions of the site such as changes in temperatures, and recommended vibriosis control measures, which included harvest restrictions (i.e., harvesting could only occur during a certain time of the day) and temperature control for harvested oysters (i.e., stored at less than 55 degrees within 5 hours of harvesting).

Healthcare-Associated Outbreaks

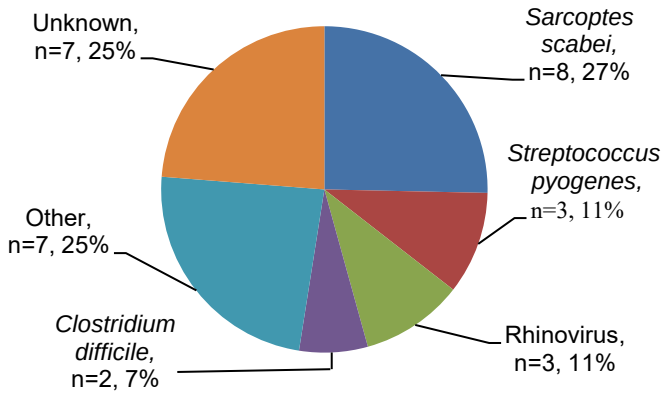
A healthcare-associated outbreak is a group of illnesses with a common etiology among patients, residents, or staff in a healthcare setting (e.g., hospital, medical center, nursing home, physician's office, dialysis center, or other healthcare facility), where the illness is associated with that

setting. Note that prior to 2008, only outbreaks that occurred in hospitals and nursing homes (facilities meeting the definition of a medical care facility in 12VAC5-90-10) were included in these statistics.

During 2013, 30 healthcare-associated outbreaks with suspected or confirmed etiologic agents other than norovirus or influenza were reported in Virginia. This is similar to the 28 non-norovirus, non-influenza outbreaks reported from healthcare facilities in 2012. The average number of ill persons per healthcare-associated outbreak in 2013 was 16, and ranged from two to 76. The majority of healthcare-associated outbreaks occurred in nursing homes (24, 80%) and the remaining events (6, 20%) occurred in medical facilities, including hospitals and physicians' offices. The majority of the healthcare-associated outbreaks (27, 90%) were attributed to person-to-person transmission. Route of transmission could not be determined in three outbreaks (10%)

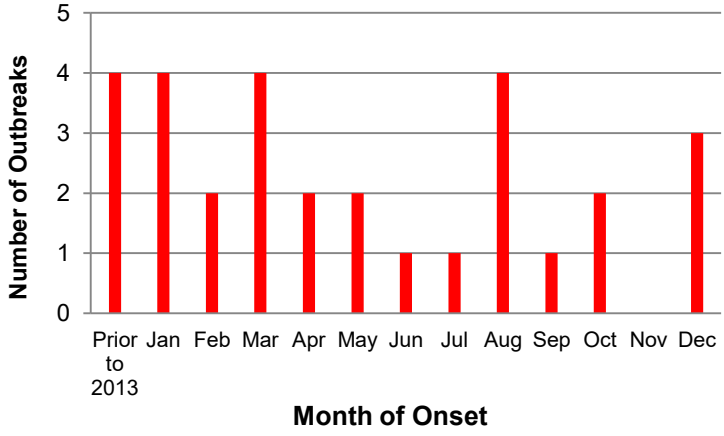
Etiologic agents were confirmed in half of the outbreaks (15), suspected in 27% (8) and unknown in 23% (7). *Sarcoptes scabei* (scabies) (8, 27%), *Streptococcus pyogenes* (3, 10%), rhinovirus (3, 10%), and *Clostridium difficile* (2, 7%) were each suspected or confirmed in multiple outbreaks. *Aeromonas hydrophila,* metapneumovirus, *Mycoplasma pneumoniae*, respiratory syncytial virus, rotavirus, sapovirus, and methicillin-resistant *Staphylococcus aureus* were each responsible for one outbreak (Figure 59). The eight scabies outbreaks reported from healthcare facilities is an increase from the three reported in 2012. The three outbreaks associated with *Streptococcus pyogenes* involved invasive disease. Two outbreaks occurred in nursing homes and one occurred in a medical facility

Figure 59. Healthcare-Associated Outbreaks: Etiologic Agent Confirmed or Suspected, Virginia, 2013



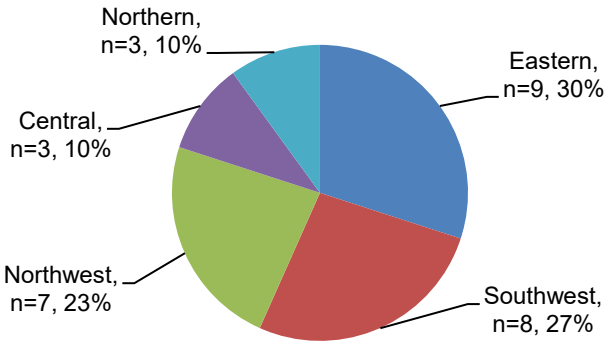
Although healthcare-associated outbreaks were reported throughout the year, 43% (13) of the outbreaks had onsets during the colder months of December, January, February, and March. Four (13%) healthcare-associated outbreaks had illness onset in the month of August (Figure 60).

Figure 60. Healthcare-Associated Outbreaks: Month of Onset, Virginia, 2013



In 2013, healthcare-associated outbreaks were reported most frequently from the eastern (9, 30%), southwest (8, 27%), and northwest (7, 23%) health planning regions. The central and northern regions each reported three outbreaks (10%) (Figure 61). This geographical distribution varied from 2012, when the central region reported 13 outbreaks and only three outbreaks were reported from the northwest region.

Figure 61. Healthcare-Associated Outbreaks: Region of Occurrence, Virginia, 2013



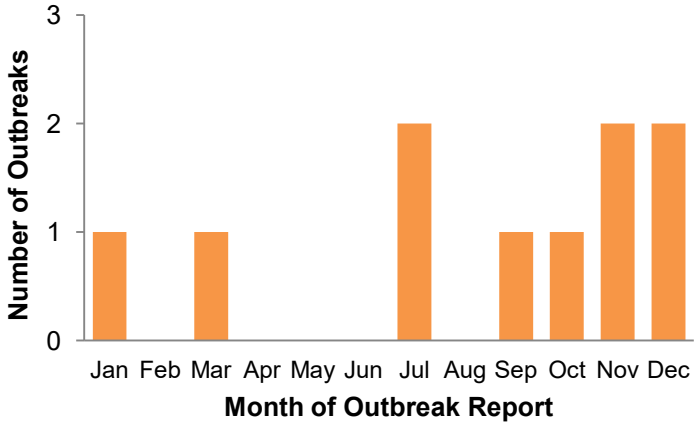
Vaccine-Preventable Disease Outbreaks

During 2013, a total of 14 vaccine-preventable disease outbreaks were reported. This is fewer than occurred in 2012, when 22 outbreaks were reported. Of these 14 outbreaks, 10 were related to pertussis, two related to mumps, and another two related to varicella (chickenpox).

All 10 of the pertussis outbreaks reported in 2013 were confirmed by laboratory testing. The average number of ill persons per outbreak was five, with a range from two to 13. Nine of the 10 pertussis outbreaks (90%) occurred in schools and the remaining one (10%) was associated with a church.

Pertussis outbreaks were reported during seven months in 2013 and the majority of these outbreaks were reported in the second half of the year (8, 80%) (Figure 62). The temporal trend of pertussis outbreaks in 2013 was different from that of 2012. In 2012, April and May each had four pertussis outbreaks reported, which represented nearly half of all pertussis outbreaks (8, 47%) that year.

Figure 62. Pertussis Outbreaks: Month of Onset, Virginia, 2013



The northern area of the state had substantially more pertussis outbreaks (8, 80%) than the other areas in 2013. The northern health planning region and the northwest region each had four pertussis outbreaks. The central region and the southwest region each had one pertussis outbreak, while the eastern region had no pertussis outbreaks in 2013.

Two chickenpox outbreaks were reported in 2013. One occurred in a school in May in the southwest region and was confirmed by laboratory testing. The other occurred in a daycare center in November in the northwest region and was not confirmed. Eighteen students were affected in the school outbreak and seven children were affected in the daycare outbreak.

Lack of compliance with the recommended immunization schedule contributed to these outbreaks. For the 10 pertussis outbreaks, up-to-date immunizations were reported among all case-patients in only half of the outbreaks. The other five outbreaks affected persons who were either unvaccinated or had not received all recommended doses of vaccine. No other outbreaks caused by vaccine-preventable diseases such as measles, rubella, or *Haemophilus influenzae* type B were reported in 2013.

Outbreak spotlight: mumps outbreaks

Two mumps outbreaks were reported in 2013, compared to none in 2012. Both outbreaks occurred in college settings between March and May 2013 but they were not epidemiologically linked. The first outbreak occurred in a college in the central region. The index case-patient was likely a student who developed signs and symptoms consistent with mumps after traveling abroad and was later confirmed by laboratory testing. Additional cases of mumps were identified afterward, resulting in a campus-wide outbreak. Clustering of mumps cases was identified in one fraternity and one athletic team. At the end of the outbreak, a total of 45 confirmed, 23 probable and 16 suspect mumps cases were identified. For this outbreak, a mass vaccination clinic was set up and vaccinations were provided to 441 college students and employees. In addition to mass vaccination, the college established isolation units on campus with meal service for symptomatic students.

Concurrently, another mumps outbreak occurred in a college in the northwest region. In this outbreak, 12 confirmed and 7 suspected cases were identified. The investigation indicated that the infections primarily occurred among attendees of events or parties sponsored by campus sorority and fraternity organizations. Shared drinks and close proximity to others were possible ways that the virus was transmitted. Similar to the central region mumps outbreak, post-exposure vaccination was provided and isolation was recommended for symptomatic students.

Waterborne Outbreaks

Three waterborne outbreaks were reported in 2013 (Table 9), compared to two outbreaks reported in 2012. All of the outbreaks occurred between May and August and were thought to be caused by ingesting contaminated water. Two outbreaks occurred in the northwest region and the other occurred in the central region. Parasitic, bacterial, and viral agents were each implicated in an outbreak.

One of the waterborne outbreaks was suspected to be caused by norovirus and affected seven individuals who were thought to have ingested water while swimming in a quarry. The other two waterborne outbreaks both occurred in camp settings. In one of the camp outbreaks, *E. coli* was confirmed in five campers who were exposed to an untreated recreational water source. In the other waterborne outbreak at a camp, improper filtration/purification of drinking water was likely responsible for causing four cases of gastrointestinal illness due to *Giardia lamblia*.

Table 9. Waterborne Outbreaks Reported in Virginia, 2013

Onset Date	Health District	Number of Cases	Etiologic Agent	Suspected Vehicle	Place Where Outbreak Occurred
5/23/2013	Thomas Jefferson	7	Norovirus suspected	Water not intended for drinking	Quarry
6/21/2013	Thomas Jefferson	5	*E. coli* O157:H7	Recreational water - untreated	Camp
8/3/2013	Chesterfield	4	*Giardia lamblia*	Water intended for drinking	Out-of-state camp

Outbreak spotlight: *Cryptosporidium at a Virginia ranch affecting out-of-state residents*

In 2013, a waterborne outbreak caused by *Cryptosporidium* occurred at a Virginia ranch and affected 19 out-of-state residents who were camping on the property. Because Virginia residents were not affected, the outbreak was not included in the statistics presented in this report. Multiple exposure sources were identified, including drinking water, untreated recreational water sources, and other types of water, but the exact cause of illness could not be determined. The investigation indicated that a well water supply with apparent fecal contamination, lack of appropriate hand hygiene, and potentially hazardous food preparation and handling likely contributed to this outbreak.

Zoonotic Outbreaks

In 2013, four zoonotic outbreaks were reported that involved residents of Virginia. All occurred in private home settings. Three of the four outbreaks involved live poultry and were caused by *Salmonella*. Two of these live poultry-related outbreaks involved multiple states. The other outbreak was due to *Streptococcus equi* and was associated with exposure to guinea pigs. The number of Virginia cases in these outbreaks ranged from two to seven (Table 10).

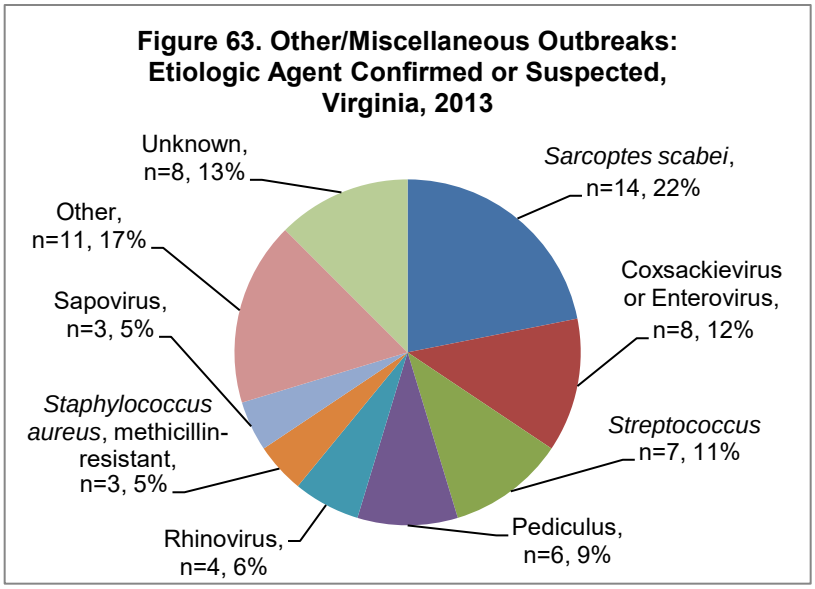
Table 10. Zoonotic Outbreaks Reported in Virginia, 2013

Onset Date	Health District	Number of Cases	Etiologic Agent	Vehicle	Place Where Outbreak Occurred
1/29/2013	Multi-state	5 VA 514 US*	*Salmonella*	Live Poultry	Private Home
2/15/2013	Multi-state	7 VA 53 US	*Salmonella* ser. Braenderup	Live Poultry	Private Home
2/19/2013	Multi-jurisdiction	2	*Streptococcus equi*	Guinea Pigs	Private Home
3/22/2013	Multi-jurisdiction	3	*Salmonella* ser. Braenderup	Live Poultry	Private Home

**Salmonella* serotypes that were part of this outbreak nationally included Infantis, Lille, Mbandaka, Newport, and Typhimurium

Other Outbreaks

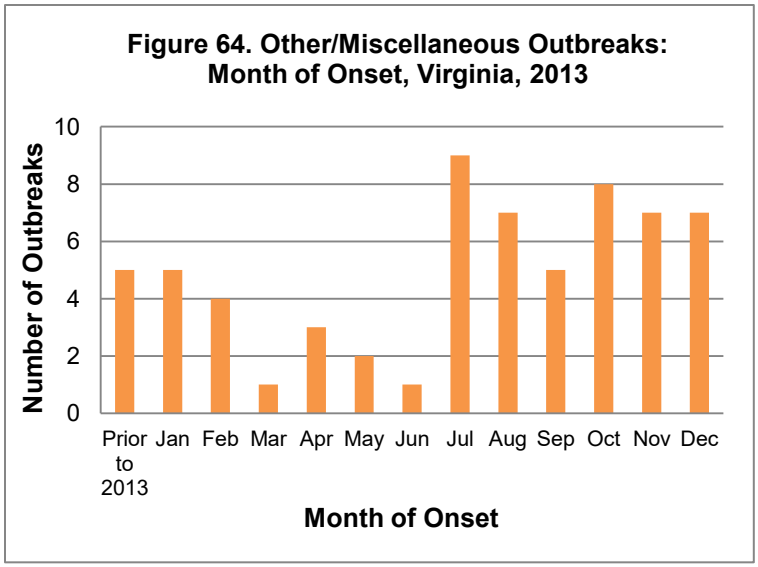
In addition to the norovirus, influenza, foodborne, healthcare-associated, vaccine-preventable, waterborne, and zoonotic disease outbreaks discussed above, 64 other outbreaks were reported in Virginia in 2013, which was a 14% increase compared to the 56 outbreaks reported in 2012. The average number of ill persons per outbreak was 14, and ranged from two to 95. As in previous years, the majority of these outbreaks (60, 94%) were attributed to person-to-person transmission. Three outbreaks (5%) were attributed to unknown transmission routes and the remaining outbreak (2%) had an environmental route of transmission.



The most frequent causes of outbreaks reported from other settings were confirmed or suspected to be *Sarcoptes scabei* (14 outbreaks, 22%) or the Enterovirus group of viruses, including coxsackievirus (8 outbreaks, 12%). The remaining 42 outbreaks were suspected or confirmed to be caused by a variety of etiologic agents (Figure 63). Seven were caused by *Streptococcus* (confirmed in four and suspected in three). One of the seven *Streptococcus* outbreaks caused both invasive and non-invasive *Streptococcus pyogenes* (Group A) illness among residents in an assisted living facility. The remaining six *Streptococcus* outbreaks caused non-invasive respiratory or rash illnesses in school, daycare or private home settings. Six outbreaks were suspected to be caused by pediculus (head lice), four were respiratory illnesses confirmed to be rhinovirus, three were non-invasive rash illnesses confirmed to be methicillin-resistant *Staphylococcus aureus,* and three were gastrointestinal illnesses confirmed to be sapovirus. Other outbreaks included two clusters of viral conjunctivitis, two rash illnesses suspected to be human parvovirus B19, and two respiratory illnesses with one suspected and one confirmed to be respiratory syncytial virus. In addition, single outbreaks were confirmed to be rash caused by bed bugs, respiratory illness caused by metapneumovirus, gastrointestinal illness caused by rotavirus, and gastrointestinal illness caused by *Salmonella* ser. Typhimurium. One remaining outbreak was suspected to be *Tinea corporis* (ringworm). The etiologic agent was unknown in four respiratory illness outbreaks, three gastrointestinal illness outbreaks, and one conjunctivitis outbreak.

Overall, the most common settings for these 64 outbreaks were assisted living facilities (21, 33%), schools (K-12) (16, 25%), and daycare/pre-K facilities (13, 20%). In addition, two (3%) outbreaks occurred in each of the following settings: colleges, correctional facilities, independent living facilities, and private homes. Outbreaks were also reported from a workplace, campground, convenience store, hotel, farm, and group residential facility.

Although these outbreaks occurred throughout the year, two-thirds (43) of the outbreaks had illness onset in the second half of the year, between July and December (Figure 64).



Regionally, outbreaks occurred throughout the state, with the largest proportions in the central (19, 30%) and southwest (14, 22%) health planning regions, followed by the northern (13, 20%), northwest (13, 20%), and eastern (5, 8%) regions.

Outbreak spotlight: Scabies

Scabies is a disease of the skin caused by the *Sarcoptes scabei* mite. Scabies mites burrow into the skin, producing pimple-like irritations or burrows. This is called an "infestation". The mites are usually spread from one person to another by direct skin-to-skin contact. Items in the environment such as clothing or bedding may also contribute to the spread of the mites if those items have been contaminated by an infested person immediately before use by another person. In 2013, fourteen (22%) of the 64 outbreaks in other settings were suspected or confirmed to be due to scabies. This was a 133% increase from the 6 outbreaks reported in 2012. The scabies outbreaks from 2013 occurred in a variety of settings including assisted living facilities (9, 64%) and correctional facilities (2, 14%). Individual outbreaks also occurred in a college, a daycare center and a group residential facility.

Outbreak spotlight: Hand, foot, and mouth disease

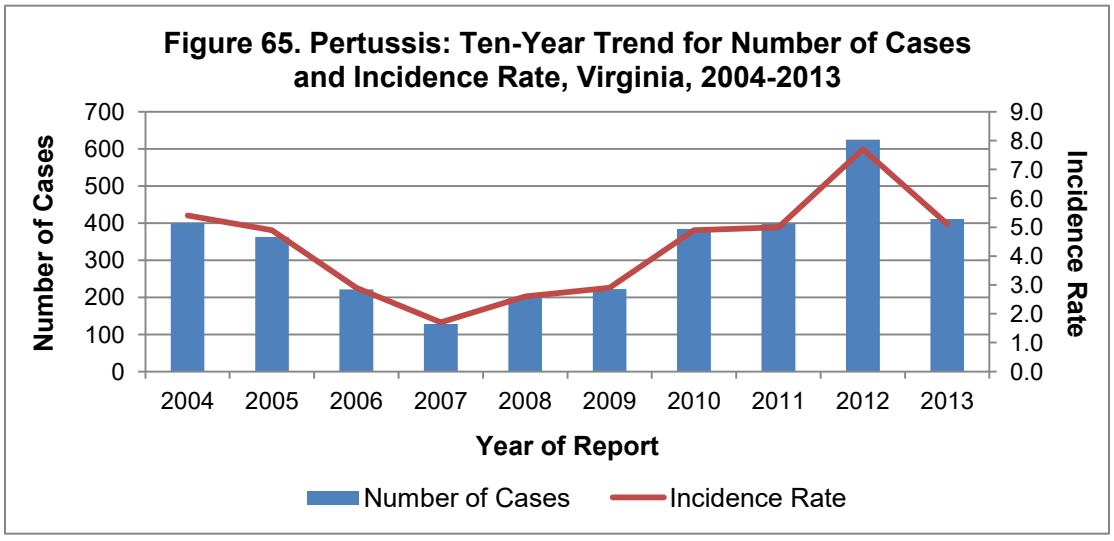
In 2013, seven (11%) of the 64 other outbreaks were outbreaks of hand, foot, and mouth (HFM) disease, a viral illness that can cause fever, blister-like sores in the mouth, and a skin rash. This is a 41% decrease from the 17 HFM outbreaks reported in 2012. HFM disease usually affects infants and children younger than 5 years of age, but can sometimes occur in adults. HFM disease is caused by the Enterovirus group of viruses, which includes polioviruses, coxsackieviruses, echoviruses, and enteroviruses. None of the seven HFM outbreaks in 2013 was confirmed by laboratory testing. Almost all of the HFM disease outbreaks occurred in daycare facilities (6, 86%), and the other occurred in a school (K-12).

Pertussis

Agent: *Bordetella pertussis* (bacteria)
Mode of Transmission: Person-to-person transmission by contact with respiratory droplets from infected patients.
Signs/Symptoms: Insidious cough that progresses to paroxysmal coughing (i.e., severe, sequential coughs with difficulty inhaling) and may be accompanied by post-cough vomiting.
Prevention: Appropriate vaccine should be administered beginning at 2 months of age.
Other Important Information: Pertussis is also known as whooping cough. Coughing fits can last up to 10 weeks or more. In vaccinated populations, the case-fatality rate is low. When deaths occur, they are generally in children less than six months old who are too young to have been vaccinated.

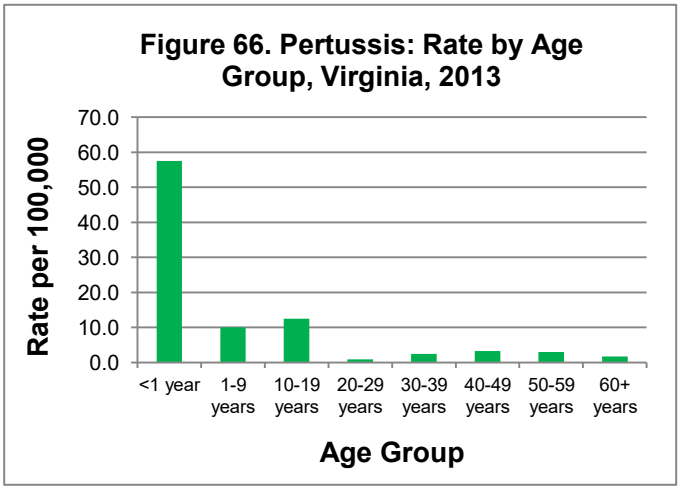
Pertussis: 2013 Data Summary	
Number of Cases:	418
5-Year Average Number of Cases:	365.6
% Change from 5-Year Average:	+14%
Incidence Rate per 100,000:	5.1

In 2013, 418 cases of pertussis were reported in Virginia. This is a 33% decrease from the 625 cases reported in 2012 but still a 14% increase from the five-year average of 365.6 cases per year (Figure 65). Cases of pertussis typically occur in waves, with peak numbers appearing every 3-5 years. For the past 20-30 years, the peaks have been getting higher and overall case counts have been rising. The number of pertussis cases in 2012 was the highest reported in Virginia since 1959 when 1,114 cases were reported. In addition, the 48,277 cases reported nationally in 2012 was the highest number reported since 1955. In 2013, although the number of cases declined both nationally and in Virginia, they were still higher than numbers seen in previous waves.



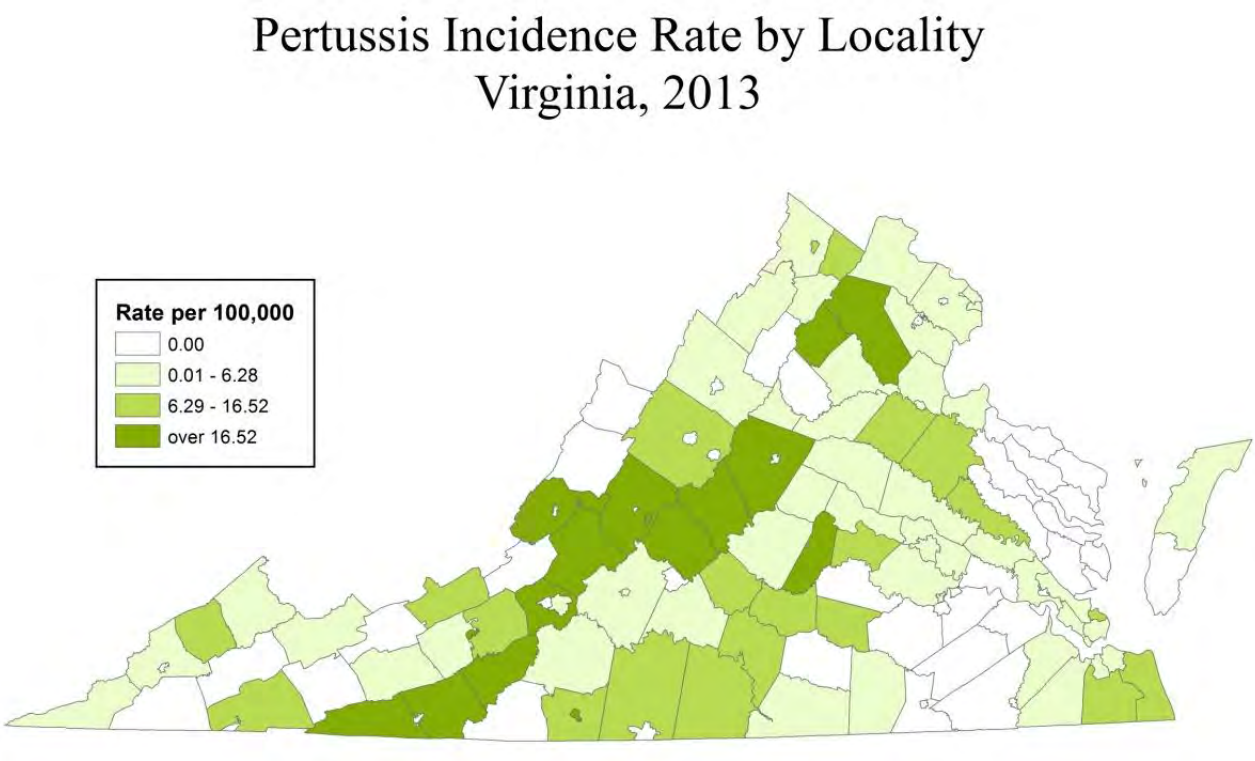
Several factors may help explain this sustained recent increase. These include increased awareness of the disease, improved diagnostic tests and their wider availability, better reporting, increased circulation of the bacteria and waning immunity in all age groups. It is also becoming apparent that the acellular pertussis vaccine currently used in the United States may not protect for as long as the

whole cell vaccine that was used earlier. As discussed below, the highest incidence rates, nationally and in Virginia, are in children (i.e., born after 1996) who received only acellular vaccine.



In Virginia, pertussis cases were reported from every age group. However, the less than one year age group had a substantially higher incidence rate than any of the others, with 57.5 cases per 100,000 population (Figure 66). The next highest incidence rates were observed in the 1-9 and 10-19 year age groups, with 10.0 and 12.5 cases per 100,000, respectively. Forty-four percent of cases were missing information on race. Among cases with race reported, incidence in the white population was 2.5 times the rate in the black population (3.5 and 1.4 per 100,000, respectively), and seven times the rate in the "other" race population (0.5 per 100,000). Females had a higher incidence rate than males (5.9 and 4.2 per 100,000, respectively).

Among regions, the southwest region had the highest number of cases and incidence (112 cases, 8.3 per 100,000). Rates in other regions ranged from 8.1 per 100,000 in the northwest region to 3.0 per 100,000 in the central region. (See the map below for more detailed information.) While cases occurred throughout the year, the largest proportion (28%) had onset in the fourth quarter of the year. Ten pertussis outbreaks were reported in 2013. Nearly all of the outbreaks (90%) were linked to school settings. The largest outbreak involved 13 cases from the southwest region. No deaths due to pertussis were reported in 2013.



Plague

Agent: *Yersinia pestis* (bacteria)
Mode of Transmission: Transmitted to humans through the bite of infected fleas or through handling tissue or body fluids of a plague-infected animal. If the disease attacks the lungs, it may be spread from person to person by respiratory droplets released when coughing.
Signs/Symptoms: Fever, chills, nausea, headache and body aches. Specific types of plague also lead to other symptoms, such as swollen lymph nodes ("buboes"), bloodstream infections, and pneumonia.
Prevention: In areas where plague occurs, travelers should avoid contact with rodents and fleas and avoid handling stray animals. Persons with plague that results in pneumonia should be isolated until 48 hours after antibiotics have been started.
Other Important Information: Fewer than 20 people in the United States are diagnosed with plague every year. Human plague infections continue to occur in the western United States. *Y. pestis* is considered to be one of the agents that could be used for bioterrorism because the bacteria can be spread from person to person and would cause increased illness and death in the population if it were used as a weapon.

No cases of plague have been reported in Virginia since the nineteenth century.

Poliovirus Infection, Including Poliomyelitis

Agent: Poliovirus
Mode of Transmission: Person-to-person transmission through ingestion of contaminated food or direct contact with fecal material from infected people.
Signs/Symptoms: Up to 90% of all polio infections are asymptomatic. Ten percent will develop into a non-specific syndrome with fever, malaise, headache, nausea, and vomiting. Flaccid paralysis occurs in less than 1% of poliovirus infections.
Prevention: Vaccine should be administered beginning at 2 months of age. Four doses of trivalent, inactivated poliovirus vaccine (IPV) are recommended with the last dose administered prior to kindergarten entry and after the fourth birthday.
Other Important Information: Polio eradication programs have led to the elimination of the disease in four of the six World Health Organization (WHO) regions and 80% of the world's people now live in polio-free areas. Polio incidence has dropped more than 99 percent since the launch of global polio eradication efforts in 1988. Poliovirus transmission has never been interrupted in only three countries, Afghanistan, Nigeria, and Pakistan. Until poliovirus transmission is interrupted in these endemic countries, all countries remain at risk of importation of polio, especially in the "wild poliovirus importation belt" stretching from west Africa to central Africa and the Horn of Africa. According to WHO, there were 416 cases of polio worldwide in 2013, up from 223 reported cases in 2012. This resurgence can be attributed to import cases reported in Cameroon, Somalia, Syria, Ethiopia, and Kenya. Somalia reported the most cases in 2013 (183) followed by Pakistan and Nigeria. For the second year in a row, India did not report any cases of polio. In 2011, Virginia's reporting requirements were changed to require reporting of any poliovirus infection, not only poliomyelitis.

No poliovirus infections were reported in Virginia in 2013. The last reported case of poliomyelitis in Virginia occurred in 1978.

Psittacosis

Agent: *Chlamydophila psittaci* (bacteria)
Mode of Transmission: Transmission usually occurs when a person inhales organisms that have been aerosolized from dried feces or respiratory tract secretions of infected birds. Other means of exposure include mouth-to-beak contact and handling of feathers or tissues from infected birds.
Signs/Symptoms: Most commonly fever, headache, weakness, loss of appetite, muscle aches, chills, sore throat, and cough. Symptoms can present as a mild flu-like illness or can be very severe, especially in older persons.
Prevention: Preventive measures include proper design and management of facilities that raise and sell birds and use of protective clothing (e.g., wearing of masks or respirators and gloves) by those working with birds. Bird cages should be cleaned regularly with disinfectants and the contents of the cage should be disposed of properly. People who work with birds or have birds as companion animals who experience symptoms compatible with psittacosis should bring this potential exposure to their healthcare providers' attention.
Other Important Information: Birds may or may not show signs of illness when infected. Chlamydial organisms have been isolated from over 460 bird species, but are most commonly identified in psittacine (parrot-type) birds, especially cockatiels and budgerigars (also called parakeets or budgies). Among caged, nonpsittacine birds, infection with *C. psittaci* occurs most frequently in pigeons and doves. People who raise, sell or keep birds should consult with a licensed veterinarian about protocols and best practices for preventing and treating avian psittacosis.

No cases of psittacosis were reported in Virginia during 2013. The most recent case was reported in 2003 and before that, one case was reported in 1998.

Q Fever

Agent: *Coxiella burnetii* (bacteria)
Mode of Transmission: Inhalation of air contaminated with *Coxiella burnetii*. Sources of this organism in the environment may include dried placental material, birth fluids, or excreta of infected animals. People may also come in contact with this organism via direct exposure to infected animals or tissues, or exposure to contaminated material, such as wool, straw, fertilizer, or laundry. Person-to-person transmission is rare.
Signs/Symptoms: While approximately 50% of infections are asymptomatic, symptomatic Q fever may be acute or chronic. Acute Q fever is characterized by high fever, severe headache, fatigue, chills and muscles aches. Serious illness can progress to pneumonia or inflammation of the heart and liver. Children with Q fever are less likely than adults to have symptoms, and might have a milder illness. When symptomatic, children are more likely to manifest gastrointestinal symptoms of illness and develop a skin rash. Chronic Q fever is a severe disease developing in less than 5% of acutely-infected patients, and is rarely reported in children. Endocarditis is the major form of chronic disease, comprising 60-70% of all reported cases. It may present within 6 weeks after an acute infection, or may manifest years later. Chronic disease can occur after symptomatic or asymptomatic infections. The three groups at highest risk for developing chronic Q fever are pregnant women, immunocompromised persons and patients with a pre-existing heart valve defect.
Prevention: Preventive measures include appropriate disposal of potentially infectious tissues and proper hygiene when handling animal birth material.
Other Important Information: Although infection has been confirmed in many species, cattle, sheep and goats are the main natural reservoirs for *C. burnetii*. The infectious form of these bacteria is highly resistant to heat, desiccation, and disinfectant substances, and can persist in the environment for long periods of time. Windborne particles containing infectious organisms can travel a half-mile or more, which may contribute to cases with no known animal contact. From 2000-2010, information associated with Q fever cases reported to the CDC indicated that 60% of patients reported no animal contact. This bacterium is classified by the CDC as a potential bioterrorism agent because it could easily be disseminated and result in a moderate amount of illness.

Three cases of Q fever, one chronic and two acute, were reported in Virginia in 2013, which is similar to the five-year average of 2.4 cases per year. No cases of Q fever were reported in 2012 in Virginia. All three cases occurred in adult males, one each from the northwest, northern and southwest regions. The chronic case had a history of valvular heart disease. A specific risk factor could not be identified for either of the two remaining cases. However, one case-patient did have a history of travel to the Netherlands, which reported a large outbreak of Q fever from 2007-2010 involving over 4,000 human cases.

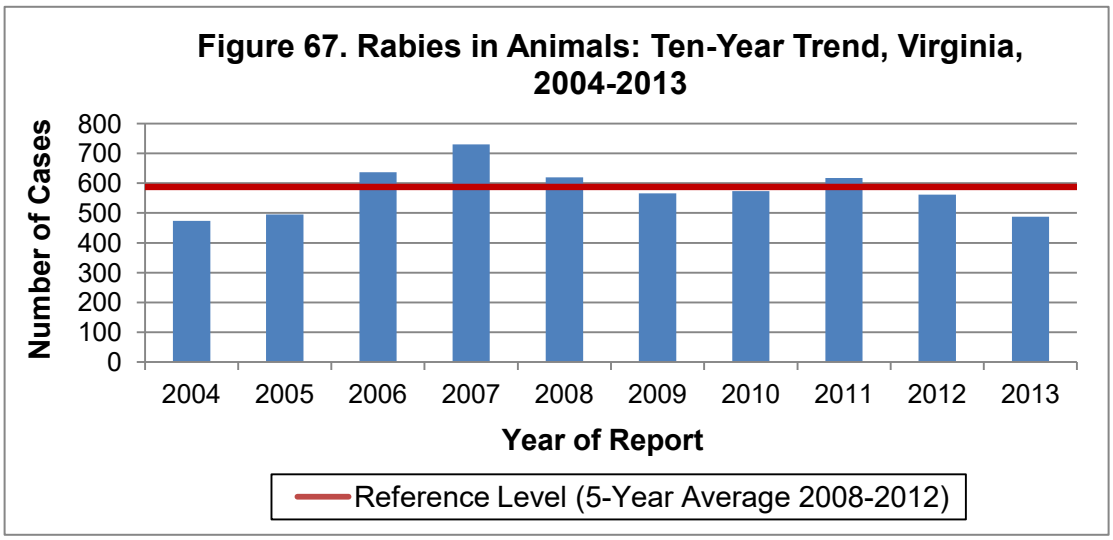
Rabies

Agent: Rabies virus, a rhabdovirus of the genus Lyssavirus
Mode of Transmission: Most commonly transmitted through the bite of an infected animal, but may be transmitted through any method by which virus-infected saliva or central nervous system tissue enters the body.
Signs/Symptoms: Vary widely, but in people, symptoms often include an initial headache, fever and apprehension which progresses to paralysis, spasms of the muscles used for swallowing, delirium and convulsions. Once symptoms appear, rabies is almost invariably fatal.
Prevention: Important prevention methods include vaccinating cats, dogs, and ferrets; using animal control to remove stray animals; and avoiding handling wildlife. A series of vaccines is recommended for people whose occupations increase their likelihood of being exposed to rabies (e.g., veterinarians and laboratorians working with rabies virus) and a vaccine series is also available for people who have been exposed.
Other Important Information: The main reservoir of rabies in the United States is wildlife. In most other countries, the main reservoir is dogs. Not everyone who meets the health department's definition of possible exposure to rabies is required to undergo the rabies vaccination series, also known as post-exposure prophylaxis (PEP). A person may receive PEP if he is considered exposed to rabies and the animal associated with the exposure is either not available or tests positive for rabies.

Human

No human rabies cases were reported in Virginia in 2013. The last case of human rabies in Virginia occurred in 2009 in an adult male who was infected with the Indian canine variant of the rabies virus and was thought to have been exposed during an encounter with a dog while traveling in India. The patient died as a result of this infection.

In 2013, 1,483 people were reported as having received rabies post-exposure prophylaxis in Virginia. This represents a statewide rate of 18.1 per 100,000 people receiving PEP and is a small increase from the previous year when 1,465 persons were reported as having received PEP. While Fairfax health district had the highest number, with 236 people receiving PEP, the highest rate was reported from the Eastern Shore health district, where treatment of 27 people resulted in a rate of 59.3 per 100,000. Rates in the remaining districts ranged from 3.4 per 100,000 (Chickahominy health district, 5 people) to 38.0 per 100,000 (Thomas Jefferson health district, 91 people). The number of people receiving PEP by region ranged from 171 (9.3 per 100,000) in the eastern region to 464 (19.8 per 100,000) in the northern region. Health districts that recorded exposures by species reported that among those receiving PEP, slightly more than 33% of people received PEP due to exposure to a wildlife species, about 33% received PEP in response to an exposure to a dog, and about 25% received PEP in response to a cat exposure. Only eight people received PEP due to livestock exposure. Most potential human exposures to rabies reported to the health department each year are associated with dogs and cats.



Animal

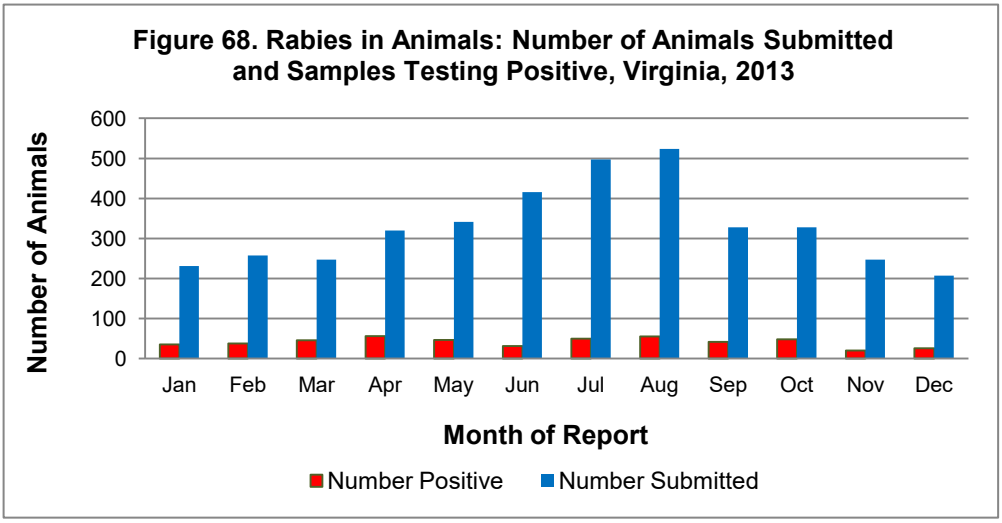
In 2013, health districts investigated over 18,000 incidents where either an animal potentially exposed a person to rabies or the animal itself was potentially exposed to rabies. Over half of these incidents involved dogs. For all the incidents investigated, only 3,943 animals were submitted for rabies testing, and of these animals, 488 (12%) were laboratory confirmed as positive for rabies. This is slightly below the range of 13-16% of animals testing positive that has been observed over the last 10 years. The 488 animals testing positive for rabies in 2013 was a 15% decrease from the 562 that tested positive in 2012 (Figure 67). The largest number of laboratory-confirmed rabid animals was reported from the northwest region (130 animals, 27%), followed by the southwest region (112 animals, 23%). The remaining regions had 76 to 88 laboratory-confirmed rabid animals. By district, the largest number of rabid animals was from the Fairfax health district (47 animals, 10%), followed by the Lord Fairfax health district (37 animals, 8%) and Rappahannock/Rapidan health district (32 animals, 7%). Cats remain the domestic animal most commonly diagnosed with rabies, and raccoons remain the most common wild animal to test positive; these trends have been consistent for over 10 years.

Among all species tested for rabies, cats were the most commonly tested animal, with 968 cats tested, but only 4% were positive (Table 11). Bats were the most commonly tested wildlife species, with 821 specimens submitted, but only 2% were positive. Skunks had the overall highest percentage of positive test results (56%), followed by bobcats (50%), and foxes (42%). Of the 488 animals positive for rabies in Virginia in 2013, raccoons accounted for over half (51%) of all positive results, followed by skunks (24%), and foxes (11%). Cattle account for the largest proportion (11%) of livestock testing positive for rabies. All small rodents submitted for testing were negative.

Table 11. Animals Testing Positive for Rabies by Species, Virginia, 2013

Animal Species	Number of Animals Tested	Positive	
		Number	Percent
Alpaca	1	0	0%
Bat	821	16	2%
Bear	1	0	0%
Beaver	5	0	0%
Bobcat	2	1	50%
Camel	1	0	0%
Cat	968	37	4%
Chipmunk	6	0	0%
Cow	81	9	11%
Coyote	6	0	0%
Deer	5	0	0%
Dog	582	1	0%
Ferret	1	0	0%
Fox	130	55	42%
Gazelle	1	0	0%
Goat	38	1	3%
Groundhog	129	2	2%
Hamster	1	0	0%
Horse	28	0	0%
Kinkajou	1	0	0%
Llama	4	0	0%
Mole	1	0	0%
Mouse	10	0	0%
Muskrat	4	0	0%
New Kent	1	0	0%
Opossum	170	0	0%
Pig	1	0	0%
Rabbit	12	0	0%
Raccoon	600	249	42%
Rat	3	0	0%
Rodent	10	0	0%
Sheep	16	1	6%
Skunk	206	115	56%
Small Rodent	5	0	0%
Squirrel	88	0	0%
Vole	2	0	0%
Wolf Hybrid	1	0	0%
Zebu	1	0	0%
Total for 2013	3943	488	12%

The largest proportion of animals were submitted for rabies testing during the late spring and summer months, while the fewest animals were submitted for testing during the winter months (Figure 68). This seasonal pattern is likely a result of increased domestic animal and human interaction with wildlife during warmer months. No seasonal pattern was observed in the number of animals testing positive for rabies, but April had the highest number of any month, with 56 animals testing positive.



Rubella

Agent: Rubella virus
Mode of Transmission: Person-to-person transmission through contact with nose and throat secretions from infected people. The virus may also be transmitted from mother to child during pregnancy, causing congenital rubella syndrome (CRS) in the infant.
Signs/Symptoms: Fever and rash, with frequent occurrences of joint pain, arthritis, and swelling of the lymph nodes.
Prevention: Vaccination, preferably administered as MMR vaccine, should begin at 12 months of age.
Other Important Information: In 2004, rubella was declared to be no longer endemic in the United States, although a small number of cases continue to be imported.

No cases of rubella were reported in Virginia during 2013. The most recent Virginia cases occurred in 2010 in two unvaccinated individuals. Prior to these cases, the last reported case occurred in 2001. Nine cases of rubella were reported in the United States in 2013; this is consistent with the previous five-year U.S. average of 8 cases per year.

Although rubella has been eliminated in the United States, it continues to be endemic in many parts of the world. An estimated 110,000 babies are born with CRS every year. As Virginia is host to large numbers of international visitors and thousands of residents returning from international travel, it is important to maintain high vaccination rates and ensure vaccination for those traveling abroad.

Salmonellosis

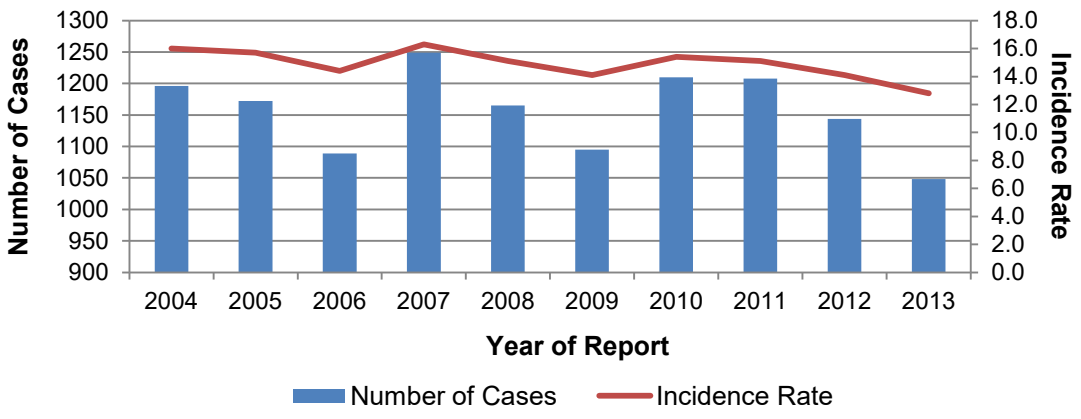
Agent: *Salmonella* (bacteria)
Mode of Transmission: Ingestion of food or water contaminated with animal or human feces. Infected persons can spread the bacteria to other persons by not washing their hands properly after going to the bathroom and then handling food that others will eat. Infection can also occur after eating, smoking, or touching one's mouth if hands are contaminated with the bacteria and not washed well. People can also be infected with *Salmonella* by the feces of some pets, including reptiles and young birds, if hands are not washed well after contact with sick or seemingly healthy infected animals.
Signs/Symptoms: Sudden onset of headache, fever, abdominal pain, diarrhea and sometimes vomiting. Dehydration, especially in older adults and young children, can be a severe complication.
Prevention: Preventive measures should include following proper sanitation methods for food preparation and water supplies, including preventing cross-contamination of food preparation surfaces; maintaining sanitary sewage disposal; excluding infected people from handling food or providing healthcare; and prohibiting the sale of small turtles and restricting the sale of other reptiles for pets. Proper hand hygiene should be practiced, including washing hands after toileting or diapering, before and after handling food, and after handling animals or their feces. Eggs and other animal food products should be cooked thoroughly.
Other Important Information: With approximately 42,000 salmonellosis cases reported each year in the United States, *Salmonella* is one of the leading pathogens that cause foodborne illnesses and result in hospital admissions. The incidence rate is highest among infants and young children. Mortality rates are higher in infants, older adults and people with impaired immune systems.
Special Note about Salmonellosis: While more than 2,500 serotypes of *Salmonella* can cause human illness, two specific *Salmonella* serotypes (*S*. Typhi and *S*. Paratyphi*) can lead to typhoidal illness (i.e., typhoid fever and paratyphoid fever, respectively). Typhoidal illness is found only in humans and often results in more serious infections than those seen in other *Salmonella* serotypes; up to 10% of people who are untreated for typhoidal illness may die. Cases of typhoid fever and paratyphoid fever are usually associated with foreign travel and are alike in regard to clinical features and measures necessary to control the spread of infection. However, despite their similarities, paratyphoid fever tends to be milder than typhoid fever, with a lower fatality rate. Due to its severity, typhoid fever is reported as a separate condition in Virginia (see the Typhoid Fever section of this report for more information), while cases of paratyphoid fever are included in the general salmonellosis report.

* Paratyphoid fever can be caused by any of three separate strains of *S.* Paratyphi*: S.* Paratyphi A, *S*. schottmuelleri (also called *S*. Paratyphi B), or *S*. hirschfeldii (also called *S*. Paratyphi C). A separate strain of *S.* Paratyphi B (i.e., *S.* Paratyphi B var. L[+] tartrate [+]) causes illness that resembles non-typhoidal salmonellosis; these cases are treated as general salmonellosis and are not considered to be paratyphoid fever.

Salmonellosis: 2013 Data Summary	
Number of Cases:	1,048
5-Year Average Number of Cases:	1,164.4
% Change from 5-Year Average:	-10%
Incidence Rate per 100,000:	12.8

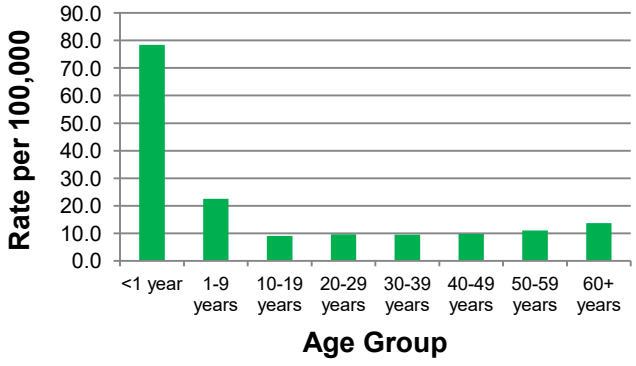
The 1,048 cases of salmonellosis reported in Virginia in 2013 is lower than the 1,144 cases reported in 2012, and represents a 10% decrease from the five-year average of 1,164.4 cases per year (Figure 69).

Figure 69. Salmonellosis: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013



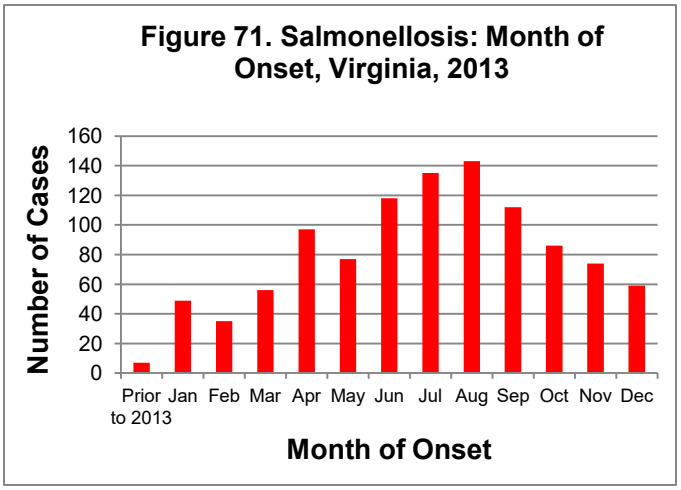
During 2013, infants had a higher incidence rate for *Salmonella* infection than any other age group (78.4 cases per 100,000). This was followed by children aged 1-9 years with a rate of 22.5 per 100,000 (Figure 70). Incidence rates in the other age groups ranged from 9.1 to 13.7 per 100,000. Race information was missing for 41% of all cases; among those with race reported, incidence was higher in the "other" race population (8.8 per 100,000) than the white and black populations (7.9 and 6.3 per 100,000, respectively). Females were infected with *Salmonella* more frequently than males (13.6 and 11.8 per 100,000, respectively).

Figure 70. Salmonellosis: Rate by Age Group, Virginia, 2013



As can be seen in the map below, cases of salmonellosis were reported from almost every locality in the state. The highest incidence rate was seen in the northwest health planning region (15.3 per 100,000) and the lowest rate was seen in the southwest region (10.6 per 100,000).

Salmonella infections peaked during the warmer months, with 48% of cases occurring between June and September (Figure 71). Three deaths occurred in persons infected with *Salmonella* during 2013. They occurred in a child <1 year of age, a male in the 50-59 year age group, and a male in the 60 year and older age group.



Ten confirmed salmonellosis outbreaks occurred during 2013, six of which were foodborne outbreaks. The number of Virginia residents affected in each foodborne outbreak ranged from 1 to 18. Six of the *Salmonella* outbreaks involving Virginia residents in 2013 were multi-state outbreaks. Three outbreaks were related to contact with live poultry (e.g., chicks, ducklings, and partridges), with three to seven Virginia cases per outbreak. One other salmonellosis outbreak occurred among four members of an extended family; the method of transmission for this outbreak could not be identified. See the Outbreaks section of this report for more information.

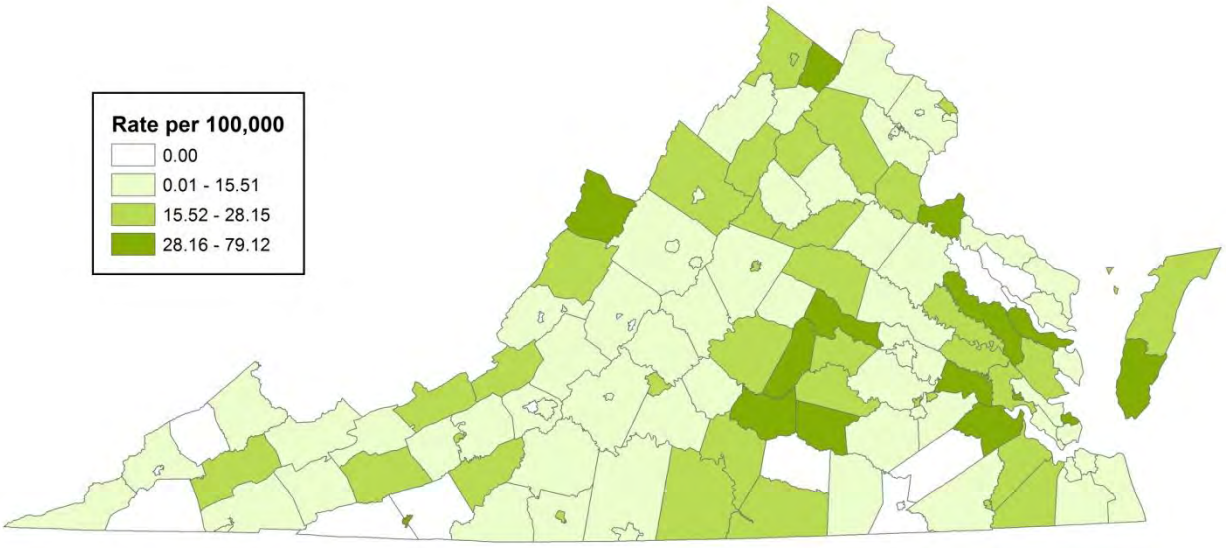
Illnesses identified during the 2013 salmonellosis outbreaks were attributed to several *Salmonella* serotypes; during some outbreaks, more than one *Salmonella* serotype was detected. The serotypes involved in the outbreaks included Braenderup, Heidelberg, Infantis, Javiana, Mbandaka, Newport, Saintpaul, Thompson, and Typhimurium. For all salmonellosis infections in 2013, including sporadic cases among Virginia residents, the most commonly detected serotypes were *Salmonella* ser. Typhimurium and *Salmonella* ser. Enteritidis (Table 12).

Table 12. Top Ten *Salmonella* Serotypes Reported to the CDC PulseNet System by the Division of Consolidated Laboratory Services, Virginia, 2013

Rank	Serotype Causing Infection	Number		Rank	Serotype Causing Infection	Number
1	*S.* ser Typhimurium	196		6	*S.* ser Bareilly	34
2	*S.* ser Enteritidis	192		7	*S.* ser Saintpaul	33
3	*S.* ser Newport	109		8	*S.* ser Braenderup	31
4	*S.* ser Javiana	62		9	*S.* ser Thompson	23
5	*S.* ser I 4,[5],12:i:-	57		10	*S.* ser Infantis	20

Four cases of paratyphoid fever (three *S.* Paratyphi A and one *S.* Paratyphi B) were reported in Virginia during 2013. This is similar to the three cases identified in 2012 but a decrease from the 16 cases identified in 2011. Three of the affected individuals travelled to India in the weeks prior to illness onsets; the fourth case-patient reported no history of travel.

Salmonellosis Incidence Rate by Locality
Virginia, 2013



Severe Acute Respiratory Syndrome (SARS)

Agent: Severe acute respiratory syndrome-associated coronavirus (SARS-CoV)
Mode of Transmission: Most likely transmitted from person to person through respiratory droplets released during coughing and sneezing; transmission can also occur by touching a contaminated surface or object and then touching the mouth, nose, or eyes. It is possible that SARS-CoV might be spread more broadly through the air or by other routes that are not yet known.
Signs/Symptoms: Fever, chills, headache, body aches, followed by respiratory symptoms, such as cough, shortness of breath, or difficulty breathing. Diarrhea may occur.
Prevention: Factors that may reduce transmission include frequent hand washing, avoidance of touching the eyes, nose, and mouth with contaminated hands, and covering the nose and mouth with a tissue when coughing or sneezing.
Other Important Information: Major outbreaks of SARS occurred between November 2002 and July 2003 in Canada, China, Singapore and Vietnam. In the United States, eight people had laboratory evidence of SARS-CoV infection. SARS is thought to have originated in China.

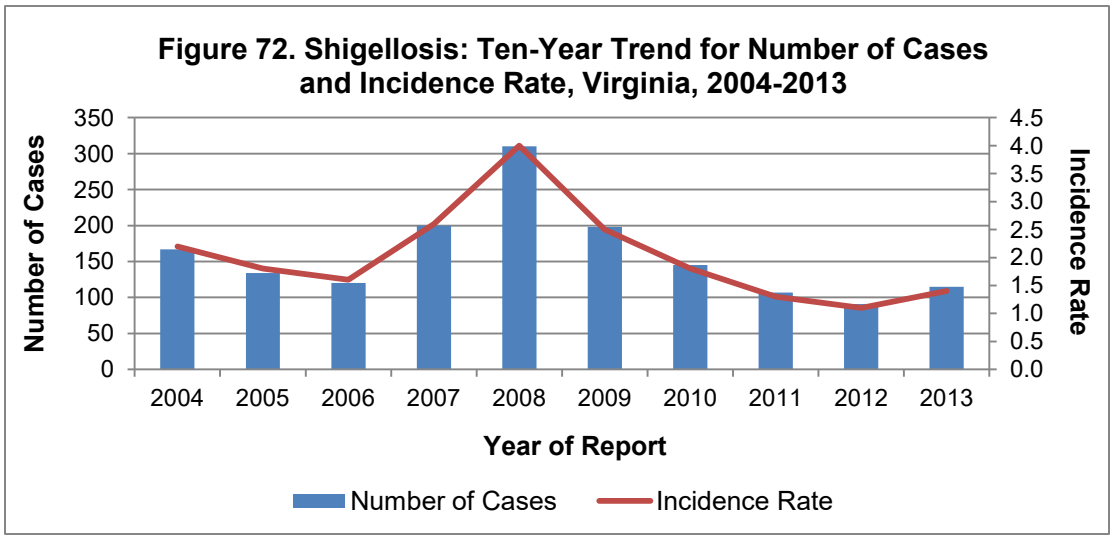
No cases of SARS were reported in Virginia during 2013. Previously, one case of SARS was confirmed in Virginia in 2003 during the international outbreaks in 2002 and 2003. The case occurred in a female aged 50 years or older who had traveled to Taiwan, Malaysia and Singapore in the four weeks before she developed symptoms. Her exposure most likely occurred in a Singapore hospital where she had direct contact with patients being treated for SARS. The last reported case detected through active global surveillance occurred in China in April 2004. Since then, there has been no evidence of SARS circulating in the human population.

Shigellosis

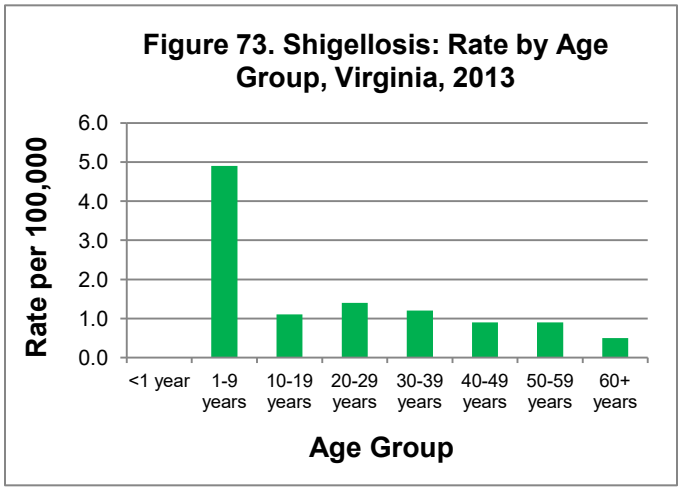
Agent: *Shigella* (bacteria)
Mode of Transmission: Primarily person-to-person transmission when the bacteria are passed from the stool of an infected person to another person through direct contact. Additionally, contact with a contaminated inanimate object, ingestion of contaminated food or water, and certain types of sexual contact may spread the disease.
Signs/Symptoms: Diarrhea ranging from watery and loose to mucoid with or without blood; fever; and sometimes nausea, vomiting, abdominal cramps and painful straining while defecating. Mild and asymptomatic infections can also occur.
Prevention: Proper hand hygiene is essential to limit transmission. Additional control measures include improved sanitation, chlorination of drinking water, proper cooking and storage of food, the exclusion of infected persons as food handlers, and measures to decrease contamination of food by houseflies.
Other Important Information: *Shigella sonnei*, (also known as "Group D" *Shigella)*, accounts for over two-thirds of shigellosis in the United States, while *Shigella flexneri* (also known as "group B" *Shigella)* accounts for almost all the rest.

Shigellosis: 2013 Data Summary	
Number of Cases:	115
5-Year Average Number of Cases:	170.2
% Change from 5-Year Average:	-32%
Incidence Rate per 100,000:	1.4

During 2013, 115 cases of shigellosis were reported in Virginia. This represents a 26% increase from the 91 cases reported in 2012, and a 32% decrease from the five-year average of 170.2 cases per year (Figure 72).



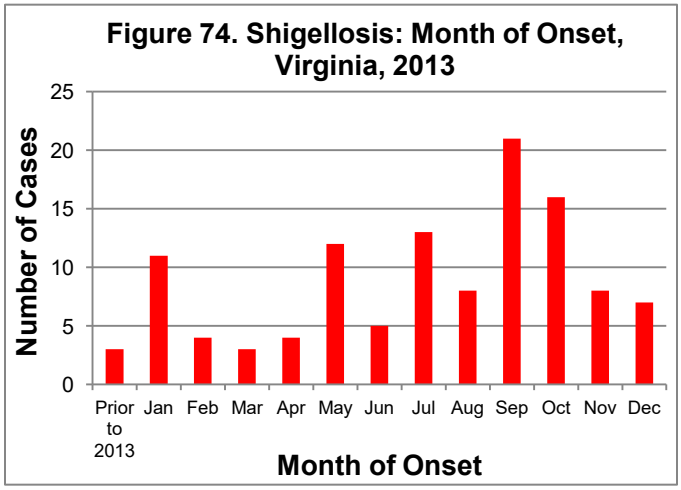
Historically in Virginia, the 1-9 year age group has had the highest number of cases and the highest incidence rate. This remained true in 2013, with 45 cases and an incidence rate of 4.9 per 100,000 (Figure 73). The high rate in this age group is expected because toddlers, age 2 to 4 years, are more likely to be exposed to shigellosis in child care and home settings where other young children may not routinely wash their hands after using the toilet. As in 2012, no cases were reported in children less than one year of age. Incidence among the other age groups ranged from 0.5 to 1.4 per 100,000, similar to what was seen in 2012.



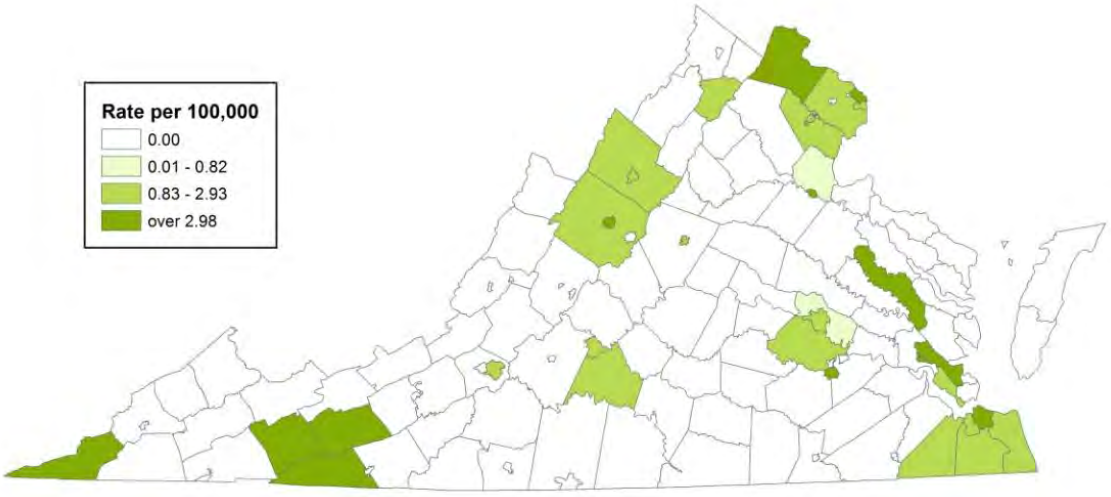
Race data were missing for 57% of reported shigellosis cases. Among those with race information, incidence was highest in the black population (0.9 per 100,000), followed closely by the "other" and white populations (0.7 and 0.5 per 100,000, respectively). The incidence of shigellosis was similar among males and females (1.5 and 1.3 per 100,000, respectively).

Geographically, the northern region had the highest incidence rate (2.6 per 100,000), followed by the eastern region (1.6 per 100,000). The northwest, southwest, and central regions had incidence rates ranging from 0.6 to 0.7 per 100,000. Incidence by locality varied greatly across the state, with most cities and counties reporting no cases (see map below)

Onset dates typically peak during summer and fall months. In 2013, there were additional peaks in January and May (Figure 74). A cluster of five cases of shigellosis within a family contributed to the May peak. No reported outbreaks or deaths were attributed to *Shigella* infection in 2013.



Shigellosis Incidence Rate by Locality
Virginia, 2013



Smallpox

Agent: Variola virus
Mode of Transmission: Person-to-person transmission through contact with respiratory droplets, airborne particles (rare), and skin lesions of an infected person. Smallpox can also be transmitted through contact with contaminated clothing or bedding.
Signs/Symptoms: Sudden onset of fever, headache, weakness and exhaustion followed by development of a rash that first appears on the face and extremities.
Prevention: Preventive measures include vaccination with the genetically distinct vaccinia virus. Routine vaccination of the American public stopped in 1972. At this time, vaccine is only available to members of emergency response teams and some military personnel.
Other Important Information: The last case of smallpox in the United States was in 1949; the last naturally occurring case in the world was in Somalia in 1977. Smallpox is considered to be one of the agents that could be used for bioterrorism because the disease can be spread from person to person and would cause increased illness and death in the population if used as a weapon.

The last case of smallpox in Virginia occurred in 1944.

Spotted Fever Rickettsiosis, including Rocky Mountain Spotted Fever

Agent: Tick-borne species of *Rickettsia* (bacteria). Spotted fever rickettsiosis may be caused by several different tick-borne disease agents, including *Rickettsia rickettsii*, the cause of Rocky Mountain spotted fever (RMSF), and *Rickettsia parkeri*, the cause of *Tidewater* spotted fever. Cases may also be caused by exposure to other tick-borne species of *Rickettsia.*

Mode of Transmission: Transmitted to humans by the bite of an infected tick. Ticks must be attached for at least 10 to 20 hours to transmit the bacterium.

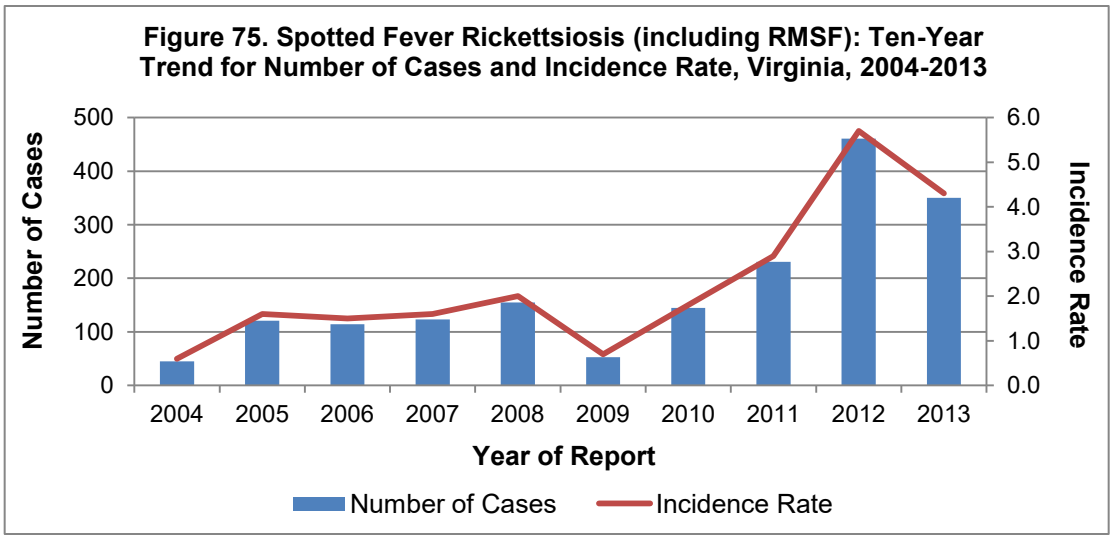
Signs/Symptoms: Persons with spotted fever rickettsiosis may have a sudden onset of fever, severe headache, muscle pain, nausea and vomiting and a rash. In the case of RMSF, a rash may develop three to five days after onset of illness. This rash starts on the wrists and ankles, and spreads to the rest of the body, and is seen in about 90% of RMSF cases.

Prevention: Tick bites can be minimized by avoiding likely tick-prone habitats such as open fields with tall brush and weeds, old fields with early succession forest growth, or brushy vegetation along trails and in forests. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus as active ingredients are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and shirts tucked into pants. Permethrin-based repellants should be applied to clothing, socks and shoes. After visiting tick habitats, a person should thoroughly check all body surfaces for ticks and, if found, attached ticks should be removed as soon as possible.

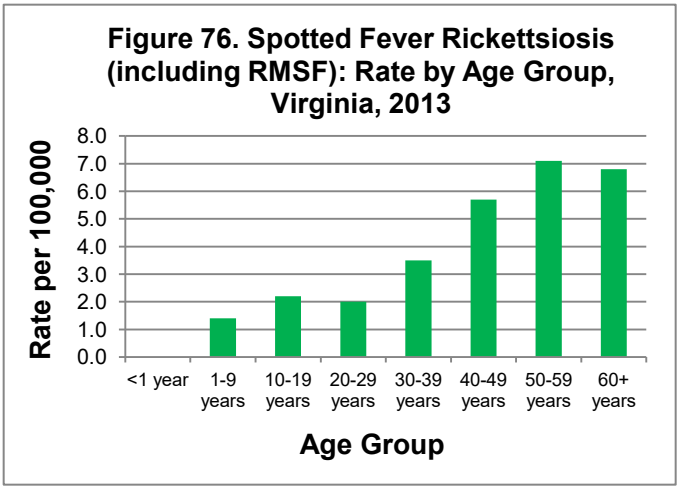
Other Important Information: Although the severity of infections attributable to spotted fever rickettsiosis varies greatly depending on the causative agent, all suspect patients should be treated as if they have RMSF. RMSF can be a serious illness, particularly in untreated patients and patients treated late in the course of illness. About one-third of all untreated RMSF cases are fatal and up to 3% of patients die because treatment was provided too late in the course of illness. If tick exposure is noted or RMSF is suspected, treatment should be started based on suspicion of infection and not delayed pending the outcome of diagnostic tests. While case numbers have increased substantially in recent years, case-fatality rates have declined to less than 1% of reported cases. One possible explanation is prompt disease recognition and increased availability and appropriate use of effective antibiotics. Another explanation is the increasing prevalence of other spotted fever group *Rickettsiae* (SFGR) species in Virginia's ticks. These other SFGR species may not cause illness in people, or may cause only a mild illness, but exposure to other SFGR causes cross-reactive positive results on blood tests for RMSF. Therefore, it is possible that many reported RMSF cases in recent years are actually due to exposure to non-pathogenic or mildly pathogenic SFGR, and/or to other Rickettsial illnesses such as ehrlichiosis, which cause symptoms similar to those of RMSF. Lone star ticks are the most common cause of tick bites in Virginia, and tick surveys have shown that the majority of lone star ticks in Virginia carry a non-pathogenic SFGR, as well as several agents of ehrlichiosis, but do not carry RMSF.

Spotted Fever Rickettsiosis: 2013 Data Summary	
Number of Cases:	350
5-Year Average Number of Cases:	209.0
% Change from 5-Year Average:	+67%
Incidence Rate per 100,000:	4.3

In 2013, 350 cases of spotted fever rickettsiosis were reported in Virginia. This represents a 24% decrease from the 461 cases reported in 2012, but is 67% higher than the five-year average of 209.0 cases per year (Figure 75).



In 2013, spotted fever rickettsiosis incidence rates generally increased with age from no cases in the less than 1 year age group to a rate of 7.1 cases per 100,000 in the 50-59 year age group and 6.8 per 100,000 in the 60 year and older age group (Figure 76). Although older national studies showed a higher incidence for RMSF in children under age 10, more recent national data indicate a shift in the age distribution, with the highest rates being among adults aged older than 40 years. This is the general pattern observed in Virginia since 2004, and is consistent with the age distribution of Rickettsial diseases other than RMSF, such as ehrlichiosis or anaplasmosis.



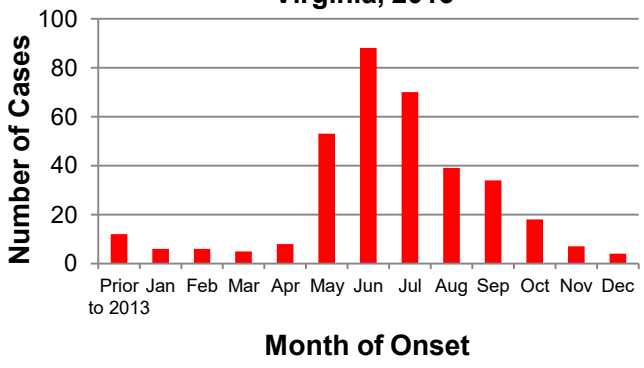
Information on race was missing for 59% of reported cases. Among cases for which race information was reported, the rate for the white population (2.1 cases per 100,000) was more than twice the rate in the black population (1.0 cases per 100,000). The lowest rate was seen in the "other" race population (0.2 per 100,000). The incidence rate among males was higher than the rate among females (5.4 and 3.1 per 100,000, respectively).

The southwest region had the highest incidence rate at 7.6 per 100,000. This was followed by the northwest and central regions at 6.7 and 6.4 cases per 100,000, respectively. Rates in the eastern and northern regions were substantially lower (2.0 and 1.6 per 100,000, respectively).

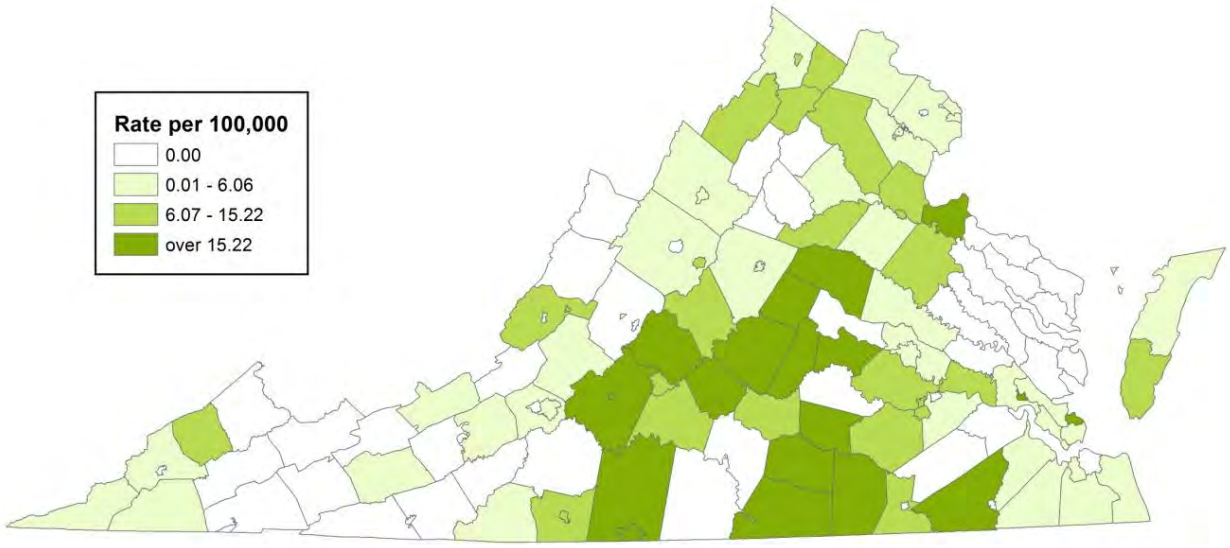
The northwest and central regions have had high rates since 2009, but the rate in the southwest region increased substantially during 2012 and remained high in 2013. Rates by locality can be viewed in the map below.

Spotted fever rickettsiosis displays a distinctly seasonal pattern. For 84% of cases, symptom onset occurred from May through August, with a peak in June (Figure 77). This is consistent with the peak activity periods for the most common human-biting tick species in Virginia. No deaths attributed to spotted fever rickettsiosis occurred among the 350 cases reported in 2013.

Figure 77. Spotted Fever Rickettsiosis (including RMSF): Month of Onset, Virginia, 2013



Spotted Fever Rickettsiosis, including RMSF Incidence Rate by Locality, Virginia, 2013



Staphylococcus aureus Infection, Invasive, Methicillin-Resistant (MRSA)

Agent: *Staphylococcus aureus* (bacteria) that has developed resistance to the class of beta-lactam antibiotics, including penicillin, cloxacillin, oxacillin, nafcillin, and methicillin, as well as cephalosporins and carbapenems.
Mode of Transmission: Person-to-person transmission via direct contact with colonized skin or skin lesions of an infected person, or by indirect contact with contaminated personal items or surfaces. Invasive infections occur when the bacteria penetrate normally sterile sites.
Signs/Symptoms: Invasive infections may affect the blood, bone, lung, and lining of the brain and spinal cord and may cause fever, difficulty breathing, chills, pain and other syndrome-specific signs and symptoms. Non-invasive skin and soft tissue infections commonly cause swelling, tenderness, and redness and can manifest as abscesses, boils, or pustules.
Prevention: In the community, preventive measures include practicing proper hygiene and wound care and cleaning hands regularly and thoroughly with soap and water or alcohol-based hand sanitizer. In healthcare settings, control measures include adhering to appropriate infection prevention practices, including management of catheters or other medical equipment, and practicing prudent use of antibiotics.
Other Important Information: Only invasive MRSA infections are required to be reported in Virginia and only laboratories are required to report these infections. Asymptomatic colonization and infections from non-sterile sites (e.g., skin and soft tissue) are not reportable. Reporting of this condition became effective on October 26, 2007.

Staphylococcus aureus Infection, Invasive, Methicillin-Resistant (MRSA): 2013 Data Summary	
Number of Cases:	1,247
5-Year Average Number of Cases:	1,289.4
% Change from 5-Year Average:	-3%
Incidence Rate per 100,000:	15.2

The 1,247 cases of invasive MRSA infection reported in 2013 is similar to the 1,294 cases reported in 2012, but represents an 18% decrease from the 1,524 cases reported in 2008, the first full reporting year for invasive MRSA infection in Virginia.

In general, with the exception of the less than one year age group and 1-9 year age group, both the number of cases and the incidence rate increased with age in 2013. As in previous years, the 60 year and older age group experienced both the highest number of cases and highest incidence rate (796 cases, 52.2 per 100,000), followed by the 50-59 year age group (200 cases, 17.4 per 100,000) (Figure 78). The less than one year age

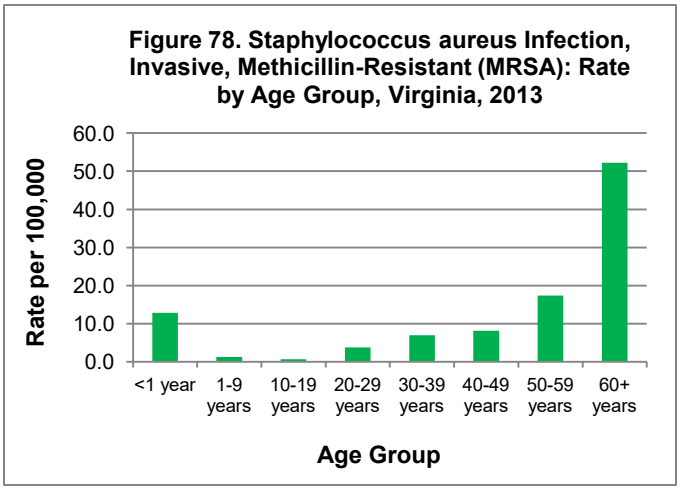
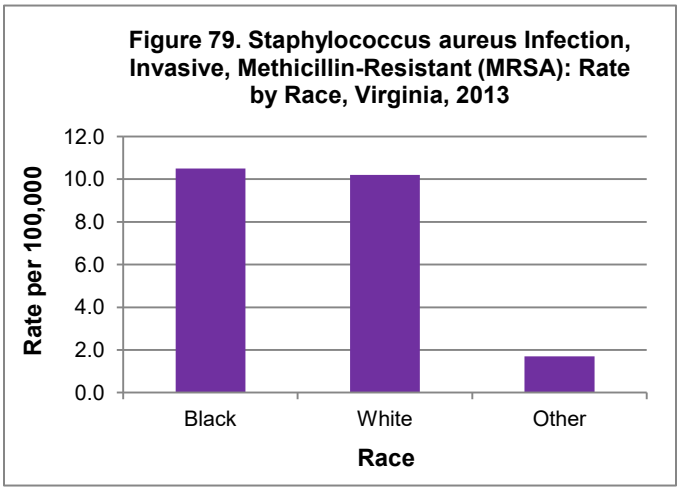


Figure 78. Staphylococcus aureus Infection, Invasive, Methicillin-Resistant (MRSA): Rate by Age Group, Virginia, 2013

group had the third highest incidence rate (13 cases, 12.9 per 100,000), which was a decrease from 2012 (16.8 per 100,000. The 10-19 year age group had the lowest number of cases and lowest incidence rate of all age groups in 2013 (7 cases, 0.7 per 100,000).



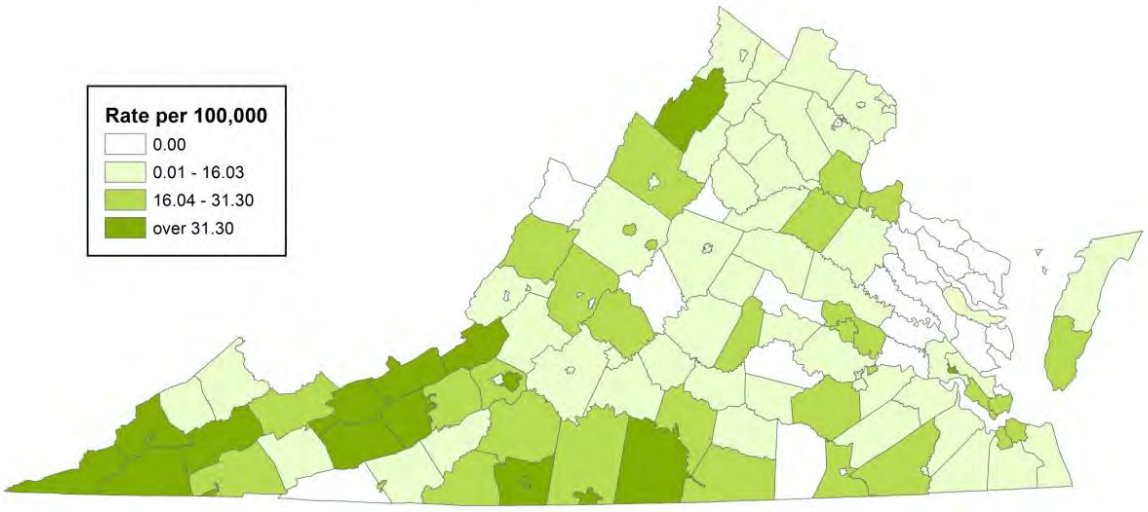
Thirty-six percent of cases were missing race data. Among cases with race information, incidence in the black population (10.5 per 100,000) was similar to the incidence in the white population (10.2 per 100,000) (Figure 79). This is the first time incidence among the black population has not been significantly higher than the white population since Virginia started collecting invasive MRSA surveillance data in 2008. Racial disparities have been noted nationally, with the black population having twice the incidence rate of the white population. It is unclear why Virginia saw little difference in incidence between these two populations in 2013. Possibly, the larger proportion of cases with unknown race data in 2013 could have had an effect on these results. In Virginia, incidence was higher in males than in females (17.4 and 12.8 per 100,000, respectively).

By region, the southwest region had the highest incidence rate (26.9 per 100,000) and the northern region experienced the lowest rate (7.7 per 100,000). Overall, incidence tends to be higher in the western half of the state. Incidence by locality can be viewed in the map below. In general, invasive MRSA infections occurred throughout the year with little seasonal variation.

There were four MRSA outbreaks in 2013, only one of which was due to invasive MRSA. That outbreak occurred in a medical facility in the northern region and involved 11 infants. One of the infants was identified with invasive MRSA infection, and surveillance cultures submitted in response to that finding identified 10 additional colonized infants. The hospital instituted numerous measures to halt the spread of the organism.

Among those with invasive MRSA infections reported in 2013, 3% (35 cases) were reported to have died from these infections. The average age of those who died from their invasive MRSA infection was 69 years, with a range of 32 to 92 years. Among the deaths in 2013, 71% occurred in adults aged 60 years and older. Case-fatality was slightly higher in males than females (3% and 2%, respectively).

Staphylococcus aureus Infection, Invasive (MRSA) Incidence Rate by Locality, Virginia, 2013



Staphylococcus aureus **Infection, Vancomycin-Intermediate (VISA) or Vancomycin-Resistant (VRSA)**

Agent: *Staphylococcus aureus* (bacteria) that has developed intermediate or complete resistance to the antibiotic vancomycin, based on susceptibility testing.
Mode of Transmission: Person-to-person spread through direct contact or through contact with contaminated materials or surfaces.
Signs/Symptoms: Dependent on site of infection (e.g., skin, bone, urinary or respiratory tract). VISA or VRSA infections can cause a range of symptoms including skin infections, abscesses, pneumonia, and infection of the heart valves, bones, or blood. Infection may develop into toxic shock syndrome. Asymptomatic colonization can occur.
Prevention: Preventive measures include appropriate use of antibiotics to treat infections, good hand hygiene, and proper cleaning and disinfecting of contaminated surfaces.

Three cases of VISA infection were reported in Virginia in 2013. Two cases occurred in the 60 year and older age group, and one case was in the less than 1 year age group. All three cases occurred in black males, one each from the northern, northwest, and eastern health planning regions. One case occurred following use of vancomycin and one case resulted in death. These are the seventh, eighth, and ninth cases of VISA ever reported in Virginia, with the prior infections occurring in 2007 (1 case), 2010 (1 case), 2011 (2 cases), and 2012 (2 cases). Of note, six of Virginia's nine VISA cases have occurred in the black population.

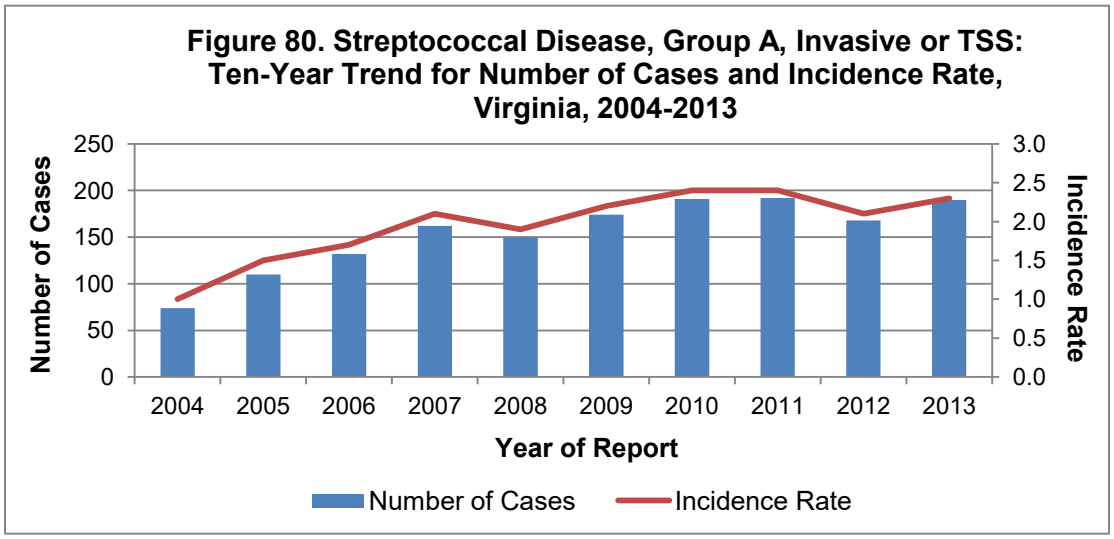
VRSA has never been reported in a Virginia resident.

Streptococcal Disease, Group A (GAS), Invasive or Toxic Shock Syndrome

Agent: *Streptococcus pyogenes* (bacteria)
Mode of Transmission: Person-to-person transmission through respiratory droplets, contact with infected wounds or sores, or (rarely) through indirect contact with objects contaminated with the body fluids of infected persons.
Signs/Symptoms: People may carry group A streptococci in the throat or on the skin and have no symptoms of illness. Most GAS infections are relatively mild, such as "strep throat" or impetigo (a skin infection). Rarely, the bacteria can lead to severe invasive infections of the blood or other internal body fluids if they enter a normally sterile site. Invasive infections often require hospitalization.
Prevention: Preventive measures include prompt identification and treatment of non-invasive cases and temporary exclusion of infected healthcare employees/others from work and other group settings for the first 24 hours of antibiotic therapy. Wounds should be kept clean, and medical care should be sought at the first signs of infection.
Other Important Information: Persons at higher risk for developing invasive GAS infections include older persons, immunocompromised persons, and those with chronic, underlying conditions. The two most severe, but least common, forms of invasive GAS infections are necrotizing fasciitis (NF) and streptococcal toxic shock syndrome (TSS). NF infections present with severe pain and rapid destruction of muscles, fat, and skin tissue. Streptococcal TSS infections are characterized by shock and rapid organ failure.

Streptococcal Disease, Group A, Invasive or TSS: 2013 Data Summary	
Number of Cases:	190
5-Year Average Number of Cases:	175.0
% Change from 5-Year Average:	+9%
Incidence Rate per 100,000:	2.3

During 2013, 190 cases of invasive GAS infection were reported in Virginia. This is a 13% increase from the 168 cases reported in 2012 and similar to the five-year average of 175 cases per year (Figure 80).



The highest number and incidence rate of invasive GAS infections occurred in the 60 year and older age group (88 cases, 5.8 per 100,000). This was followed by the 30-39 and 40-49 year age groups, which had incidence rates of 2.3 and 2.1 per 100,000, respectively. No cases were reported in those less than 1 year of age. The other age groups had rates between 0.5 and 1.8 per 100,000. Race information was missing for 36% of reported cases. Among cases for which race was reported, the incidence rate was higher in the white and black populations (1.6 and 1.5 per 100,000, respectively) than in the "other" population (0.3 per 100,000). Incidence was similar among males and females (2.4 and 2.2 per 100,000, respectively). Geographically, the incidence rate was highest in the northwest and southwest regions (3.2 per 100,000 each). Rates in the other regions ranged from 1.3 to 2.5 per 100,000. Information on incidence rates for individual localities is presented in the map below.

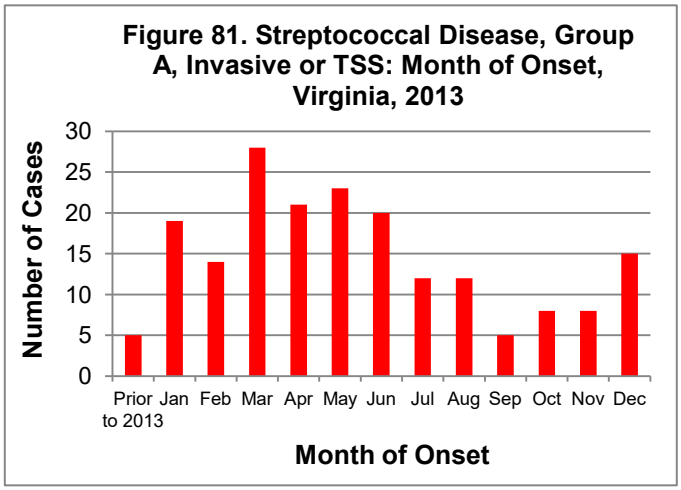
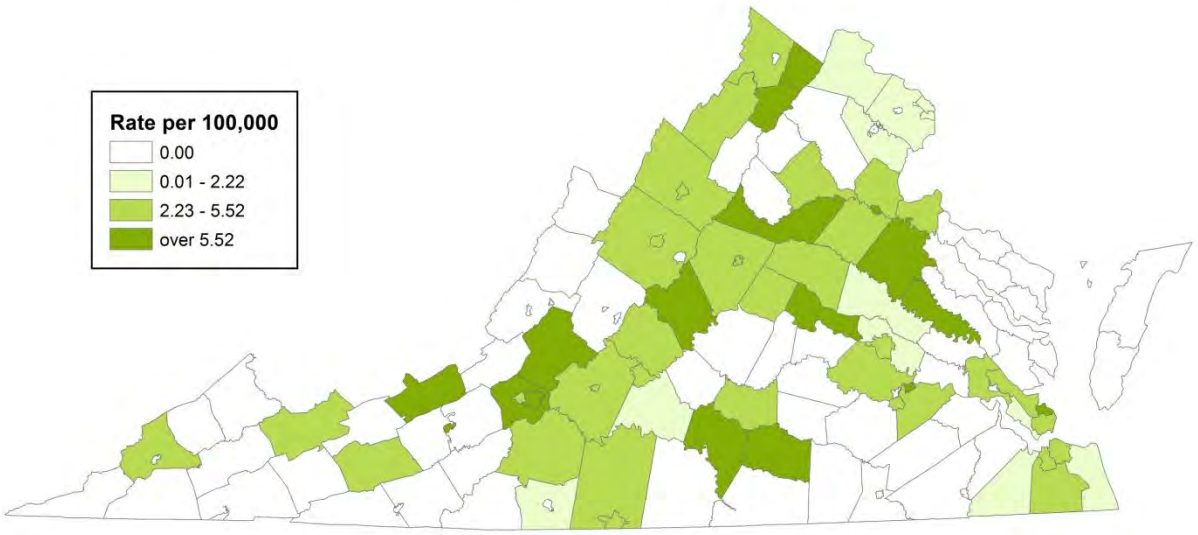


Figure 81. Streptococcal Disease, Group A, Invasive or TSS: Month of Onset, Virginia, 2013

While cases occurred throughout the year, a seasonal trend was observed with 54% of cases occurring during the months of January through May, including a peak of 28 cases in March (Figure 81). This general late-winter to spring pattern is also typically seen with "strep throat", a non-invasive GAS infection. Among the 190 cases reported in 2013, 17 deaths were attributed to invasive GAS infection. Two of the deaths were due to streptococcal toxic shock syndrome. Eleven (65%) of the deaths occurred in individuals aged 60 years and older. Four outbreaks, accounting for 9 cases, were attributed to invasive GAS infection in 2013; two of the outbreaks occurred in nursing homes, one case was associated with an assisted living facility and one was associated with the delivery of medical care services.

Streptococcal Disease, Group A, Invasive or TSS Incidence Rate by Locality, Virginia, 2013



Streptococcus pneumoniae, Invasive, in Children Less than 5 Years of Age

Agent: *Streptococcus pneumoniae* (bacteria)
Mode of Transmission: Person-to-person transmission via respiratory droplets or direct contact with respiratory secretions from persons carrying the bacteria in their upper respiratory tract.
Signs/Symptoms: Invasive pneumococcal disease (IPD) may affect the blood, lung, and lining of the brain and spinal cord and may cause fever, chills, and irritability. Headache, stiff neck, confusion, sleepiness, vomiting, and poor feeding can occur with meningitis.
Prevention: Routine immunization with pneumococcal conjugate vaccine as a 4-dose series is recommended for infants at 2, 4, 6, and 12 to 15 months of age. IPD can be hard to treat because of antibiotic resistance, thus making prevention through vaccination even more important. The 7-valent conjugate vaccine was first licensed in the U.S. in 2000 and a 13-valent vaccine was licensed in 2012. Following the introduction of the 13-valent vaccine, clients that completed the immunization series were recommended to receive a booster dose for protection against the additional strains. Vaccine is also recommended for adults aged 65 years or older and other persons at increased risk for infection, although a 23-valent polysaccharide vaccine is traditionally used in these populations.
Other Important Information: There are more than 90 known serotypes of *S. pneumoniae*. Although all serotypes may cause serious disease, a relatively limited number of serotypes cause the majority of invasive infections. From 1998 (two years before implementation of routine immunization of infants with heptavalent pneumococcal conjugate vaccine) through 2007, incidence of vaccine-type invasive pneumococcal infections decreased by 99% in children less than 5 years, and the incidence for all pneumococcal infections decreased by 76%. Today *S. pneumoniae* continues to be the leading cause of bacterial meningitis among children less than 5 years of age in the United States.

***Streptococcus pneumoniae*, Invasive, in Children Less than 5 Years of Age: 2013 Data Summary**	
Number of Cases:	37
5-Year Average Number of Cases:	45.4
% Change from 5-Year Average:	-19%
Incidence Rate per 100,000:	7.3

In 2013, 37 cases of invasive *S. pneumoniae* infection in children less than five years of age were reported in Virginia (Figure 82). While this represents a minimal increase from the 36 cases reported in 2012, it is a 19% decline from the five-year average of 45.4 cases per year. For children less than five years of age, the statewide incidence rate was 7.3 cases per 100,000.

Incidence in the less than 1 year age group was almost three times the rate in the 1-4 year age group (14.9 and 5.4 per 100,000, respectively) and was higher in males than females (8.9 and 5.6 cases per 100,000, respectively). For the 70% of cases for which information on race was available, the rate in the black population (9.8 per 100,000) was more than two times the rate in the white population (4.1 per 100,000). No cases were reported as "other" race.

Among the health planning regions, the highest incidence (14.8 cases per 100,000) occurred in the northwest region. Rates in the remaining regions ranged from 4.9 per 100,000 in the central region to 7.2 per 100,000 in the northern region. Peak incidence occurred during the first quarter of the year with 38% of onsets occurring during that timeframe. This follows the expected seasonal trend of cases occurring during the colder months of January and February. While there were no reported deaths due to *S. pneumoniae* infection, twenty (54%) of the 37 cases were hospitalized.

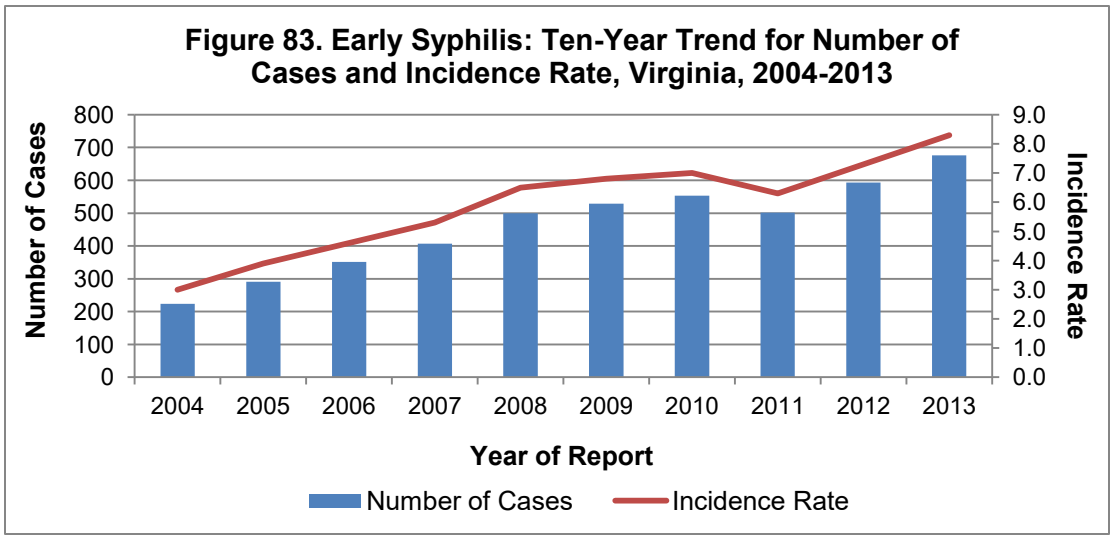
Syphilis

Agent: *Treponema pallidum* (bacteria)
Mode of Transmission: Through sexual intercourse, from mother to child through the placenta (or during birth) and via blood transfusion from an infected donor in the early stage of disease.
Signs/Symptoms: The primary stage is characterized by a painless sore (called a chancre). The secondary stage includes a skin rash and lesions of the mucous membranes. A latent period follows with no clinical symptoms. If left untreated, late syphilis occurs. The central nervous system, skin, bones and heart may become sufficiently damaged, causing disability or death.
Prevention: Preventive measures include safe sexual practices, screening of all women during early pregnancy to prevent infection of infants and treatment of infected partners.
Other Important Information: Nationwide, the rate of primary and secondary syphilis is on the rise for two populations: men who have sex with men (MSM) and persons of black race.

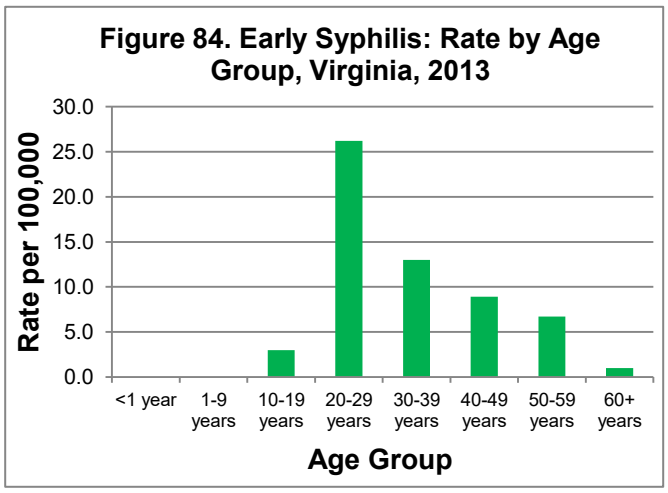
Early Syphilis: 2013 Data Summary	
Number of Cases:	676
5-Year Average Number of Cases:	535.4
% Change from 5-Year Average:	+26%
Incidence Rate per 100,000:	8.3

Early Syphilis

Primary, secondary and early latent (cases diagnosed without signs/symptoms within one year from infection) syphilis are included when the term "early syphilis" is used. There was a considerable increase in early syphilis cases (14%) from the previous year, with 676 cases reported in Virginia during 2013 (Figure 83). Over the past 10 years, the incidence of early syphilis has been on the rise despite a modest drop in 2011. Incidence has almost quadrupled in Virginia from a low of 2.1 per 100,000 in 2003 to 8.3 per 100,000 in 2013. Virginia follows a national trend in early syphilis with a growing gender gap; infections are declining among women and increasing among men.



As in previous years, the highest incidence rate in 2013 occurred in the 20-29 year age group (26.2 per 100,000), followed by the 30-39 year age group (13.0 per 100,000) (Figure 84). No cases were reported in children less than 10 years of age. The incidence rate in the black population (22.0 per 100,000) was over five times the rate in the white population (4.1 per 100,000) and over twice the rate in the "other" race population (10.1 per 100,000). The rising incidence of early syphilis among MSM continues to widen the gender divide. The rate in males was 11 times that in females (15.4 and 1.4 per 100,000, respectively). The eastern region continued to lead the state with the highest incidence, while the central region followed closely (12.3 and 11.0 per 100,000, respectively). Since 2006, these two regions have consistently had higher incidence rates of early syphilis than any other Virginia region. Incidence by locality can be seen in the map below.



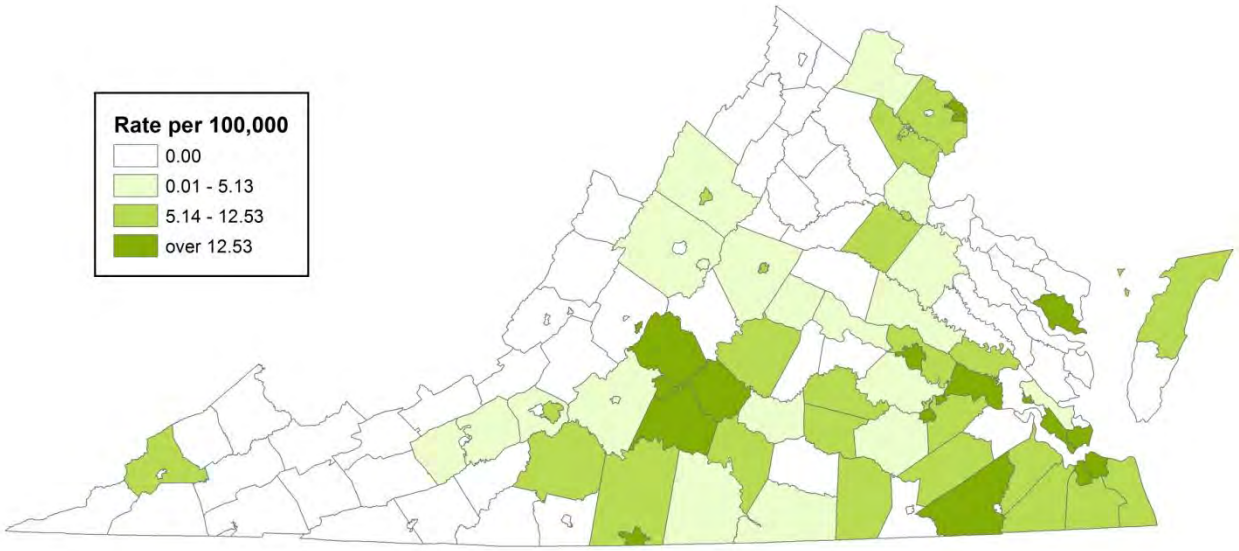
Congenital Syphilis

Congenital syphilis is a condition affecting an infant whose mother had untreated syphilis or inadequately treated syphilis at delivery. Diagnosis is based on serologic testing of the mother's serum because the serologic tests performed on the infected infant's serum can be nonreactive if the antibody level is low or if the mother was infected late in pregnancy. Two cases of congenital syphilis were reported in Virginia in 2013. Not since 2009 has there been more than one case; however, two cases are consistent with the 1.6 cases per year average in Virginia over the preceding 5 years. Nationally, 322 cases of congenital syphilis were reported during 2012, the most recent year for which data are available. The Centers for Disease Control and Prevention considers each case of congenital syphilis in the United States to be a sentinel event representing a public health failure.

Latent Syphilis

Latent syphilis is diagnosed when there is no evidence that infection was acquired within the preceding 12 months. In 2013, 330 cases of latent syphilis were reported in Virginia, which is a 4% increase from the 317 cases reported in 2012. Incidence in the black population was more than 10 times the incidence in the white population (10.4 and 1.0 per 100,000, respectively). While the gender gap is not as considerable as with early syphilis, latent syphilis was diagnosed more frequently in males than in females (4.8 and 3.2 per 100,000, respectively). The highest incidence rate was reported in the 40-49 year age group (7.5 per 100,000). Incidence rates were highest in the northern and central regions, at 5.5 and 5.0 per 100,000, respectively.

Syphilis, Early Stage, Incidence Rate by Locality
Virginia, 2013



Tetanus

Agent: Toxin secreted by the bacteria *Clostridium tetani*
Mode of Transmission: The bacteria enter the body through a break in the skin, usually when a wound, either major or minor, is infected by contaminated soil, dust, or animal or human feces. Person-to-person transmission does not occur.
Signs/Symptoms: A descending pattern of painful muscle contractions, particularly of the neck muscles, difficulty swallowing and abdominal rigidity.
Prevention: Tetanus vaccine is available as part of the diphtheria/tetanus/pertussis (DTaP) vaccine for children and the combination tetanus/diphtheria/pertussis (Tdap) vaccine for adolescents and adults. One dose of Tdap should be given at 11 to 12 years of age with booster doses of tetanus/diphtheria (Td) every ten years thereafter.
Other Important Information: The case-fatality rate of tetanus ranges from 10% to over 80% and depends on patient age, length of incubation period, and quality of and access to care, especially access to intensive care unit resources and tetanus immune globulin. In the U.S., reported tetanus cases have dropped more than 95%, and deaths from tetanus have declined more than 99% since 1947, when the disease became reportable nationally. This decline was primarily attributed to continued use of tetanus antitoxin for wound management and introduction of tetanus vaccines in the 1930s and 1940s, which led to universal childhood immunization and the addition of tetanus boosters for adults. Sporadic cases of tetanus continue to occur in adults, especially in people who were not vaccinated in childhood or did not receive ten-year booster shots. In recent years, a higher proportion of patients with tetanus had minor wounds, probably because severe wounds are more likely to be properly managed.

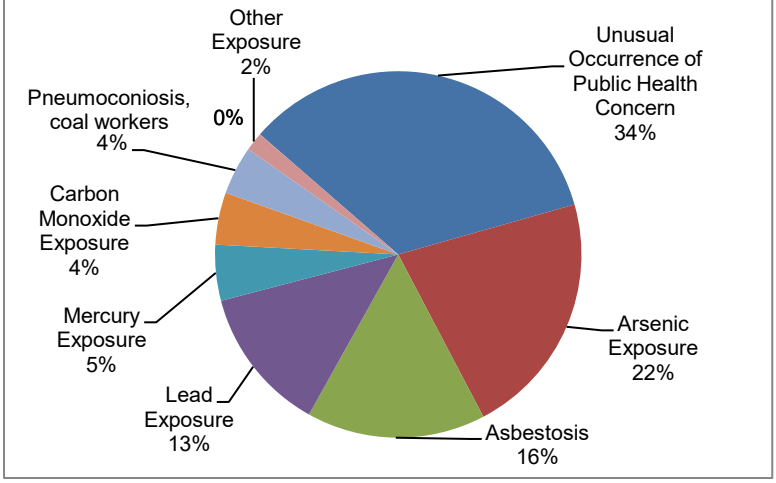
Two cases of tetanus were reported statewide in 2013. One occurred in a male in the 20-29 year age group and the other occurred in a female in the 40-49 year age group. Both cases resulted from acute injuries, and neither of the individuals had received tetanus toxoid before symptom onset. In recent years, one case of tetanus was reported in each of 2004, 2005 and 2012.

Toxic Substance-Related Illness

Agent: Multiple, including heavy metals (e.g., lead, cadmium, mercury, arsenic), occupational dusts or fibers (e.g., coal, silica, asbestos), gases (e.g., carbon monoxide, methane), pesticides, or radioactive materials.
Mode of Transmission: Varies depending on agent; can include absorption through skin, ingestion, or inhalation.
Signs/Symptoms: Varies depending on agent and route, dose and duration of exposure. Chronic occupational dust or fiber exposure may increase the risk of lung cancer, mesothelioma and nonmalignant lung disorders. Heavy metals, gases and pesticides may damage nervous, hepatic (liver), digestive, or reproductive systems.
Prevention: Eating, drinking, or smoking should not occur in contaminated work areas. Hands and face should be washed with soap and water after contacting toxic materials. After working with potential toxic substances, showering and changing clothes should occur at the worksite, if possible. Preventive measures include strict adherence to safety guidelines and requirements.
Other Important Information: Improving public and healthcare professional awareness and recognition of various toxic substance exposures can help reduce subsequent illness.

During 2013, 304 cases of toxic substance-related illness were reported in Virginia. This is 4% fewer than the five-year average of 317.2 cases per year. A determination of illness is based upon a physician's diagnosis or on a laboratory finding outside an occupational standard, or when no standard exists, outside expected normal values. The two most frequently reported toxic substance-related conditions were arsenic exposure and asbestosis, followed by lead exposure, mercury exposure, carbon monoxide exposure, and coal workers' pneumoconiosis (Figure 85). Other toxic substance-related exposures reported during 2013 included exposures to cadmium and pesticides. Illness from exposure to rarely reported substances were also captured. While the occurrence of most types of toxic exposure or illness has remained very similar in recent years, more "unusual occurrences of public health concern" were reported in 2013. These included unintentional exposures to aerosol cleaners, solvents, exhaust fumes, and methane, or other illness sustained during a toxic substance or chemical release. A large proportion of toxic substance exposures are identified by public health through claims to the Virginia Workers' Compensation Commission (WCC) and from death certificates.

Figure 85: Reported Toxic Substance-Related Illness, by Illness or Exposure Type, Virginia, 2013



Arsenic exposure has continued to be one of the most frequently reported toxic substance exposures, due in part to the presence of arsenic in various foods, particularly seafood. There was a general increase from the 18 cases reported in 2007 to the 92 cases reported in 2012. This increase was primarily due to more comprehensive reporting of persons with arsenic levels above normal laboratory values with the implementation of electronic laboratory reporting. However, the decrease to 66 reported arsenic exposures in 2013 suggests that this trend is stabilizing. The same phenomenon was seen, to a lesser extent, in the reporting of mercury and cadmium exposures and these two conditions have also experienced a noticeable drop in reported cases in the last two years, so that together they accounted for only 6% of toxic substance-related exposures in 2013. Most laboratory reports of elevated arsenic provide results for total urine levels, without further speciation of this substance. Without the additional information from speciation, reports for total urinary arsenic levels may contain a non-toxic organic form of arsenic (arsenobetaine) and, therefore, elevated levels of this compound may overstate the health hazard of arsenic exposures.

While lead remains one of the three most commonly reported exposures, reports of adult lead exposures continue to show a general decrease. In 2013, 39 cases of elevated blood lead levels in adults were reported, compared with 181 cases in 2006. Greater awareness of the dangers of lead exposure, as well as enforcement of workplace lead safety standards, has contributed to the decrease in reported exposures.

The number of reported cases of illness from asbestos exposure has remained relatively stable over the past decade. Forty-eight persons were reported with asbestosis in 2013, accounting for 16% of all toxic substance-related illness. The age of those affected ranged from 60-93 years, with an average age of 75 years. This older age group reflects current illness from exposures occurring before regulatory standards and guidelines went into effect. Sixteen (33%) of the asbestos exposures were reported through death certificates, and of these, 44% listed asbestosis as a primary cause of death. The remaining asbestosis cases were reported by the WCC as asbestosis-related disease due to previous exposures.

The 14 persons with reported carbon monoxide exposures worked in various industries; six of the exposures were reported through death certificates and resulted from deliberate exposure to vehicle exhaust, charcoal grills, or generators. The remaining eight carbon monoxide cases resulted from accidental occupational exposures to fumes generated from vehicle exhaust, cleaning activities, and boiler repairs.

All 13 persons reported with pneumoconiosis worked in the coal mining industry, and were identified from death certificates.

Among all toxic substance exposures, the largest proportion of cases (36%) occurred in the 60 year and older age group, with an incidence rate of 7.2 per 100,000, followed by the 50-59 year age group, with a rate of 5.8 per 100,000. No cases of toxic substance exposure (excluding childhood lead) occurred in children less than ten years of age. This age distribution reflects the large proportion of cases identified by public health through WCC reports and death certificates, which are likely to represent long-term exposures. Because information on race was not reported for 76% of toxic substance-related cases, no statement can be made about the distribution of this

condition by race. Seventy-five percent of all cases occurred in males and their incidence rate was slightly less than three times the rate in females (5.6 and 1.9 per 100,000, respectively). The southwest region had the highest incidence, at 5.1 per 100,000. Incidence rates in other regions of the state ranged from 2.6 to 4.6 per 100,000.

Trichinosis

Agent: Roundworms of genus *Trichinella; T. spiralis* is the most common cause of human infections.
Mode of Transmission: Eating raw or undercooked contaminated meat, including bear, pork, wild feline (such as cougar), fox, dog, wolf, horse, seal, or walrus. Trichinosis is not transmitted from person to person.
Signs/Symptoms: Usually occur in 1-2 days after consuming contaminated meat and may include nausea, diarrhea, vomiting, fatigue, fever, and abdominal discomfort. Headaches, fever, chills, cough, eye swelling, aching joints and muscle pains, itchy skin, diarrhea, or constipation may follow. Individuals may be asymptomatic, but severe or even fatal infections can occur.
Prevention: All meat should be cooked to safe temperatures and a meat thermometer should be used to measure the internal temperature of cooked meat. Whole cuts of meat (excluding poultry and wild game) should be cooked to at least 145 degrees Fahrenheit. Ground meat (excluding poultry) and wild game (both whole cuts and ground) should be cooked to at least 160 degrees Fahrenheit. All poultry products should be cooked to at least 165 degrees Fahrenheit. Meat grinders should be cleaned thoroughly after each use.
Other Important Information: Trichinosis used to be more common in the United States, but has decreased dramatically in the past forty years. Consumption of raw or undercooked pork products was the most common risk factor. Now, more cases in the United States are associated with consuming raw or undercooked wild game meats than with pork products. Curing, drying, smoking or microwaving meat alone does not always kill infective worms. Homemade jerky and sausage have reportedly been the cause of many cases in recent years.

Two cases of trichinosis were reported in 2013. This is the same number of cases reported in 2012 and 2011, but slightly more than the five-year average of 1.0 case per year. The cases occurred in adult females from different health districts in the eastern region. No clear risk factors were determined in either case.

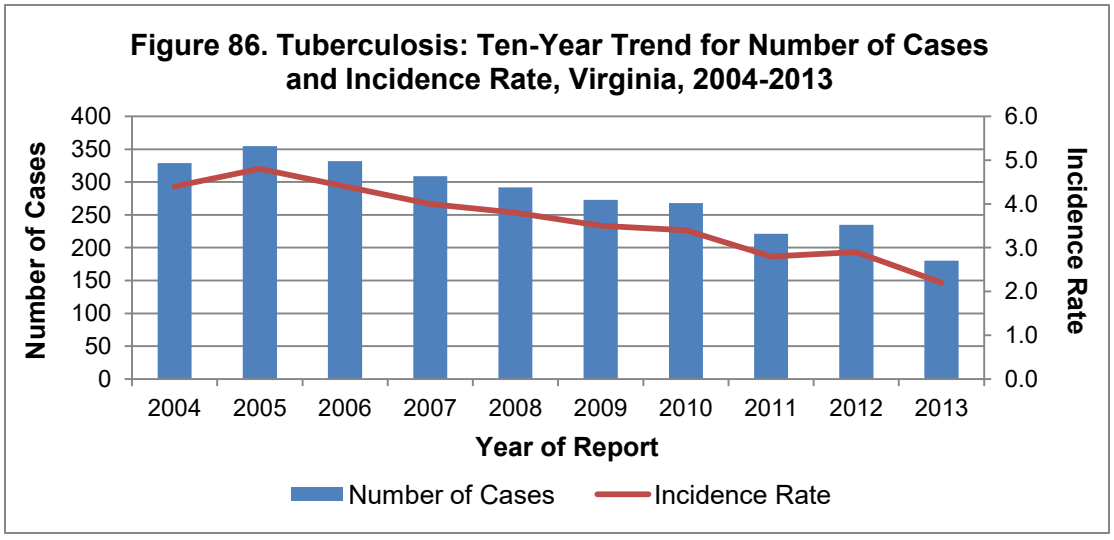
Tuberculosis

Agent: *Mycobacterium tuberculosis* (bacteria)
Mode of Transmission: Inhalation of tubercle bacilli via airborne droplets produced when patients with pulmonary or respiratory tract tuberculosis exhale the bacilli through coughing, singing, or sneezing.
Signs/Symptoms: Dependent on the organ(s) affected. General systemic signs and symptoms include fever, chills, night sweats, weight loss and fatigue. Symptoms of pulmonary tuberculosis may also include a prolonged (i.e., greater than 3 weeks) productive cough and coughing up blood.
Prevention: Control measures include the prompt identification, diagnosis and treatment of persons with infectious tuberculosis, followed by timely contact investigations to identify and treat additional persons with active tuberculosis disease and persons with latent tuberculosis infection. Special infection control measures should be practiced in high-risk settings.
Other Important Information: Persons with latent tuberculosis infection do not have any signs or symptoms of disease. These persons do not spread tuberculosis bacteria. Approximately 10% of those infected with tuberculosis will develop active disease during their lifetime, with the greatest risk for disease progression during the two years following infection. Co-infection with HIV and other immune suppressing conditions represent the greatest risks for progression to active disease.

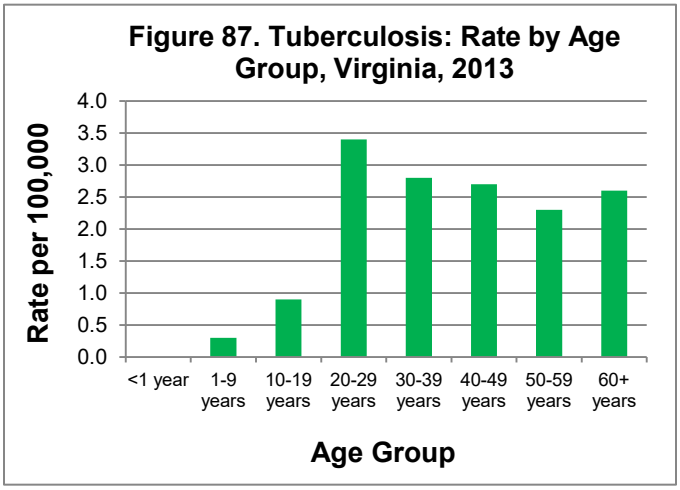
Tuberculosis: 2013 Data Summary	
Number of Cases:	180
5-Year Average Number of Cases:	257.8
% Change from 5-Year Average:	-30%
Incidence Rate per 100,000:	2.2

Virginia continues to see a general decline in TB cases, but not quite as consistently as has been seen at the national level. 2013 was the twenty-first consecutive year of declining rates of TB in the United States.

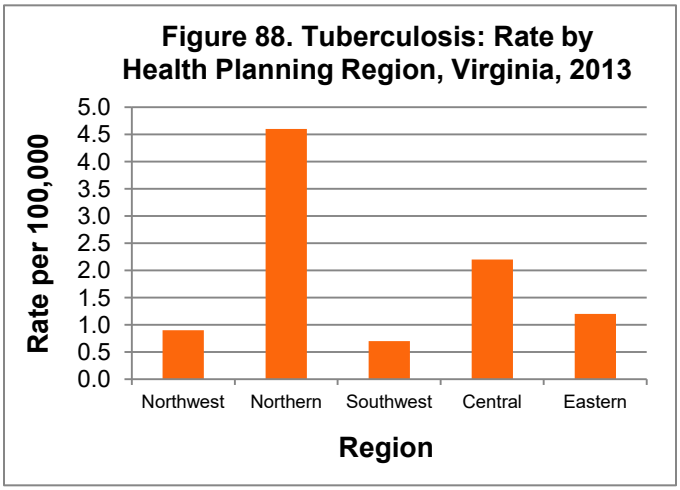
Although the 235 cases reported in Virginia in 2012 was slightly higher than the number reported during the previous year, the 180 cases reported in 2013 represent a 30% decline in cases from the five-year average of 257.8 cases per year (Figure 86). In Virginia, TB cases among those born in the U.S. decreased by 40%, from 52 in 2012 to 31 in 2013. The significant and sustained decline among the U.S.-born cases represents years of persistent TB control efforts to identify and treat active TB disease. A decrease in cases was also seen among the foreign-born, where the number of new cases declined by 19% from 183 cases in 2012 to 149 cases in 2013. Most TB infections among the foreign-born are believed to occur among people who were infected with TB before immigration to the United States. The five most frequent countries of origin for foreign-born TB cases were Ethiopia, India, Viet Nam, the Philippines, and El Salvador. As the burden of TB disease decreases, the focus of TB control will shift from controlling active disease to identification and treatment of TB infection.



Incidence was higher in adults than in children and adolescents. The highest incidence rate occurred among those in the 20-29 year age group (3.4 cases per 100,000). Rates among other adult age groups ranged from 2.3 to 2.8 cases per 100,000. Rates among children ranged from 0.3 per 100,000 in the 1-9 year age group to 0.9 per 100,000 in the 10-19 year age group. No cases occurred among infants in 2013 (Figure 87). By race, the highest incidence was observed in the "other" race group (12.9 per 100,000), while rates were substantially lower in the black and white populations (3.5 and 0.8 per 100,000, respectively). Males experienced a higher rate (2.7 per 100,000) than females (1.7 per 100,000).

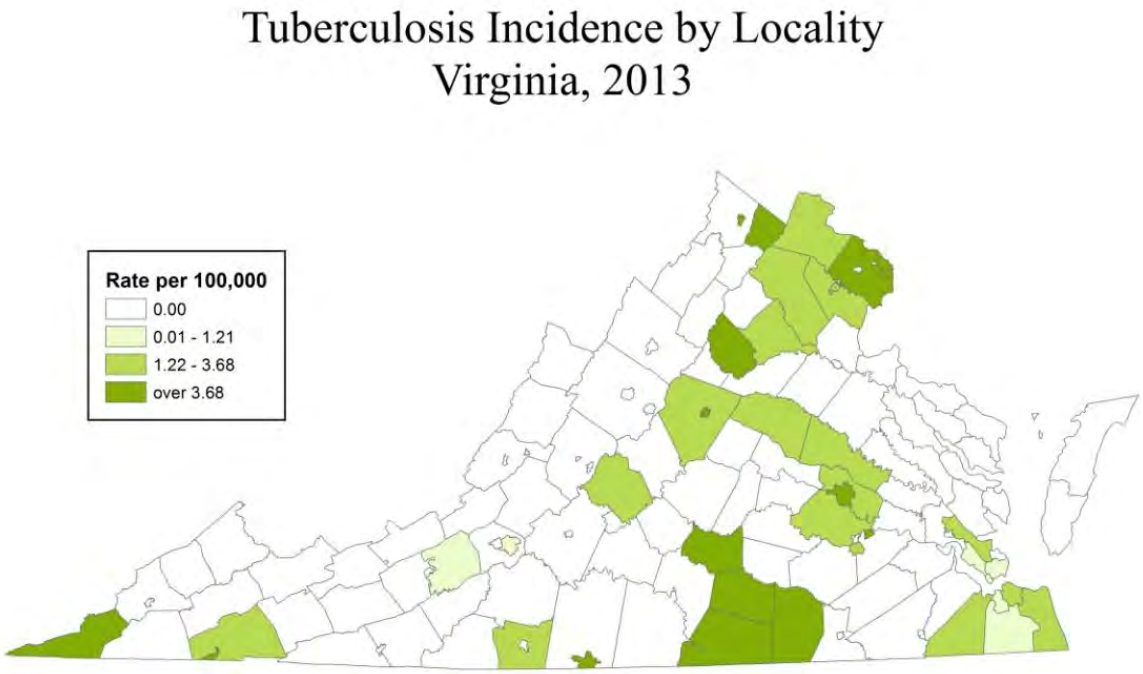


The highest number of cases and highest incidence rate (107 cases, 4.6 per 100,000) occurred in the northern region, where 70% of the foreign-born TB cases lived (Figure 88). Rates among the other regions ranged from 0.7 per 100,000 in the southwest to 2.2 per 100,000 in the central region. Incidence by locality can be seen in the map below.



For culture-positive cases with drug sensitivity reported, 13% had resistance to at least one first-line

drug. One case was multidrug resistant (resistant to isoniazid and rifampin). In 2013, two deaths were attributed to TB. Both deaths occurred in adult females, one from the northern region and the other from the central region. No outbreaks were attributed to TB during 2013.



Tularemia

Agent: *Francisella tularensis* (bacteria)
Mode of Transmission: Transmission in the United States is primarily by the bite of an infected tick such as the American dog tick, the lone star tick, or occasionally by the bite of an infected deer fly. Hunters can contract the disease while cleaning infected game or when eating infected meat that is raw or undercooked. Humans may also become infected by drinking water contaminated by infected animals, by contaminating their eyes with infected material, or by breathing *F. tularensis* spores from the dried carcasses or pelts of animals that died from tularemia. Because *F. tularensis* is highly infectious when grown in culture, laboratorians who work with the bacteria may became infected with the bacteria through wound contamination, or inhalation of aerosolized material. The bacteria are not transmitted directly from person to person.
Signs/Symptoms: Symptoms vary depending on the mode of transmission, but usually include sudden onset of high fever, chills, fatigue, general body aches, headache and nausea. An ulcer may occur at the site of infectious bites or wounds, and proximate lymph nodes may become swollen and painful. Ingestion may result in painful pharyngitis, abdominal pain, diarrhea and vomiting. Pulmonary infection may result in pneumonia and requires prompt identification and treatment to prevent development of life-threatening illness.
Prevention: Preventive measures include minimizing the risk of bites by avoiding areas infested by ticks or deer flies, and avoiding untreated water in areas where tularemia is prevalent among wild animals. Impervious protective gloves should be used when skinning rabbits and other wild game. Utensils used for preparing meat from game should not be used to prepare other food items. Undercooked meat should not be consumed. Avoid mowing over dead animals to lower the risk of aerosolizing infectious particles.
Other Important Information: Wild animals are the reservoir for *F. tularensis* and rabbits, hares, and rodents are especially susceptible to infection. Tularemia is classified as a potential bioweapon because its spores are relatively easy to disseminate as a breathable aerosol or as a food and water contaminant.

In 2013, two cases of tularemia were reported in Virginia residents. One case occurred in an adult male living in the central region who reported having exposures to both ticks and wildlife, including rabbits, while landscaping. The other case occurred in an adult male who resided in the northwest region and reported frequent lawn mowing resulting in several known tick bites. In Virginia, the 5-year average incidence rate for tularemia is 2.0 cases per year.

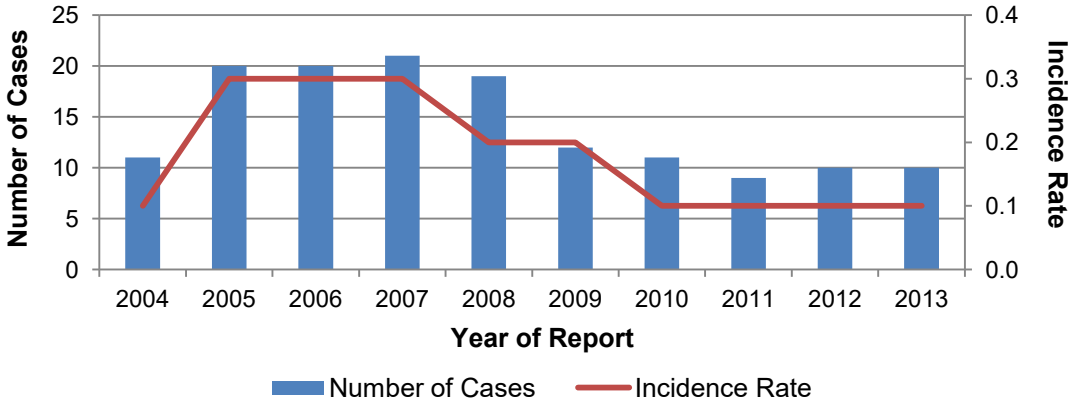
Typhoid Fever

Agent: *Salmonella* ser. Typhi (bacteria)
Mode of Transmission: Ingestion of food or water contaminated by feces or urine of infected persons. The bacteria live only in humans.
Signs/Symptoms: Include sustained fever, headache, malaise, altered mental status, lethargy, anorexia, fast heart rate, enlarged spleen, a non-productive cough and constipation.
Prevention: Access to safe water and proper sanitation, and following safe food handling and hand hygiene practices are essential. Travelers to countries where the disease is common should get vaccinated and avoid consuming risky foods and drinks.
Other Important Information: According to the CDC, most cases of typhoid fever in the U.S. (up to 75%) are acquired while traveling internationally. The condition is very common in the developing world, where it affects more than 20 million persons annually. Approximately 200,000 deaths are attributed to typhoid fever worldwide each year.

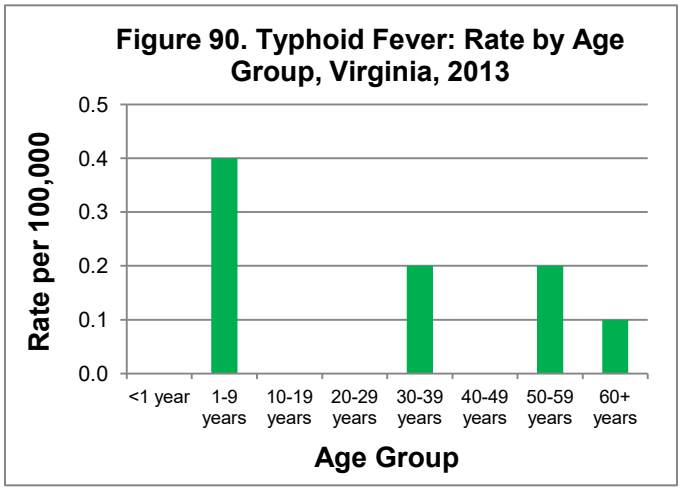
Typhoid Fever: 2013 Data Summary	
Number of Cases:	10
5-Year Average Number of Cases:	12.2
% Change from 5-Year Average:	-18%
Incidence Rate per 100,000:	0.1

During 2013, 10 cases of typhoid fever were reported in Virginia. This is the same number of cases as reported in 2012, but an 18% decrease from the five-year average of 12.2 cases per year (Figure 89). Eight of the ten cases had a history of travel outside the United States in the 30 days prior to illness onset; two visited El Salvador and individual cases visited India, Bangladesh, Pakistan, Nepal, Guatemala and Sudan. One of the cases occurred in someone who did not travel outside the United States and reportedly acquired typhoid fever from a relative who was visiting from Pakistan. The final case was not associated with a history of travel or known exposure.

Figure 89. Typhoid Fever: Ten-Year Trend for Number of Cases and Incidence Rate, Virginia, 2004-2013



Among all age groups, the 1-9 year age group had the highest incidence rate (4 cases, 0.4 per 100,000) (Figure 90). Race information was not available for half of the cases. Where information on race was available, the "other" race population had the highest incidence (0.5 per 100,000). Males and females had similar incidence rates (0.1 per 100,000, each). All ten cases were reported from the northern region, where the incidence rate was 0.4 per 100,000.



Onset occurred throughout the year. However, because most cases are acquired outside the country, any seasonal pattern would most likely be related to travel patterns. During 2013, no deaths were attributed to typhoid fever in Virginia.

Vaccinia, Disease or Adverse Event

Agent: Vaccinia virus, which is used in the smallpox vaccine. The virus also occurs in some bovine (cattle) populations, primarily in Brazil.
Mode of Transmission: Through injection with the smallpox vaccine, or through direct contact with contaminated materials or the vaccination site before it has healed. Outbreaks among dairy cattle in Brazil have led to transmission of the virus to their human handlers, primarily farmers and ranchers.
Signs/Symptoms: Include rash, fever and head and body aches. Some individuals, especially those with certain skin conditions or weakened immune systems, may experience more serious effects, such as a toxic or allergic reaction at the vaccination site or spread of the virus to other parts of the body.
Prevention: When smallpox is not circulating, and to prevent serious reaction to the vaccine, administration of the smallpox vaccine should be generally limited to laboratory workers who handle smallpox and similar viruses and certain healthcare workers. The vaccine is currently available only to members of emergency response teams and some military personnel.
Other Important Information: The U.S. government has enough smallpox vaccine to vaccinate every person in the country in the event of a smallpox emergency. Vaccinia became a reportable condition in Virginia in 2003. It is not a nationally notifiable condition and U.S. totals are not available.

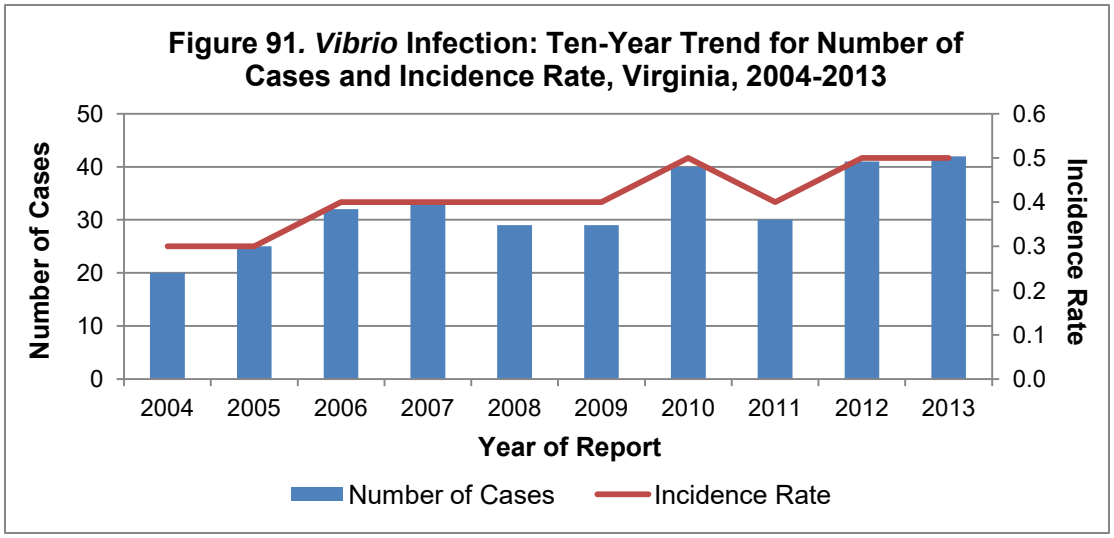
Smallpox vaccination is generally limited to a small population. Therefore, occurrences of vaccinia due to inadvertent transmission of the vaccine virus or occurrences of adverse events in vaccine recipients are very rare. One report of a vaccinia adverse event was reported in 2013. The adverse event occurred in a vaccinated member of the military. The first and only other report of vaccinia infection in Virginia was received in 2008 and occurred in a laboratory worker who handled vaccinia-infected mice. No cases of vaccinia disease or adverse events were reported from 2009 through 2012, yielding a five-year average of 0.2 cases per year.

Vibrio Infection

Agent: *Vibrio* (bacteria)
Mode of Transmission: Gastroenteritis caused by *Vibrio* is usually related to the consumption of raw or undercooked seafood, particularly shellfish. Several large foodborne outbreaks of *Vibrio parahaemolyticus* have occurred in the United States in which undercooked seafood was the food vehicle. Wound infections occur when seawater carrying the *Vibrio* bacteria enters the body through a break in the skin, usually from brackish waters or from occupational injuries (e.g., among fishermen).
Signs/Symptoms: Symptoms associated with *Vibrio* infection include diarrhea, wound infection, and septicemia (bloodstream infection). Diarrheal illness is most common and includes watery stools, cramping, and abdominal pain. Low-grade fever, headache, and chills are seen in half of those ill with diarrheal illness, while 30% of those with diarrheal illness will experience vomiting. Wound infection is usually severe in those who have liver disease or weakened immune systems. Among those infected with *V. vulnificus*, over 50% of patients with primary septicemia die.
Prevention: Seafood should be cooked adequately and should be refrigerated. Abrasions suffered by those swimming in the ocean should be rinsed with clean, fresh water. Most people are considered susceptible, especially those with liver disease, decreased gastric acidity, diabetes, peptic ulcers, or weakened immune systems. People in high risk groups should refrain from eating raw or undercooked shellfish.
Other Important Information: Marine coastal areas are the natural habitat of *Vibrio*. During the cold season, organisms are found in marine silt; during the warm season, they are found free in coastal waters and in fish and shellfish. Most *Vibrio* infections occur during summer and fall months, when levels of bacteria in brackish waters and estuaries are highest.

Vibrio Infection: 2013 Data Summary	
Number of Cases:	42
5-Year Average Number of Cases:	33.8
% Change from 5-Year Average:	+24%
Incidence Rate per 100,000:	0.5

During 2013, 42 cases of *Vibrio* infection were reported in Virginia. This is similar to the 41 cases reported in 2012, but is higher than the five-year average of 33.8 cases per year (Figure 91). The rate of *Vibrio* infection in the population in 2013 (incidence of 0.5 per 100,000) was the same as the rate in 2012.



Species were identified for all but two of the *Vibrio* infections. As in previous years, *V. parahaemolyticus* was the most commonly identified strain (45%). The species that predominated in 2013 were the same as those usually identified. Illnesses included 16 wound infections, 16 gastrointestinal infections, 4 ear infections, 7 bloodstream infections, 1 urinary tract infection, and 1 tissue infection (Table 13).

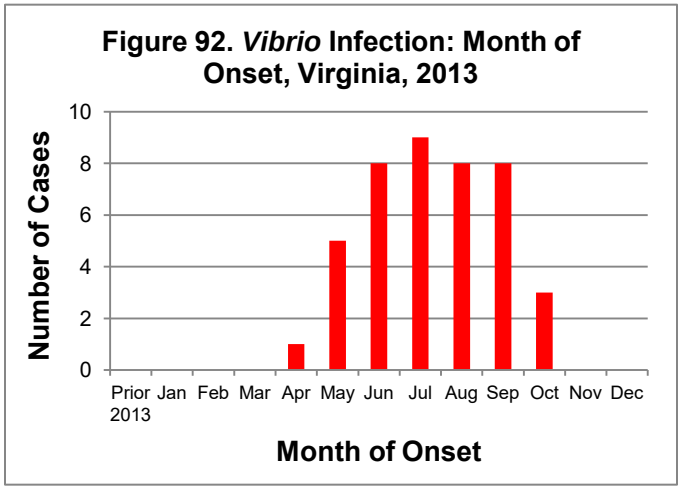
Table 13. *Vibrio* Infections by Species and Specimen Source, 2013

***Vibrio* Species**	***Vibrio* Specimen Source***						
	Wound	**Stool**	**Ear**	**Blood**	**Urine**	**Tissue**	**Total**
V. parahaemolyticus	7	12	0	0	0	0	19
V. vulnificus	4	0	0	6	0	1	11
V. alginolyticus	3	0	3	0	0	0	6
V. cholera non O1, non O139	0	1	0	1	1	0	3
V. fluvialis	0	2	0	0	0	0	2
Vibrio, unspeciated	1	0	1	0	0	0	2
V. furnissii	1	0	0	0	0	0	1
V. mimicus	0	1	0	0	0	0	1

*The total number of positive specimens is larger than the total number of *Vibrio* cases because multiple specimen types may have been collected from a single case-patient.

The largest number of *Vibrio* infections occurred in the 60 year and older age group (14 cases), with a rate of 0.9 per 100,000 population. The 40-49 and 50-59 year age groups both had rates of 0.6 per 100,000 (7 cases in each age group). No cases were reported among children less than one year of age, and two to five cases were reported in each of the remaining age groups. Among the 45% of cases for whom race information was available, incidence rates were similar for whites and blacks (0.3 and 0.2 per 100,000, respectively). In Virginia, *Vibrio* infections typically affect males more often than females, and this was true in 2013; 60% of cases were male.

Geographically, the eastern region had the highest number of cases and the highest incidence rate (17, 0.9 per 100,000), followed by the northern region (13, 0.6 per 100,000). Cases were clustered from late spring to early fall, with onset of illness for 90% of cases occurring from May through September (Figure 92).



Hospitalization information was available for 41 patients (98%), with 18 cases (44%) reported as having been hospitalized. During 2013, four case-patients were known to have died after testing positive for vibriosis. All four were male; one was in the 20-29 year age group, two were in the 50-59 year age group, and one was in the 60 year and older age group.

Two outbreaks of *V. parahaemolyticus* were identified in 2013. In the first outbreak, three cases (two Massachusetts residents and one Maryland resident) all reported eating oysters harvested from the same growing region in Virginia prior to becoming ill. As a result, the growing area was closed for oyster harvesting for one year. This was the first time ever a growing area in Virginia was closed due to an outbreak of *Vibrio* infections.

The second outbreak of *V. parahaemolyticus* was linked to an out-of-state growing area that had also been implicated as the source of a 2012 outbreak. The growing area was temporarily closed to shellfish harvesting in 2013 after cases were identified with an infection with *V. parahaemolyticus* that had the same genetic pattern as the strain responsible for the 2012 outbreak. Case-patients resided in Connecticut, New York, Massachusetts, Ohio and Virginia.

Viral Hemorrhagic Fever

Agent(s): Viruses of four distinct families including *Arenaviridae* (Argentine, Bolivian, Venezuelan, Brazilian, Chapare and Lujo hemorrhagic fevers, and Lassa fever), *Filoviridae* (Ebola and Marburg hemorrhagic fevers), *Bunyaviridae* (Crimean-Congo hemorrhagic fever, Rift Valley fever, and hemorrhagic fever with renal syndrome [HFRS]), and *Flaviviridae* (dengue hemorrhagic fever, yellow fever, Omsk hemorrhagic fever, and Kyasansur Forest disease). Historically, among the viral hemorrhagic fevers, only dengue hemorrhagic fever has been found to occur naturally in North America.
Mode of Transmission: Varies by agent. Arenaviruses are carried by rodents and are contracted by breathing dust contaminated with saliva, feces or urine of infected rodents, but may also be transmitted person-to-person by infected patients. Filovirus hemorrhagic fevers are contracted through direct contact with blood or body fluids from infected animals or persons. Bunyaviruses are typically transmitted by the bites of arthropods but may also be contracted through contact with the blood and body fluids of infected livestock or people, or in the case of HFRS may be contracted through exposure to dust contaminated with saliva, feces or urine of infected rodents. Hemorrhagic fevers caused by Flaviviruses are typically transmitted by the bites of arthropods (mosquitoes or ticks).
Signs/Symptoms: Vary by type, including but not limited to, malaise, headache, fever, bleeding from the nose and gums, rash, appearance of blood in the eyes, or vomiting. Case-fatality rates can range from 1% (dengue) to 90% (Ebola).
Prevention: Depending on agent, exposure to hemorrhagic diseases can be reduced by rodent control in and around the home in endemic areas, by isolation of infected persons during their febrile period, by preventing contact with blood or body fluids of sick or dead humans or animals, and by avoiding the bites of mosquito or tick vectors.
Other Important Information: Viral hemorrhagic fevers are classified as potential bioweapons because they could cause high mortality, public panic, or social disruption. For surveillance purposes, cases of dengue fever are counted in the Arboviral Infection section of this report, while cases of yellow fever are counted in the Yellow Fever section. Therefore, any cases of dengue fever or yellow fever, including those with hemorrhagic signs, will be discussed in their respective sections of this surveillance report.

No cases of viral hemorrhagic fever were reported in Virginia during 2013. In 2011, one case of dengue hemorrhagic fever was reported and was counted for surveillance purposes as an arboviral infection. It was discussed in the Arboviral Infection section of the 2011 report.

Yellow Fever

Agent: Yellow fever virus
Mode of Transmission: Transmitted through the bites of several species of infected *Aedes* mosquitoes, most notably the yellow fever mosquito (*Aedes aegypti*), which breeds in containers of water occurring around human habitats. Yellow fever mosquitoes occur in Virginia but have become rare after being displaced from their container breeding habitats by the arrival of the closely related Asian tiger mosquito (*Aedes albopictus*) in 1992. The Asian tiger mosquito is more cold tolerant than the yellow fever mosquito and is able to overwinter and maintain populations from year to year in most parts of Virginia. As a result, tiger mosquitoes have become very common throughout most of Virginia and could be potential vectors of the yellow fever virus. Tiger mosquitoes are similar in behavior and appearance to yellow fever mosquitoes. Although the Asian tiger mosquito's competence as a yellow fever vector has been proven in laboratory studies, there are currently no records of this mosquito having transmitted yellow fever in nature.
Signs/Symptoms: Varying levels of severity, but could include a sudden onset of fever, chills, headache, backache, generalized muscle pain, prostration, nausea, vomiting and jaundice. Jaundice is usually mild in early disease but intensifies later. Among cases with jaundice, the fatality rate is 20% to 50%.
Prevention: Vaccination against the yellow fever virus before traveling to yellow fever endemic regions of the world and avoidance of mosquito bites while traveling in these regions.

No cases of yellow fever have been reported in Virginia since the nineteenth century.

Yersiniosis

Agent: *Yersinia* species (bacteria)
Mode of Transmission: Ingestion of contaminated foods, particularly raw or incompletely cooked pork products and unpasteurized milk, contaminated surface or well water, or by direct or indirect contact with infected people or animals.
Signs/Symptoms: Vary depending on age, but may include fever, abdominal pain, and bloody diarrhea.
Prevention: Preventive measures include safe food preparation and pasteurization of dairy products. People handling pork intestines should wash their hands and environmental surfaces thoroughly after contact with raw meat, and should not handle infants or young children or their toys, bottles, or pacifiers until hands are washed thoroughly.
Other Important Information: Infection most often occurs from eating contaminated food, especially raw or undercooked pork products, including pork intestines (chitterlings). Children are infected more often than adults. While most infections occur during the winter months, this is believed to be related to the preparation of chitterlings for the holidays, and not to outdoor temperatures.

Yersiniosis: 2013 Data Summary	
Number of Cases:	11
5-Year Average Number of Cases:	11.2
% Change from 5-Year Average:	-2%
Incidence Rate per 100,000:	0.1

Eleven cases of yersiniosis were reported in Virginia in 2013, which is higher than the eight reported in 2012 but very similar to the five-year average of 11.2 cases per year.

The ages of persons reported with yersiniosis ranged from 0-80 years, and averaged 33 years. Seven (64%) of the cases were less than 30 years of age, while the remaining 36% were older than 65 years. Among the seven cases with race information reported, five were in the white population and two were in the black population. Eight cases occurred in females and three in males.

Three cases were reported from each of the eastern, northwest, and southwest regions; two cases were from the northern region and none from the central region. No seasonal pattern was observed in the onset dates. Except for one case, no clear risk factors were associated with the illnesses. For that one case, reported consumption of unpasteurized milk and caring for livestock presented potential opportunities for exposure.

NUMBER OF REPORTED CASES
AND
RATE PER 100,000 POPULATION
FOR SELECTED DISEASES BY
LOCALITY, DISTRICT AND REGION

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,185,867	26	0.3	709	8.7	374	4.6
LOCALITY							
Accomack County	33,341	0	0.0	9	27.0	2	6.0
Albemarle County	102,251	0	0.0	3	2.9	16	15.6
Alleghany County, Clifton Forge	16,230	0	0.0	1	6.2	0	0.0
Amelia County	12,759	0	0.0	0	0.0	1	7.8
Amherst County	32,384	0	0.0	1	3.1	0	0.0
Appomattox County	15,128	0	0.0	1	6.6	0	0.0
Arlington County	221,045	4	1.8	56	25.3	6	2.7
Augusta County	73,658	0	0.0	0	0.0	7	9.5
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	0	0.0	6	7.9	0	0.0
Bland County	6,738	0	0.0	1	14.8	2	29.7
Botetourt County	33,154	0	0.0	2	6.0	0	0.0
Brunswick County	17,010	0	0.0	0	0.0	0	0.0
Buchanan County	23,859	0	0.0	0	0.0	0	0.0
Buckingham County	17,088	0	0.0	3	17.6	0	0.0
Campbell County	55,163	0	0.0	1	1.8	1	1.8
Caroline County	28,972	0	0.0	1	3.5	1	3.5
Carroll County	29,851	0	0.0	3	10.0	0	0.0
Charles City County	7,157	0	0.0	1	14.0	0	0.0
Charlotte County	12,404	0	0.0	2	16.1	0	0.0
Chesterfield County	323,856	0	0.0	21	6.5	18	5.6
Clarke County	14,323	0	0.0	7	48.9	0	0.0
Craig County	5,213	0	0.0	1	19.2	0	0.0
Culpeper County	47,911	0	0.0	1	2.1	1	2.1
Cumberland County	9,849	0	0.0	1	10.2	0	0.0
Dickenson County	15,690	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,994	0	0.0	7	25.0	3	10.7
Essex County	11,233	0	0.0	1	8.9	0	0.0
Fairfax County	1,118,602	9	0.8	108	9.7	61	5.5
Fauquier County	66,542	0	0.0	6	9.0	0	0.0
Floyd County	15,390	0	0.0	2	13.0	0	0.0
Fluvanna County	25,967	0	0.0	1	3.9	1	3.9
Franklin County	56,411	0	0.0	6	10.6	1	1.8
Frederick County	80,317	0	0.0	22	27.4	2	2.5
Giles County	16,928	0	0.0	1	5.9	0	0.0
Gloucester County	36,886	0	0.0	3	8.1	0	0.0
Goochland County	21,347	0	0.0	2	9.4	1	4.7
Grayson County	15,183	0	0.0	2	13.2	0	0.0
Greene County	18,771	0	0.0	0	0.0	2	10.7
Greensville County	11,851	0	0.0	0	0.0	3	25.3
Halifax County, South Boston	35,849	0	0.0	5	13.9	2	5.6
Hanover County	100,668	0	0.0	7	7.0	1	1.0
Henrico County	314,932	2	0.6	25	7.9	14	4.4
Henry County	52,969	0	0.0	0	0.0	1	1.9
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	1	2.8	2	5.6
James City County	68,967	0	0.0	5	7.2	1	1.4

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,185,867	26	0.3	709	8.7	374	4.6
LOCALITY							
King and Queen County	7,046	0	0.0	2	28.4	0	0.0
King George County	24,500	0	0.0	1	4.1	2	8.2
King William County	15,981	0	0.0	2	12.5	0	0.0
Lancaster County	11,236	0	0.0	1	8.9	0	0.0
Lee County	25,474	0	0.0	5	19.6	1	3.9
Loudoun County	336,898	3	0.9	33	9.8	19	5.6
Louisa County	33,430	0	0.0	2	6.0	2	6.0
Lunenburg County	12,588	0	0.0	2	15.9	0	0.0
Madison County	13,200	0	0.0	0	0.0	0	0.0
Mathews County	8,884	0	0.0	1	11.3	0	0.0
Mecklenburg County	31,749	0	0.0	6	18.9	3	9.4
Middlesex County	10,822	0	0.0	0	0.0	0	0.0
Montgomery County	95,194	0	0.0	9	9.5	0	0.0
Nelson County	14,827	0	0.0	0	0.0	0	0.0
New Kent County	19,169	0	0.0	6	31.3	1	5.2
Northampton County	12,226	0	0.0	0	0.0	0	0.0
Northumberland County	12,346	0	0.0	3	24.3	0	0.0
Nottoway County	15,830	0	0.0	5	31.6	0	0.0
Orange County	34,246	0	0.0	1	2.9	0	0.0
Page County	23,895	0	0.0	9	37.7	2	8.4
Patrick County	18,451	0	0.0	0	0.0	2	10.8
Pittsylvania County	62,807	0	0.0	4	6.4	22	35.0
Powhatan County	28,123	0	0.0	1	3.6	0	0.0
Prince Edward County	23,238	0	0.0	3	12.9	0	0.0
Prince George County	36,941	0	0.0	5	13.5	2	5.4
Prince William County	430,289	0	0.0	29	6.7	18	4.2
Pulaski County	34,736	0	0.0	1	2.9	0	0.0
Rappahannock County	7,456	0	0.0	0	0.0	0	0.0
Richmond County	9,059	0	0.0	1	11.0	0	0.0
Roanoke County	92,901	0	0.0	16	17.2	5	5.4
Rockbridge County	22,394	0	0.0	8	35.7	1	4.5
Rockingham County	77,391	0	0.0	12	15.5	15	19.4
Russell County	28,445	0	0.0	4	14.1	0	0.0
Scott County	22,781	0	0.0	4	17.6	0	0.0
Shenandoah County	42,583	0	0.0	13	30.5	11	25.8
Smyth County	31,718	0	0.0	0	0.0	1	3.2
Southampton County	18,409	0	0.0	1	5.4	0	0.0
Spotsylvania County	125,684	0	0.0	8	6.4	2	1.6
Stafford County	134,352	0	0.0	9	6.7	1	0.7
Surry County	6,844	0	0.0	1	14.6	0	0.0
Sussex County	11,972	0	0.0	0	0.0	0	0.0
Tazewell County	44,268	0	0.0	6	13.6	7	15.8
Warren County	38,070	0	0.0	4	10.5	2	5.3
Washington County	55,190	0	0.0	12	21.7	2	3.6
Westmoreland County	17,524	0	0.0	2	11.4	1	5.7
Wise County	40,918	0	0.0	2	4.9	7	17.1
Wythe County	29,251	0	0.0	2	6.8	2	6.8
York County	66,146	0	0.0	3	4.5	2	3.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,185,867	26	0.3	709	8.7	374	4.6
LOCALITY							
Alexandria	146,294	3	2.1	21	14.4	5	3.4
Bristol	17,662	0	0.0	2	11.3	0	0.0
Buena Vista	6,707	0	0.0	0	0.0	1	14.9
Charlottesville	43,956	0	0.0	0	0.0	5	11.4
Chesapeake	228,417	1	0.4	12	5.3	10	4.4
Colonial Heights	17,479	0	0.0	2	11.4	0	0.0
Covington	5,771	0	0.0	0	0.0	0	0.0
Danville	42,996	0	0.0	0	0.0	1	2.3
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	0	0.0	0	0.0
Falls Church	13,229	0	0.0	0	0.0	0	0.0
Franklin City	8,528	0	0.0	1	11.7	0	0.0
Fredericksburg	27,307	1	3.7	1	3.7	2	7.3
Galax	6,908	1	14.5	0	0.0	0	0.0
Hampton	136,836	0	0.0	3	2.2	3	2.2
Harrisonburg	50,981	0	0.0	1	2.0	4	7.8
Hopewell	22,348	0	0.0	0	0.0	1	4.5
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	0	0.0	6	7.8	0	0.0
Manassas	40,605	0	0.0	2	4.9	2	4.9
Manassas Park	15,798	0	0.0	0	0.0	0	0.0
Martinsville	13,733	0	0.0	3	21.8	0	0.0
Newport News	180,726	0	0.0	11	6.1	3	1.7
Norfolk	245,782	1	0.4	5	2.0	7	2.8
Norton	4,068	0	0.0	0	0.0	0	0.0
Petersburg	31,973	0	0.0	1	3.1	3	9.4
Poquoson	12,097	0	0.0	0	0.0	0	0.0
Portsmouth	96,470	0	0.0	0	0.0	0	0.0
Radford	16,685	0	0.0	0	0.0	0	0.0
Richmond City	210,309	0	0.0	10	4.8	7	3.3
Roanoke City	97,469	0	0.0	5	5.1	14	14.4
Salem	24,970	0	0.0	0	0.0	0	0.0
Staunton	23,921	0	0.0	0	0.0	0	0.0
Suffolk	85,181	0	0.0	3	3.5	1	1.2
Virginia Beach	447,021	1	0.2	46	10.3	18	4.0
Waynesboro	21,107	0	0.0	1	4.7	0	0.0
Williamsburg	15,167	0	0.0	3	19.8	2	13.2
Winchester	26,881	0	0.0	5	18.6	2	7.4

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Amebiasis REPORTED CASES	Amebiasis RATE PER 100,000	Campylobacteriosis REPORTED CASES	Campylobacteriosis RATE PER 100,000	Chickenpox REPORTED CASES	Chickenpox RATE PER 100,000
VIRGINIA TOTAL	8,185,867	26	0.3	709	8.7	374	4.6
DISTRICT/REGION							

Central Shenandoah	290,054	0	0.0	22	7.6	28	9.7
Lord Fairfax	226,069	0	0.0	60	26.5	19	8.4
Rappahannock	340,815	1	0.3	20	5.9	8	2.3
Rappahannock/Rapidan	169,355	0	0.0	8	4.7	1	0.6
Thomas Jefferson	239,202	0	0.0	6	2.5	26	10.9
Northwest Region	1,265,495	1	0.1	116	9.2	82	6.5

Alexandria	146,294	3	2.1	21	14.4	5	3.4
Arlington	221,045	4	1.8	56	25.3	6	2.7
Fairfax	1,155,292	9	0.8	108	9.3	61	5.3
Loudoun	336,898	3	0.9	33	9.8	19	5.6
Prince William	486,692	0	0.0	31	6.4	20	4.1
Northern Region	2,346,221	19	0.8	249	10.6	111	4.7

Alleghany	178,239	0	0.0	20	11.2	5	2.8
Central Virginia	255,342	0	0.0	15	5.9	1	0.4
Cumberland Plateau	112,262	0	0.0	10	8.9	7	6.2
Lenowisco	93,241	0	0.0	11	11.8	8	8.6
Mount Rogers	192,501	1	0.5	22	11.4	7	3.6
New River	178,933	0	0.0	13	7.3	0	0.0
Pittsylvania/Danville	105,803	0	0.0	4	3.8	23	21.7
Roanoke City	97,469	0	0.0	5	5.1	14	14.4
West Piedmont	141,564	0	0.0	9	6.4	4	2.8
Southwest Region	1,355,354	1	0.1	109	8.0	69	5.1

Chesterfield	369,458	0	0.0	24	6.5	18	4.9
Chickahominy	148,341	0	0.0	16	10.8	3	2.0
Crater	155,663	0	0.0	14	9.0	12	7.7
Henrico	314,932	2	0.6	25	7.9	14	4.4
Piedmont	103,756	0	0.0	16	15.4	1	1.0
Richmond City	210,309	0	0.0	10	4.8	7	3.3
Southside	84,608	0	0.0	11	13.0	5	5.9
Central Region	1,387,067	2	0.1	116	8.4	60	4.3

Chesapeake	228,417	1	0.4	12	5.3	10	4.4
Eastern Shore	45,567	0	0.0	9	19.8	2	4.4
Hampton	136,836	0	0.0	3	2.2	3	2.2
Norfolk	245,782	1	0.4	5	2.0	7	2.8
Peninsula	343,103	0	0.0	22	6.4	8	2.3
Portsmouth	96,470	0	0.0	0	0.0	0	0.0
Three Rivers	141,017	0	0.0	16	11.3	1	0.7
Virginia Beach	447,021	1	0.2	46	10.3	18	4.0
Western Tidewater	147,517	0	0.0	6	4.1	3	2.0
Eastern Region	1,831,730	3	0.2	119	6.5	52	2.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	33561	410.0	144	1.8	143	1.7
LOCALITY							
Accomack County	33,341	183	548.9	0	0.0	1	3.0
Albemarle County	102,251	228	223.0	2	2.0	3	2.9
Alleghany County, Clifton Forge	16,230	38	234.1	1	6.2	0	0.0
Amelia County	12,759	38	297.8	0	0.0	1	7.8
Amherst County	32,384	113	348.9	0	0.0	4	12.4
Appomattox County	15,128	57	376.8	1	6.6	1	6.6
Arlington County	221,045	587	265.6	3	1.4	1	0.5
Augusta County	73,658	149	202.3	1	1.4	1	1.4
Bath County	4,652	8	172.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	104	137.6	0	0.0	10	13.2
Bland County	6,738	2	29.7	0	0.0	0	0.0
Botetourt County	33,154	23	69.4	0	0.0	0	0.0
Brunswick County	17,010	77	452.7	0	0.0	2	11.8
Buchanan County	23,859	3	12.6	0	0.0	0	0.0
Buckingham County	17,088	60	351.1	1	5.9	2	11.7
Campbell County	55,163	158	286.4	1	1.8	1	1.8
Caroline County	28,972	96	331.4	0	0.0	0	0.0
Carroll County	29,851	38	127.3	1	3.3	0	0.0
Charles City County	7,157	28	391.2	0	0.0	0	0.0
Charlotte County	12,404	34	274.1	0	0.0	0	0.0
Chesterfield County	323,856	1202	371.2	0	0.0	2	0.6
Clarke County	14,323	22	153.6	0	0.0	0	0.0
Craig County	5,213	2	38.4	0	0.0	0	0.0
Culpeper County	47,911	154	321.4	1	2.1	4	8.3
Cumberland County	9,849	44	446.7	0	0.0	0	0.0
Dickenson County	15,690	26	165.7	0	0.0	0	0.0
Dinwiddie County	27,994	119	425.1	2	7.1	4	14.3
Essex County	11,233	58	516.3	1	8.9	0	0.0
Fairfax County	1,118,602	2058	184.0	33	3.0	11	1.0
Fauquier County	66,542	121	181.8	2	3.0	3	4.5
Floyd County	15,390	18	117.0	0	0.0	0	0.0
Fluvanna County	25,967	48	184.9	0	0.0	0	0.0
Franklin County	56,411	162	287.2	2	3.5	7	12.4
Frederick County	80,317	170	211.7	0	0.0	1	1.2
Giles County	16,928	33	194.9	0	0.0	0	0.0
Gloucester County	36,886	79	214.2	1	2.7	1	2.7
Goochland County	21,347	55	257.6	0	0.0	1	4.7
Grayson County	15,183	18	118.6	0	0.0	0	0.0
Greene County	18,771	34	181.1	1	5.3	0	0.0
Greensville County	11,851	57	481.0	0	0.0	0	0.0
Halifax County, South Boston	35,849	175	488.2	0	0.0	0	0.0
Hanover County	100,668	189	187.7	0	0.0	1	1.0
Henrico County	314,932	1351	429.0	3	1.0	1	0.3
Henry County	52,969	184	347.4	0	0.0	2	3.8
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	114	322.0	0	0.0	1	2.8
James City County	68,967	155	224.7	1	1.4	1	1.4

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	33561	410.0	144	1.8	143	1.7
LOCALITY							
King and Queen County	7,046	17	241.3	0	0.0	0	0.0
King George County	24,500	78	318.4	0	0.0	3	12.2
King William County	15,981	50	312.9	0	0.0	1	6.3
Lancaster County	11,236	32	284.8	0	0.0	1	8.9
Lee County	25,474	27	106.0	2	7.9	0	0.0
Loudoun County	336,898	537	159.4	7	2.1	1	0.3
Louisa County	33,430	77	230.3	0	0.0	0	0.0
Lunenburg County	12,588	59	468.7	0	0.0	1	7.9
Madison County	13,200	25	189.4	0	0.0	0	0.0
Mathews County	8,884	14	157.6	0	0.0	0	0.0
Mecklenburg County	31,749	164	516.6	0	0.0	4	12.6
Middlesex County	10,822	31	286.5	1	9.2	0	0.0
Montgomery County	95,194	292	306.7	0	0.0	0	0.0
Nelson County	14,827	36	242.8	0	0.0	2	13.5
New Kent County	19,169	38	198.2	0	0.0	0	0.0
Northampton County	12,226	57	466.2	0	0.0	0	0.0
Northumberland County	12,346	32	259.2	0	0.0	1	8.1
Nottoway County	15,830	90	568.5	0	0.0	1	6.3
Orange County	34,246	91	265.7	0	0.0	1	2.9
Page County	23,895	71	297.1	0	0.0	0	0.0
Patrick County	18,451	23	124.7	1	5.4	0	0.0
Pittsylvania County	62,807	197	313.7	1	1.6	7	11.1
Powhatan County	28,123	57	202.7	0	0.0	0	0.0
Prince Edward County	23,238	109	469.1	1	4.3	1	4.3
Prince George County	36,941	265	717.4	1	2.7	0	0.0
Prince William County	430,289	1353	314.4	12	2.8	9	2.1
Pulaski County	34,736	55	158.3	0	0.0	0	0.0
Rappahannock County	7,456	7	93.9	0	0.0	1	13.4
Richmond County	9,059	25	276.0	2	22.1	0	0.0
Roanoke County	92,901	183	197.0	2	2.2	1	1.1
Rockbridge County	22,394	51	227.7	0	0.0	2	8.9
Rockingham County	77,391	147	189.9	1	1.3	2	2.6
Russell County	28,445	23	80.9	0	0.0	0	0.0
Scott County	22,781	33	144.9	1	4.4	0	0.0
Shenandoah County	42,583	62	145.6	0	0.0	0	0.0
Smyth County	31,718	41	129.3	2	6.3	0	0.0
Southampton County	18,409	79	429.1	0	0.0	0	0.0
Spotsylvania County	125,684	369	293.6	0	0.0	10	8.0
Stafford County	134,352	352	262.0	3	2.2	2	1.5
Surry County	6,844	29	423.7	0	0.0	1	14.6
Sussex County	11,972	59	492.8	0	0.0	0	0.0
Tazewell County	44,268	45	101.7	1	2.3	0	0.0
Warren County	38,070	142	373.0	0	0.0	0	0.0
Washington County	55,190	69	125.0	2	3.6	0	0.0
Westmoreland County	17,524	74	422.3	1	5.7	1	5.7
Wise County	40,918	89	217.5	1	2.4	0	0.0
Wythe County	29,251	57	194.9	0	0.0	1	3.4
York County	66,146	168	254.0	4	6.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	33561	410.0	144	1.8	143	1.7
LOCALITY							
Alexandria	146,294	550	376.0	11	7.5	2	1.4
Bristol	17,662	45	254.8	1	5.7	0	0.0
Buena Vista	6,707	21	313.1	0	0.0	0	0.0
Charlottesville	43,956	306	696.2	0	0.0	0	0.0
Chesapeake	228,417	1216	532.4	0	0.0	1	0.4
Colonial Heights	17,479	80	457.7	0	0.0	0	0.0
Covington	5,771	26	450.5	0	0.0	0	0.0
Danville	42,996	384	893.1	0	0.0	1	2.3
Emporia	5,740	44	766.6	0	0.0	0	0.0
Fairfax City	23,461	141	601.0	0	0.0	0	0.0
Falls Church	13,229	71	536.7	0	0.0	0	0.0
Franklin City	8,528	83	973.3	0	0.0	0	0.0
Fredericksburg	27,307	200	732.4	0	0.0	2	7.3
Galax	6,908	22	318.5	0	0.0	0	0.0
Hampton	136,836	1291	943.5	2	1.5	0	0.0
Harrisonburg	50,981	231	453.1	0	0.0	0	0.0
Hopewell	22,348	182	814.4	0	0.0	0	0.0
Lexington	6,998	20	285.8	0	0.0	0	0.0
Lynchburg	77,113	622	806.6	0	0.0	5	6.5
Manassas	40,605	188	463.0	2	4.9	0	0.0
Manassas Park	15,798	39	246.9	1	6.3	0	0.0
Martinsville	13,733	97	706.3	0	0.0	1	7.3
Newport News	180,726	1596	883.1	15	8.3	1	0.6
Norfolk	245,782	3226	1312.5	3	1.2	0	0.0
Norton	4,068	16	393.3	0	0.0	0	0.0
Petersburg	31,973	583	1823.4	0	0.0	0	0.0
Poquoson	12,097	14	115.7	0	0.0	0	0.0
Portsmouth	96,470	1036	1073.9	0	0.0	0	0.0
Radford	16,685	126	755.2	0	0.0	0	0.0
Richmond City	210,309	2457	1168.3	1	0.5	1	0.5
Roanoke City	97,469	618	634.0	0	0.0	2	2.1
Salem	24,970	75	300.4	0	0.0	0	0.0
Staunton	23,921	90	376.2	1	4.2	0	0.0
Suffolk	85,181	547	642.2	1	1.2	0	0.0
Virginia Beach	447,021	2296	513.6	1	0.2	3	0.7
Waynesboro	21,107	68	322.2	0	0.0	1	4.7
Williamsburg	15,167	88	580.2	1	6.6	2	13.2
Winchester	26,881	213	792.4	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Chlamydia trachomatis* Infection**		**Cryptosporidiosis**		**Ehrlichiosis/ Anaplasmosis**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	33561	410.0	144	1.8	143	1.7
DISTRICT/REGION							

Central Shenandoah	290,054	785	270.6	3	1.0	6	2.1
Lord Fairfax	226,069	680	300.8	0	0.0	1	0.4
Rappahannock	340,815	1095	321.3	3	0.9	17	5.0
Rappahannock/Rapidan	169,355	398	235.0	3	1.8	9	5.3
Thomas Jefferson	239,202	729	304.8	3	1.3	5	2.1
Northwest Region	1,265,495	3,687	291.3	12	0.9	38	3.0

Alexandria	146,294	550	376.0	11	7.5	2	1.4
Arlington	221,045	587	265.6	3	1.4	1	0.5
Fairfax	1,155,292	2270	196.5	33	2.9	11	1.0
Loudoun	336,898	537	159.4	7	2.1	1	0.3
Prince William	486,692	1580	324.6	15	3.1	9	1.8
Northern Region	2,346,221	5,524	235.4	69	2.9	24	1.0

Alleghany	178,239	347	194.7	3	1.7	1	0.6
Central Virginia	255,342	1054	412.8	2	0.8	21	8.2
Cumberland Plateau	112,262	97	86.4	1	0.9	0	0.0
Lenowisco	93,241	165	177.0	4	4.3	0	0.0
Mount Rogers	192,501	292	151.7	6	3.1	1	0.5
New River	178,933	524	292.8	0	0.0	0	0.0
Pittsylvania/Danville	105,803	581	549.1	1	0.9	8	7.6
Roanoke City	97,469	618	634.0	0	0.0	2	2.1
West Piedmont	141,564	466	329.2	3	2.1	10	7.1
Southwest Region	1,355,354	4,144	305.8	20	1.5	43	3.2

Chesterfield	369,458	1339	362.4	0	0.0	2	0.5
Chickahominy	148,341	310	209.0	0	0.0	2	1.3
Crater	155,663	1338	859.5	3	1.9	5	3.2
Henrico	314,932	1351	429.0	3	1.0	1	0.3
Piedmont	103,756	434	418.3	2	1.9	6	5.8
Richmond City	210,309	2457	1168.3	1	0.5	1	0.5
Southside	84,608	416	491.7	0	0.0	6	7.1
Central Region	1,387,067	7,645	551.2	9	0.6	23	1.7

Chesapeake	228,417	1216	532.4	0	0.0	1	0.4
Eastern Shore	45,567	240	526.7	0	0.0	1	2.2
Hampton	136,836	1291	943.5	2	1.5	0	0.0
Norfolk	245,782	3226	1312.5	3	1.2	0	0.0
Peninsula	343,103	2021	589.0	21	6.1	4	1.2
Portsmouth	96,470	1036	1073.9	0	0.0	0	0.0
Three Rivers	141,017	412	292.2	6	4.3	5	3.5
Virginia Beach	447,021	2296	513.6	1	0.2	3	0.7
Western Tidewater	147,517	823	557.9	1	0.7	1	0.7
Eastern Region	1,831,730	12,561	685.7	34	1.9	15	0.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Escherichia coli* Infection, Shiga Toxin-Producing**		**Giardiasis**		**Gonorrhea**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	109	1.3	278	3.4	6,992	85.4
LOCALITY							
Accomack County	33,341	0	0.0	1	3.0	43	129.0
Albemarle County	102,251	3	2.9	6	5.9	29	28.4
Alleghany County, Clifton Forge	16,230	0	0.0	0	0.0	1	6.2
Amelia County	12,759	0	0.0	1	7.8	6	47.0
Amherst County	32,384	1	3.1	1	3.1	22	67.9
Appomattox County	15,128	0	0.0	1	6.6	8	52.9
Arlington County	221,045	3	1.4	16	7.2	118	53.4
Augusta County	73,658	7	9.5	2	2.7	9	12.2
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	1	1.3	2	2.6	18	23.8
Bland County	6,738	0	0.0	0	0.0	1	14.8
Botetourt County	33,154	0	0.0	2	6.0	6	18.1
Brunswick County	17,010	0	0.0	0	0.0	23	135.2
Buchanan County	23,859	0	0.0	0	0.0	0	0.0
Buckingham County	17,088	0	0.0	0	0.0	11	64.4
Campbell County	55,163	0	0.0	0	0.0	35	63.4
Caroline County	28,972	1	3.5	2	6.9	12	41.4
Carroll County	29,851	1	3.3	1	3.3	2	6.7
Charles City County	7,157	0	0.0	0	0.0	8	111.8
Charlotte County	12,404	0	0.0	0	0.0	12	96.7
Chesterfield County	323,856	1	0.3	11	3.4	240	74.1
Clarke County	14,323	0	0.0	0	0.0	1	7.0
Craig County	5,213	0	0.0	0	0.0	1	19.2
Culpeper County	47,911	0	0.0	0	0.0	6	12.5
Cumberland County	9,849	0	0.0	0	0.0	6	60.9
Dickenson County	15,690	0	0.0	0	0.0	3	19.1
Dinwiddie County	27,994	0	0.0	1	3.6	28	100.0
Essex County	11,233	0	0.0	0	0.0	12	106.8
Fairfax County	1,118,602	13	1.2	68	6.1	280	25.0
Fauquier County	66,542	2	3.0	1	1.5	9	13.5
Floyd County	15,390	1	6.5	1	6.5	1	6.5
Fluvanna County	25,967	0	0.0	1	3.9	8	30.8
Franklin County	56,411	1	1.8	3	5.3	56	99.3
Frederick County	80,317	3	3.7	1	1.2	25	31.1
Giles County	16,928	1	5.9	0	0.0	2	11.8
Gloucester County	36,886	0	0.0	0	0.0	9	24.4
Goochland County	21,347	0	0.0	0	0.0	5	23.4
Grayson County	15,183	1	6.6	1	6.6	4	26.3
Greene County	18,771	0	0.0	1	5.3	4	21.3
Greensville County	11,851	0	0.0	0	0.0	12	101.3
Halifax County, South Boston	35,849	0	0.0	1	2.8	43	119.9
Hanover County	100,668	0	0.0	4	4.0	27	26.8
Henrico County	314,932	1	0.3	5	1.6	319	101.3
Henry County	52,969	0	0.0	1	1.9	39	73.6
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	1	2.8	14	39.5
James City County	68,967	1	1.4	0	0.0	31	44.9

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	***Escherichia coli* Infection, Shiga Toxin-Producing** REPORTED CASES	RATE PER 100,000	**Giardiasis** REPORTED CASES	RATE PER 100,000	**Gonorrhea** REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	109	1.3	278	3.4	6,992	85.4
LOCALITY							
King and Queen County	7,046	0	0.0	0	0.0	2	28.4
King George County	24,500	0	0.0	0	0.0	8	32.7
King William County	15,981	0	0.0	0	0.0	7	43.8
Lancaster County	11,236	0	0.0	0	0.0	6	53.4
Lee County	25,474	0	0.0	0	0.0	1	3.9
Loudoun County	336,898	8	2.4	17	5.0	53	15.7
Louisa County	33,430	1	3.0	3	9.0	11	32.9
Lunenburg County	12,588	0	0.0	0	0.0	24	190.7
Madison County	13,200	1	7.6	0	0.0	3	22.7
Mathews County	8,884	0	0.0	0	0.0	1	11.3
Mecklenburg County	31,749	0	0.0	0	0.0	45	141.7
Middlesex County	10,822	0	0.0	0	0.0	4	37.0
Montgomery County	95,194	2	2.1	4	4.2	34	35.7
Nelson County	14,827	0	0.0	1	6.7	2	13.5
New Kent County	19,169	0	0.0	0	0.0	10	52.2
Northampton County	12,226	0	0.0	0	0.0	8	65.4
Northumberland County	12,346	0	0.0	0	0.0	3	24.3
Nottoway County	15,830	0	0.0	0	0.0	13	82.1
Orange County	34,246	0	0.0	1	2.9	13	38.0
Page County	23,895	1	4.2	1	4.2	3	12.6
Patrick County	18,451	1	5.4	0	0.0	2	10.8
Pittsylvania County	62,807	0	0.0	1	1.6	45	71.6
Powhatan County	28,123	1	3.6	0	0.0	5	17.8
Prince Edward County	23,238	0	0.0	0	0.0	18	77.5
Prince George County	36,941	0	0.0	2	5.4	36	97.5
Prince William County	430,289	5	1.2	15	3.5	141	32.8
Pulaski County	34,736	0	0.0	1	2.9	13	37.4
Rappahannock County	7,456	0	0.0	0	0.0	0	0.0
Richmond County	9,059	0	0.0	0	0.0	8	88.3
Roanoke County	92,901	3	3.2	6	6.5	92	99.0
Rockbridge County	22,394	2	8.9	0	0.0	3	13.4
Rockingham County	77,391	7	9.0	6	7.8	6	7.8
Russell County	28,445	3	10.5	0	0.0	0	0.0
Scott County	22,781	1	4.4	0	0.0	4	17.6
Shenandoah County	42,583	2	4.7	1	2.3	3	7.0
Smyth County	31,718	2	6.3	0	0.0	11	34.7
Southampton County	18,409	0	0.0	1	5.4	16	86.9
Spotsylvania County	125,684	1	0.8	4	3.2	40	31.8
Stafford County	134,352	3	2.2	3	2.2	38	28.3
Surry County	6,844	0	0.0	0	0.0	2	29.2
Sussex County	11,972	0	0.0	0	0.0	5	41.8
Tazewell County	44,268	0	0.0	2	4.5	16	36.1
Warren County	38,070	1	2.6	2	5.3	13	34.1
Washington County	55,190	4	7.2	2	3.6	6	10.9
Westmoreland County	17,524	0	0.0	0	0.0	10	57.1
Wise County	40,918	0	0.0	0	0.0	6	14.7
Wythe County	29,251	1	3.4	1	3.4	7	23.9
York County	66,146	0	0.0	1	1.5	18	27.2

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Escherichia coli* Infection, Shiga Toxin-Producing**		**Giardiasis**		**Gonorrhea**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	109	1.3	278	3.4	6,992	85.4
LOCALITY							
Alexandria	146,294	2	1.4	11	7.5	117	80.0
Bristol	17,662	0	0.0	0	0.0	17	96.3
Buena Vista	6,707	0	0.0	0	0.0	1	14.9
Charlottesville	43,956	1	2.3	6	13.7	35	79.6
Chesapeake	228,417	0	0.0	3	1.3	245	107.3
Colonial Heights	17,479	0	0.0	1	5.7	11	62.9
Covington	5,771	0	0.0	0	0.0	2	34.7
Danville	42,996	0	0.0	2	4.7	141	327.9
Emporia	5,740	0	0.0	0	0.0	12	209.1
Fairfax City	23,461	0	0.0	1	4.3	17	72.5
Falls Church	13,229	0	0.0	0	0.0	11	83.2
Franklin City	8,528	0	0.0	0	0.0	23	269.7
Fredericksburg	27,307	0	0.0	1	3.7	23	84.2
Galax	6,908	0	0.0	0	0.0	4	57.9
Hampton	136,836	0	0.0	4	2.9	289	211.2
Harrisonburg	50,981	1	2.0	0	0.0	21	41.2
Hopewell	22,348	0	0.0	0	0.0	34	152.1
Lexington	6,998	0	0.0	0	0.0	2	28.6
Lynchburg	77,113	0	0.0	1	1.3	188	243.8
Manassas	40,605	0	0.0	0	0.0	18	44.3
Manassas Park	15,798	0	0.0	1	6.3	6	38.0
Martinsville	13,733	0	0.0	0	0.0	17	123.8
Newport News	180,726	2	1.1	2	1.1	403	223.0
Norfolk	245,782	3	1.2	8	3.3	773	314.5
Norton	4,068	0	0.0	0	0.0	1	24.6
Petersburg	31,973	0	0.0	0	0.0	143	447.3
Poquoson	12,097	0	0.0	1	8.3	2	16.5
Portsmouth	96,470	0	0.0	3	3.1	224	232.2
Radford	16,685	0	0.0	0	0.0	5	30.0
Richmond City	210,309	1	0.5	10	4.8	771	366.6
Roanoke City	97,469	3	3.1	3	3.1	391	401.2
Salem	24,970	0	0.0	0	0.0	25	100.1
Staunton	23,921	1	4.2	1	4.2	18	75.2
Suffolk	85,181	0	0.0	0	0.0	112	131.5
Virginia Beach	447,021	2	0.4	4	0.9	447	100.0
Waynesboro	21,107	0	0.0	1	4.7	12	56.9
Williamsburg	15,167	0	0.0	2	13.2	13	85.7
Winchester	26,881	1	3.7	1	3.7	54	200.9

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***Escherichia coli* Infection, Shiga Toxin-Producing**		**Giardiasis**		**Gonorrhea**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	109	1.3	278	3.4	6,992	85.4
DISTRICT/REGION							

Central Shenandoah	290,054	18	6.2	10	3.4	72	24.8
Lord Fairfax	226,069	8	3.5	6	2.7	99	43.8
Rappahannock	340,815	5	1.5	10	2.9	121	35.5
Rappahannock/Rapidan	169,355	3	1.8	2	1.2	31	18.3
Thomas Jefferson	239,202	5	2.1	18	7.5	89	37.2
Northwest Region	1,265,495	39	3.1	46	3.6	412	32.6

Alexandria	146,294	2	1.4	11	7.5	117	80.0
Arlington	221,045	3	1.4	16	7.2	118	53.4
Fairfax	1,155,292	13	1.1	69	6.0	308	26.7
Loudoun	336,898	8	2.4	17	5.0	53	15.7
Prince William	486,692	5	1.0	16	3.3	165	33.9
Northern Region	2,346,221	31	1.3	129	5.5	761	32.4

Alleghany	178,239	3	1.7	8	4.5	127	71.3
Central Virginia	255,342	2	0.8	5	2.0	271	106.1
Cumberland Plateau	112,262	3	2.7	2	1.8	19	16.9
Lenowisco	93,241	1	1.1	0	0.0	12	12.9
Mount Rogers	192,501	9	4.7	5	2.6	52	27.0
New River	178,933	4	2.2	6	3.4	55	30.7
Pittsylvania/Danville	105,803	0	0.0	3	2.8	186	175.8
Roanoke City	97,469	3	3.1	3	3.1	391	401.2
West Piedmont	141,564	2	1.4	4	2.8	114	80.5
Southwest Region	1,355,354	27	2.0	36	2.7	1,227	90.5

Chesterfield	369,458	2	0.5	12	3.2	256	69.3
Chickahominy	148,341	0	0.0	4	2.7	50	33.7
Crater	155,663	0	0.0	3	1.9	272	174.7
Henrico	314,932	1	0.3	5	1.6	319	101.3
Piedmont	103,756	0	0.0	1	1.0	90	86.7
Richmond City	210,309	1	0.5	10	4.8	771	366.6
Southside	84,608	0	0.0	1	1.2	111	131.2
Central Region	1,387,067	4	0.3	36	2.6	1869	134.7

Chesapeake	228,417	0	0.0	3	1.3	245	107.3
Eastern Shore	45,567	0	0.0	1	2.2	51	111.9
Hampton	136,836	0	0.0	4	2.9	289	211.2
Norfolk	245,782	3	1.2	8	3.3	773	314.5
Peninsula	343,103	3	0.9	6	1.7	467	136.1
Portsmouth	96,470	0	0.0	3	3.1	224	232.2
Three Rivers	141,017	0	0.0	0	0.0	62	44.0
Virginia Beach	447,021	2	0.4	4	0.9	447	100.0
Western Tidewater	147,517	0	0.0	2	1.4	165	111.9
Eastern Region	1,831,730	8	0.4	31	1.7	2,723	148.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	***H. influenzae* Infection, Invasive** REPORTED CASES	***H. influenzae* Infection, Invasive** RATE PER 100,000	**Hepatitis A** REPORTED CASES	**Hepatitis A** RATE PER 100,000	**Hepatitis B, Acute** REPORTED CASES	**Hepatitis B, Acute** RATE PER 100,000
VIRGINIA TOTAL	8,185,867	98	1.2	36	0.4	72	0.9
LOCALITY							
Accomack County	33,341	0	0.0	1	3.0	0	0.0
Albemarle County	102,251	1	1.0	0	0.0	0	0.0
Alleghany County, Clifton Forge	16,230	0	0.0	0	0.0	0	0.0
Amelia County	12,759	0	0.0	1	7.8	0	0.0
Amherst County	32,384	0	0.0	0	0.0	0	0.0
Appomattox County	15,128	0	0.0	0	0.0	0	0.0
Arlington County	221,045	0	0.0	2	0.9	1	0.5
Augusta County	73,658	0	0.0	0	0.0	0	0.0
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	3	4.0	1	1.3	0	0.0
Bland County	6,738	0	0.0	0	0.0	0	0.0
Botetourt County	33,154	0	0.0	0	0.0	1	3.0
Brunswick County	17,010	0	0.0	1	5.9	0	0.0
Buchanan County	23,859	0	0.0	1	4.2	0	0.0
Buckingham County	17,088	0	0.0	0	0.0	0	0.0
Campbell County	55,163	0	0.0	0	0.0	0	0.0
Caroline County	28,972	2	6.9	0	0.0	0	0.0
Carroll County	29,851	1	3.3	0	0.0	1	3.3
Charles City County	7,157	0	0.0	0	0.0	0	0.0
Charlotte County	12,404	0	0.0	0	0.0	0	0.0
Chesterfield County	323,856	2	0.6	1	0.3	1	0.3
Clarke County	14,323	0	0.0	0	0.0	0	0.0
Craig County	5,213	1	19.2	0	0.0	0	0.0
Culpeper County	47,911	0	0.0	0	0.0	0	0.0
Cumberland County	9,849	0	0.0	0	0.0	0	0.0
Dickenson County	15,690	0	0.0	0	0.0	1	6.4
Dinwiddie County	27,994	1	3.6	0	0.0	1	3.6
Essex County	11,233	0	0.0	0	0.0	0	0.0
Fairfax County	1,118,602	11	1.0	8	0.7	3	0.3
Fauquier County	66,542	1	1.5	1	1.5	0	0.0
Floyd County	15,390	1	6.5	0	0.0	0	0.0
Fluvanna County	25,967	0	0.0	0	0.0	0	0.0
Franklin County	56,411	0	0.0	0	0.0	1	1.8
Frederick County	80,317	1	1.2	0	0.0	1	1.2
Giles County	16,928	1	5.9	0	0.0	2	11.8
Gloucester County	36,886	0	0.0	0	0.0	0	0.0
Goochland County	21,347	0	0.0	0	0.0	0	0.0
Grayson County	15,183	0	0.0	0	0.0	0	0.0
Greene County	18,771	1	5.3	0	0.0	0	0.0
Greensville County	11,851	0	0.0	0	0.0	0	0.0
Halifax County, South Boston	35,849	0	0.0	0	0.0	0	0.0
Hanover County	100,668	1	1.0	3	3.0	0	0.0
Henrico County	314,932	3	1.0	2	0.6	5	1.6
Henry County	52,969	1	1.9	0	0.0	0	0.0
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	1	2.8	0	0.0
James City County	68,967	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***H. influenzae* Infection, Invasive**		**Hepatitis A**		**Hepatitis B, Acute**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	98	1.2	36	0.4	72	0.9
LOCALITY							
King and Queen County	7,046	0	0.0	0	0.0	0	0.0
King George County	24,500	1	4.1	0	0.0	0	0.0
King William County	15,981	0	0.0	0	0.0	0	0.0
Lancaster County	11,236	0	0.0	0	0.0	0	0.0
Lee County	25,474	0	0.0	0	0.0	6	23.6
Loudoun County	336,898	2	0.6	1	0.3	1	0.3
Louisa County	33,430	2	6.0	0	0.0	1	3.0
Lunenburg County	12,588	0	0.0	0	0.0	0	0.0
Madison County	13,200	0	0.0	0	0.0	0	0.0
Mathews County	8,884	0	0.0	0	0.0	0	0.0
Mecklenburg County	31,749	0	0.0	0	0.0	0	0.0
Middlesex County	10,822	0	0.0	0	0.0	1	9.2
Montgomery County	95,194	0	0.0	0	0.0	0	0.0
Nelson County	14,827	0	0.0	1	6.7	0	0.0
New Kent County	19,169	0	0.0	0	0.0	0	0.0
Northampton County	12,226	0	0.0	0	0.0	0	0.0
Northumberland County	12,346	0	0.0	0	0.0	1	8.1
Nottoway County	15,830	1	6.3	0	0.0	1	6.3
Orange County	34,246	3	8.8	0	0.0	0	0.0
Page County	23,895	0	0.0	0	0.0	2	8.4
Patrick County	18,451	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,807	0	0.0	0	0.0	0	0.0
Powhatan County	28,123	0	0.0	0	0.0	0	0.0
Prince Edward County	23,238	0	0.0	0	0.0	0	0.0
Prince George County	36,941	0	0.0	0	0.0	0	0.0
Prince William County	430,289	4	0.9	4	0.9	1	0.2
Pulaski County	34,736	3	8.6	0	0.0	2	5.8
Rappahannock County	7,456	0	0.0	0	0.0	0	0.0
Richmond County	9,059	0	0.0	0	0.0	0	0.0
Roanoke County	92,901	3	3.2	0	0.0	0	0.0
Rockbridge County	22,394	0	0.0	0	0.0	0	0.0
Rockingham County	77,391	2	2.6	0	0.0	0	0.0
Russell County	28,445	1	3.5	0	0.0	1	3.5
Scott County	22,781	0	0.0	0	0.0	2	8.8
Shenandoah County	42,583	4	9.4	2	4.7	1	2.3
Smyth County	31,718	2	6.3	0	0.0	0	0.0
Southampton County	18,409	0	0.0	0	0.0	0	0.0
Spotsylvania County	125,684	2	1.6	0	0.0	1	0.8
Stafford County	134,352	1	0.7	0	0.0	1	0.7
Surry County	6,844	0	0.0	0	0.0	0	0.0
Sussex County	11,972	0	0.0	0	0.0	0	0.0
Tazewell County	44,268	0	0.0	0	0.0	2	4.5
Warren County	38,070	3	7.9	0	0.0	0	0.0
Washington County	55,190	0	0.0	0	0.0	1	1.8
Westmoreland County	17,524	0	0.0	0	0.0	0	0.0
Wise County	40,918	3	7.3	0	0.0	5	12.2
Wythe County	29,251	0	0.0	0	0.0	3	10.3
York County	66,146	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		***H. influenzae* Infection, Invasive**		**Hepatitis A**		**Hepatitis B, Acute**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	98	1.2	36	0.4	72	0.9
LOCALITY							
Alexandria	146,294	0	0.0	0	0.0	0	0.0
Bristol	17,662	0	0.0	0	0.0	0	0.0
Buena Vista	6,707	0	0.0	0	0.0	0	0.0
Charlottesville	43,956	1	2.3	0	0.0	0	0.0
Chesapeake	228,417	4	1.8	0	0.0	0	0.0
Colonial Heights	17,479	0	0.0	0	0.0	0	0.0
Covington	5,771	0	0.0	0	0.0	0	0.0
Danville	42,996	0	0.0	0	0.0	0	0.0
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	0	0.0	0	0.0
Falls Church	13,229	0	0.0	0	0.0	0	0.0
Franklin City	8,528	0	0.0	0	0.0	0	0.0
Fredericksburg	27,307	1	3.7	0	0.0	0	0.0
Galax	6,908	0	0.0	0	0.0	0	0.0
Hampton	136,836	3	2.2	0	0.0	2	1.5
Harrisonburg	50,981	0	0.0	2	3.9	1	2.0
Hopewell	22,348	0	0.0	0	0.0	1	4.5
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	0	0.0	1	1.3	0	0.0
Manassas	40,605	0	0.0	0	0.0	0	0.0
Manassas Park	15,798	0	0.0	0	0.0	0	0.0
Martinsville	13,733	0	0.0	0	0.0	1	7.3
Newport News	180,726	1	0.6	0	0.0	0	0.0
Norfolk	245,782	0	0.0	0	0.0	1	0.4
Norton	4,068	1	24.6	0	0.0	0	0.0
Petersburg	31,973	1	3.1	0	0.0	0	0.0
Poquoson	12,097	0	0.0	0	0.0	0	0.0
Portsmouth	96,470	1	1.0	0	0.0	2	2.1
Radford	16,685	0	0.0	0	0.0	0	0.0
Richmond City	210,309	3	1.4	2	1.0	6	2.9
Roanoke City	97,469	6	6.2	0	0.0	2	2.1
Salem	24,970	0	0.0	0	0.0	0	0.0
Staunton	23,921	0	0.0	0	0.0	0	0.0
Suffolk	85,181	1	1.2	0	0.0	0	0.0
Virginia Beach	447,021	2	0.4	0	0.0	4	0.9
Waynesboro	21,107	3	14.2	0	0.0	0	0.0
Williamsburg	15,167	1	6.6	0	0.0	1	6.6
Winchester	26,881	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	***H. influenzae* Infection, Invasive** REPORTED CASES	***H. influenzae* Infection, Invasive** RATE PER 100,000	**Hepatitis A** REPORTED CASES	**Hepatitis A** RATE PER 100,000	**Hepatitis B, Acute** REPORTED CASES	**Hepatitis B, Acute** RATE PER 100,000
VIRGINIA TOTAL	8,185,867	98	1.2	36	0.4	72	0.9
DISTRICT/REGION							

Central Shenandoah	290,054	5	1.7	2	0.7	1	0.3
Lord Fairfax	226,069	8	3.5	2	0.9	4	1.8
Rappahannock	340,815	7	2.1	0	0.0	2	0.6
Rappahannock/Rapidan	169,355	4	2.4	1	0.6	0	0.0
Thomas Jefferson	239,202	5	2.1	1	0.4	1	0.4
Northwest Region	1,265,495	29	2.3	6	0.5	8	0.6

Alexandria	146,294	0	0.0	0	0.0	0	0.0
Arlington	221,045	0	0.0	2	0.9	1	0.5
Fairfax	1,155,292	11	1.0	8	0.7	3	0.3
Loudoun	336,898	2	0.6	1	0.3	1	0.3
Prince William	486,692	4	0.8	4	0.8	1	0.2
Northern Region	2,346,221	17	0.7	15	0.6	6	0.3

Alleghany	178,239	4	2.2	0	0.0	1	0.6
Central Virginia	255,342	3	1.2	2	0.8	0	0.0
Cumberland Plateau	112,262	1	0.9	1	0.9	4	3.6
Lenowisco	93,241	4	4.3	0	0.0	13	13.9
Mount Rogers	192,501	3	1.6	0	0.0	5	2.6
New River	178,933	5	2.8	0	0.0	4	2.2
Pittsylvania/Danville	105,803	0	0.0	0	0.0	0	0.0
Roanoke City	97,469	6	6.2	0	0.0	2	2.1
West Piedmont	141,564	1	0.7	0	0.0	2	1.4
Southwest Region	1,355,354	27	2.0	3	0.2	31	2.3

Chesterfield	369,458	2	0.5	1	0.3	1	0.3
Chickahominy	148,341	1	0.7	3	2.0	0	0.0
Crater	155,663	2	1.3	0	0.0	2	1.3
Henrico	314,932	3	1.0	2	0.6	5	1.6
Piedmont	103,756	1	1.0	1	1.0	1	1.0
Richmond City	210,309	3	1.4	2	1.0	6	2.9
Southside	84,608	0	0.0	1	1.2	0	0.0
Central Region	1,387,067	12	0.9	10	0.7	15	1.1

Chesapeake	228,417	4	1.8	0	0.0	0	0.0
Eastern Shore	45,567	0	0.0	1	2.2	0	0.0
Hampton	136,836	3	2.2	0	0.0	2	1.5
Norfolk	245,782	0	0.0	0	0.0	1	0.4
Peninsula	343,103	2	0.6	0	0.0	1	0.3
Portsmouth	96,470	1	1.0	0	0.0	2	2.1
Three Rivers	141,017	0	0.0	0	0.0	2	1.4
Virginia Beach	447,021	2	0.4	0	0.0	4	0.9
Western Tidewater	147,517	1	0.7	1	0.7	0	0.0
Eastern Region	1,831,730	13	0.7	2	0.1	12	0.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Hepatitis C, Acute: REPORTED CASES	Hepatitis C, Acute: RATE PER 100,000	HIV Disease*: REPORTED CASES	HIV Disease*: RATE PER 100,000	Lead-Elevated Blood Levels in Children Age 0-15 years**: REPORTED CASES	Lead-Elevated Blood Levels in Children Age 0-15 years**: RATE PER 100,000
VIRGINIA TOTAL	8,185,867	41	0.5	1151	14.1	164	10.0
LOCALITY							
Accomack County	33,341	0	0.0	3	9.0	8	125.6
Albemarle County	102,251	0	0.0	9	8.8	3	15.7
Alleghany County, Clifton Forge	16,230	0	0.0	1	6.2	0	0.0
Amelia County	12,759	0	0.0	2	15.7	0	0.0
Amherst County	32,384	0	0.0	4	12.4	0	0.0
Appomattox County	15,128	0	0.0	1	6.6	1	34.2
Arlington County	221,045	0	0.0	59	26.7	3	9.1
Augusta County	73,658	1	1.4	2	2.7	0	0.0
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	0	0.0	4	5.3	0	0.0
Bland County	6,738	0	0.0	0	0.0	0	0.0
Botetourt County	33,154	0	0.0	2	6.0	0	0.0
Brunswick County	17,010	0	0.0	8	47.0	0	0.0
Buchanan County	23,859	0	0.0	1	4.2	0	0.0
Buckingham County	17,088	0	0.0	1	5.9	0	0.0
Campbell County	55,163	0	0.0	9	16.3	1	10.0
Caroline County	28,972	0	0.0	2	6.9	2	32.5
Carroll County	29,851	1	3.3	0	0.0	0	0.0
Charles City County	7,157	0	0.0	1	14.0	0	0.0
Charlotte County	12,404	0	0.0	1	8.1	0	0.0
Chesterfield County	323,856	0	0.0	25	7.7	0	0.0
Clarke County	14,323	0	0.0	0	0.0	2	73.2
Craig County	5,213	0	0.0	0	0.0	0	0.0
Culpeper County	47,911	0	0.0	4	8.3	4	37.0
Cumberland County	9,849	0	0.0	1	10.2	0	0.0
Dickenson County	15,690	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,994	0	0.0	5	17.9	2	39.2
Essex County	11,233	0	0.0	0	0.0	0	0.0
Fairfax County	1,118,602	0	0.0	133	11.9	15	6.3
Fauquier County	66,542	0	0.0	9	13.5	0	0.0
Floyd County	15,390	0	0.0	0	0.0	0	0.0
Fluvanna County	25,967	0	0.0	5	19.3	0	0.0
Franklin County	56,411	0	0.0	2	3.5	0	0.0
Frederick County	80,317	2	2.5	0	0.0	4	23.3
Giles County	16,928	1	5.9	0	0.0	0	0.0
Gloucester County	36,886	0	0.0	1	2.7	0	0.0
Goochland County	21,347	0	0.0	2	9.4	0	0.0
Grayson County	15,183	0	0.0	1	6.6	1	41.8
Greene County	18,771	0	0.0	1	5.3	0	0.0
Greensville County	11,851	0	0.0	3	25.3	0	0.0
Halifax County, South Boston	35,849	1	2.8	7	19.5	0	0.0
Hanover County	100,668	0	0.0	7	7.0	0	0.0
Henrico County	314,932	1	0.3	35	11.1	6	9.1
Henry County	52,969	0	0.0	1	1.9	0	0.0
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	2	5.6	2	30.0
James City County	68,967	0	0.0	4	5.8	1	8.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Hepatitis C, Acute: REPORTED CASES	Hepatitis C, Acute: RATE PER 100,000	HIV Disease*: REPORTED CASES	HIV Disease*: RATE PER 100,000	Lead-Elevated Blood Levels in Children Age 0-15 years**: REPORTED CASES	Lead-Elevated Blood Levels in Children Age 0-15 years**: RATE PER 100,000
VIRGINIA TOTAL	8,185,867	41	0.5	1151	14.1	164	10.0
LOCALITY							
King and Queen County	7,046	0	0.0	1	14.2	0	0.0
King George County	24,500	0	0.0	2	8.2	0	0.0
King William County	15,981	0	0.0	0	0.0	0	0.0
Lancaster County	11,236	0	0.0	0	0.0	0	0.0
Lee County	25,474	1	3.9	0	0.0	0	0.0
Loudoun County	336,898	0	0.0	20	5.9	4	4.4
Louisa County	33,430	0	0.0	0	0.0	0	0.0
Lunenburg County	12,588	0	0.0	1	7.9	2	94.2
Madison County	13,200	0	0.0	0	0.0	0	0.0
Mathews County	8,884	0	0.0	3	33.8	0	0.0
Mecklenburg County	31,749	0	0.0	7	22.0	0	0.0
Middlesex County	10,822	0	0.0	0	0.0	2	133.9
Montgomery County	95,194	2	2.1	8	8.4	0	0.0
Nelson County	14,827	0	0.0	0	0.0	1	40.5
New Kent County	19,169	0	0.0	1	5.2	0	0.0
Northampton County	12,226	0	0.0	0	0.0	3	139.1
Northumberland County	12,346	0	0.0	4	32.4	0	0.0
Nottoway County	15,830	0	0.0	1	6.3	0	0.0
Orange County	34,246	0	0.0	2	5.8	0	0.0
Page County	23,895	0	0.0	0	0.0	2	46.3
Patrick County	18,451	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,807	0	0.0	3	4.8	0	0.0
Powhatan County	28,123	0	0.0	0	0.0	1	19.6
Prince Edward County	23,238	0	0.0	3	12.9	0	0.0
Prince George County	36,941	0	0.0	3	8.1	1	13.9
Prince William County	430,289	0	0.0	59	13.7	4	3.7
Pulaski County	34,736	8	23.0	2	5.8	0	0.0
Rappahannock County	7,456	0	0.0	0	0.0	0	0.0
Richmond County	9,059	0	0.0	1	11.0	0	0.0
Roanoke County	92,901	1	1.1	7	7.5	0	0.0
Rockbridge County	22,394	0	0.0	1	4.5	1	27.8
Rockingham County	77,391	1	1.3	3	3.9	0	0.0
Russell County	28,445	0	0.0	1	3.5	0	0.0
Scott County	22,781	0	0.0	2	8.8	0	0.0
Shenandoah County	42,583	0	0.0	2	4.7	0	0.0
Smyth County	31,718	0	0.0	3	9.5	1	17.6
Southampton County	18,409	0	0.0	1	5.4	0	0.0
Spotsylvania County	125,684	6	4.8	11	8.8	0	0.0
Stafford County	134,352	3	2.2	9	6.7	0	0.0
Surry County	6,844	0	0.0	0	0.0	1	85.9
Sussex County	11,972	0	0.0	1	8.4	1	56.9
Tazewell County	44,268	0	0.0	2	4.5	0	0.0
Warren County	38,070	1	2.6	5	13.1	0	0.0
Washington County	55,190	1	1.8	5	9.1	0	0.0
Westmoreland County	17,524	0	0.0	2	11.4	1	33.6
Wise County	40,918	2	4.9	2	4.9	0	0.0
Wythe County	29,251	4	13.7	0	0.0	0	0.0
York County	66,146	0	0.0	3	4.5	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Hepatitis C, Acute: REPORTED CASES	Hepatitis C, Acute: RATE PER 100,000	HIV Disease*: REPORTED CASES	HIV Disease*: RATE PER 100,000	Lead-Elevated Blood Levels in Children Age 0-15 years**: REPORTED CASES	Lead-Elevated Blood Levels in Children Age 0-15 years**: RATE PER 100,000
VIRGINIA TOTAL	8,185,867	41	0.5	1151	14.1	164	10.0
LOCALITY							
Alexandria	146,294	0	0.0	42	28.7	3	12.6
Bristol	17,662	0	0.0	2	11.3	0	0.0
Buena Vista	6,707	0	0.0	0	0.0	1	81.0
Charlottesville	43,956	0	0.0	11	25.0	1	16.1
Chesapeake	228,417	0	0.0	51	22.3	1	2.0
Colonial Heights	17,479	0	0.0	3	17.2	0	0.0
Covington	5,771	0	0.0	1	17.3	1	93.2
Danville	42,996	0	0.0	7	16.3	6	70.5
Emporia	5,740	0	0.0	1	17.4	2	157.9
Fairfax City	23,461	0	0.0	2	8.5	0	0.0
Falls Church	13,229	0	0.0	5	37.8	1	34.5
Franklin City	8,528	0	0.0	2	23.5	2	104.3
Fredericksburg	27,307	0	0.0	4	14.6	2	38.2
Galax	6,908	0	0.0	0	0.0	0	0.0
Hampton	136,836	0	0.0	34	24.8	1	3.7
Harrisonburg	50,981	0	0.0	2	3.9	2	26.8
Hopewell	22,348	0	0.0	4	17.9	0	0.0
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	0	0.0	12	15.6	3	22.1
Manassas	40,605	0	0.0	2	4.9	0	0.0
Manassas Park	15,798	0	0.0	0	0.0	0	0.0
Martinsville	13,733	0	0.0	2	14.6	0	0.0
Newport News	180,726	0	0.0	58	32.1	5	12.9
Norfolk	245,782	0	0.0	112	45.6	12	25.9
Norton	4,068	0	0.0	0	0.0	0	0.0
Petersburg	31,973	0	0.0	19	59.4	2	31.5
Poquoson	12,097	0	0.0	1	8.3	0	0.0
Portsmouth	96,470	0	0.0	42	43.5	0	0.0
Radford	16,685	1	6.0	0	0.0	0	0.0
Richmond City	210,309	0	0.0	83	39.5	14	37.9
Roanoke City	97,469	0	0.0	14	14.4	8	41.6
Salem	24,970	0	0.0	0	0.0	0	0.0
Staunton	23,921	2	8.4	1	4.2	2	49.6
Suffolk	85,181	0	0.0	14	16.4	5	26.1
Virginia Beach	447,021	0	0.0	78	17.4	3	3.3
Waynesboro	21,107	0	0.0	0	0.0	5	110.5
Williamsburg	15,167	0	0.0	1	6.6	0	0.0
Winchester	26,881	1	3.7	2	7.4	2	36.5

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Hepatitis C, Acute: REPORTED CASES	Hepatitis C, Acute: RATE PER 100,000	HIV Disease*: REPORTED CASES	HIV Disease*: RATE PER 100,000	Lead-Elevated Blood Levels in Children Age 0-15 years**: REPORTED CASES	Lead-Elevated Blood Levels in Children Age 0-15 years**: RATE PER 100,000
VIRGINIA TOTAL	8,185,867	41	0.5	1151	14.1	164	10.0
DISTRICT/REGION							

Central Shenandoah	290,054	4	1.4	9	3.1	11	21.5
Lord Fairfax	226,069	4	1.8	9	4.0	10	22.0
Rappahannock	340,815	9	2.6	28	8.2	4	5.1
Rappahannock/Rapidan	169,355	0	0.0	15	8.9	4	11.3
Thomas Jefferson	239,202	0	0.0	26	10.9	5	11.6
Northwest Region	1,265,495	17	1.3	87	6.9	34	13.4

Alexandria	146,294	0	0.0	42	28.7	3	12.6
Arlington	221,045	0	0.0	59	26.7	3	9.1
Fairfax	1,155,292	0	0.0	140	12.1	16	6.5
Loudoun	336,898	0	0.0	20	5.9	4	4.4
Prince William	486,692	0	0.0	61	12.5	4	3.3
Northern Region	2,346,221	0	0.0	322	13.7	30	5.8

Alleghany	178,239	1	0.6	11	6.2	1	3.1
Central Virginia	255,342	0	0.0	30	11.7	5	10.8
Cumberland Plateau	112,262	0	0.0	4	3.6	0	0.0
Lenowisco	93,241	3	3.2	4	4.3	0	0.0
Mount Rogers	192,501	6	3.1	11	5.7	2	6.0
New River	178,933	12	6.7	10	5.6	0	0.0
Pittsylvania/Danville	105,803	0	0.0	10	9.5	6	30.5
Roanoke City	97,469	0	0.0	14	14.4	8	41.6
West Piedmont	141,564	0	0.0	5	3.5	0	0.0
Southwest Region	1,355,354	22	1.6	99	7.3	22	9.2

Chesterfield	369,458	0	0.0	28	7.6	1	1.3
Chickahominy	148,341	0	0.0	11	7.4	0	0.0
Crater	155,663	0	0.0	36	23.1	9	30.3
Henrico	314,932	1	0.3	35	11.1	6	9.1
Piedmont	103,756	0	0.0	10	9.6	2	11.1
Richmond City	210,309	0	0.0	83	39.5	14	37.9
Southside	84,608	1	1.2	22	26.0	0	0.0
Central Region	1,387,067	2	0.1	225	16.2	32	11.7

Chesapeake	228,417	0	0.0	51	22.3	1	2.0
Eastern Shore	45,567	0	0.0	3	6.6	11	129.0
Hampton	136,836	0	0.0	34	24.8	1	3.7
Norfolk	245,782	0	0.0	112	45.6	12	25.9
Peninsula	343,103	0	0.0	67	19.5	6	8.7
Portsmouth	96,470	0	0.0	42	43.5	0	0.0
Three Rivers	141,017	0	0.0	12	8.5	3	12.6
Virginia Beach	447,021	0	0.0	78	17.4	3	3.3
Western Tidewater	147,517	0	0.0	19	12.9	9	29.0
Eastern Region	1,831,730	0	0.0	418	22.8	46	12.5

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* Beginning with 2009 data, HIV infection and AIDS are no longer being presented separately. Instead, HIV disease will represent the number of persons newly reported to VDH with HIV infection regardless of disease progression, and includes people with an AIDS defining condition at first HIV report.

** Rates are based on population figures for ages 0-15 years only

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,185,867	123	1.5	29	0.4	1,307	16.0
LOCALITY							
Accomack County	33,341	0	0.0	0	0.0	7	21.0
Albemarle County	102,251	1	1.0	0	0.0	30	29.3
Alleghany County, Clifton Forge	16,230	1	6.2	0	0.0	0	0.0
Amelia County	12,759	0	0.0	0	0.0	1	7.8
Amherst County	32,384	0	0.0	0	0.0	5	15.4
Appomattox County	15,128	1	6.6	0	0.0	9	59.5
Arlington County	221,045	0	0.0	1	0.5	37	16.7
Augusta County	73,658	0	0.0	0	0.0	18	24.4
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	0	0.0	0	0.0	13	17.2
Bland County	6,738	0	0.0	0	0.0	0	0.0
Botetourt County	33,154	2	6.0	0	0.0	0	0.0
Brunswick County	17,010	0	0.0	0	0.0	2	11.8
Buchanan County	23,859	0	0.0	0	0.0	0	0.0
Buckingham County	17,088	1	5.9	0	0.0	1	5.9
Campbell County	55,163	1	1.8	0	0.0	2	3.6
Caroline County	28,972	0	0.0	0	0.0	5	17.3
Carroll County	29,851	1	3.3	0	0.0	25	83.7
Charles City County	7,157	0	0.0	0	0.0	1	14.0
Charlotte County	12,404	0	0.0	0	0.0	0	0.0
Chesterfield County	323,856	6	1.9	0	0.0	20	6.2
Clarke County	14,323	0	0.0	0	0.0	15	104.7
Craig County	5,213	0	0.0	0	0.0	0	0.0
Culpeper County	47,911	0	0.0	0	0.0	10	20.9
Cumberland County	9,849	0	0.0	0	0.0	1	10.2
Dickenson County	15,690	1	6.4	0	0.0	0	0.0
Dinwiddie County	27,994	0	0.0	0	0.0	0	0.0
Essex County	11,233	0	0.0	0	0.0	1	8.9
Fairfax County	1,118,602	13	1.2	7	0.6	257	23.0
Fauquier County	66,542	0	0.0	0	0.0	31	46.6
Floyd County	15,390	0	0.0	0	0.0	53	344.4
Fluvanna County	25,967	0	0.0	0	0.0	7	27.0
Franklin County	56,411	0	0.0	0	0.0	2	3.5
Frederick County	80,317	2	2.5	0	0.0	33	41.1
Giles County	16,928	0	0.0	0	0.0	6	35.4
Gloucester County	36,886	1	2.7	0	0.0	2	5.4
Goochland County	21,347	0	0.0	0	0.0	2	9.4
Grayson County	15,183	1	6.6	0	0.0	9	59.3
Greene County	18,771	2	10.7	0	0.0	7	37.3
Greensville County	11,851	0	0.0	0	0.0	1	8.4
Halifax County, South Boston	35,849	0	0.0	0	0.0	0	0.0
Hanover County	100,668	2	2.0	2	2.0	6	6.0
Henrico County	314,932	11	3.5	0	0.0	19	6.0
Henry County	52,969	1	1.9	0	0.0	3	5.7
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	0	0.0	3	8.5
James City County	68,967	2	2.9	0	0.0	7	10.1

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,185,867	123	1.5	29	0.4	1,307	16.0
LOCALITY							
King and Queen County	7,046	0	0.0	0	0.0	0	0.0
King George County	24,500	1	4.1	0	0.0	5	20.4
King William County	15,981	0	0.0	0	0.0	0	0.0
Lancaster County	11,236	0	0.0	0	0.0	0	0.0
Lee County	25,474	0	0.0	0	0.0	0	0.0
Loudoun County	336,898	4	1.2	5	1.5	168	49.9
Louisa County	33,430	0	0.0	0	0.0	5	15.0
Lunenburg County	12,588	0	0.0	0	0.0	2	15.9
Madison County	13,200	2	15.2	0	0.0	6	45.5
Mathews County	8,884	0	0.0	0	0.0	0	0.0
Mecklenburg County	31,749	0	0.0	0	0.0	3	9.4
Middlesex County	10,822	0	0.0	0	0.0	1	9.2
Montgomery County	95,194	0	0.0	1	1.1	57	59.9
Nelson County	14,827	0	0.0	0	0.0	5	33.7
New Kent County	19,169	1	5.2	0	0.0	0	0.0
Northampton County	12,226	1	8.2	0	0.0	1	8.2
Northumberland County	12,346	0	0.0	0	0.0	2	16.2
Nottoway County	15,830	3	19.0	0	0.0	1	6.3
Orange County	34,246	2	5.8	0	0.0	5	14.6
Page County	23,895	0	0.0	0	0.0	10	41.8
Patrick County	18,451	0	0.0	0	0.0	2	10.8
Pittsylvania County	62,807	0	0.0	0	0.0	5	8.0
Powhatan County	28,123	0	0.0	0	0.0	0	0.0
Prince Edward County	23,238	1	4.3	0	0.0	3	12.9
Prince George County	36,941	1	2.7	0	0.0	1	2.7
Prince William County	430,289	2	0.5	1	0.2	55	12.8
Pulaski County	34,736	1	2.9	0	0.0	29	83.5
Rappahannock County	7,456	0	0.0	0	0.0	6	80.5
Richmond County	9,059	0	0.0	0	0.0	0	0.0
Roanoke County	92,901	1	1.1	0	0.0	18	19.4
Rockbridge County	22,394	0	0.0	0	0.0	0	0.0
Rockingham County	77,391	1	1.3	0	0.0	24	31.0
Russell County	28,445	0	0.0	0	0.0	0	0.0
Scott County	22,781	1	4.4	0	0.0	0	0.0
Shenandoah County	42,583	0	0.0	0	0.0	20	47.0
Smyth County	31,718	2	6.3	0	0.0	0	0.0
Southampton County	18,409	0	0.0	0	0.0	0	0.0
Spotsylvania County	125,684	2	1.6	0	0.0	22	17.5
Stafford County	134,352	2	1.5	1	0.7	17	12.7
Surry County	6,844	0	0.0	0	0.0	0	0.0
Sussex County	11,972	0	0.0	0	0.0	0	0.0
Tazewell County	44,268	1	2.3	0	0.0	0	0.0
Warren County	38,070	0	0.0	0	0.0	25	65.7
Washington County	55,190	0	0.0	1	1.8	1	1.8
Westmoreland County	17,524	0	0.0	0	0.0	1	5.7
Wise County	40,918	1	2.4	0	0.0	0	0.0
Wythe County	29,251	0	0.0	0	0.0	19	65.0
York County	66,146	1	1.5	0	0.0	4	6.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,185,867	123	1.5	29	0.4	1,307	16.0
LOCALITY							
Alexandria	146,294	1	0.7	0	0.0	14	9.6
Bristol	17,662	0	0.0	0	0.0	0	0.0
Buena Vista	6,707	0	0.0	0	0.0	0	0.0
Charlottesville	43,956	0	0.0	2	4.6	4	9.1
Chesapeake	228,417	7	3.1	0	0.0	5	2.2
Colonial Heights	17,479	0	0.0	0	0.0	3	17.2
Covington	5,771	2	34.7	0	0.0	0	0.0
Danville	42,996	0	0.0	0	0.0	2	4.7
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	0	0.0	1	4.3
Falls Church	13,229	0	0.0	0	0.0	2	15.1
Franklin City	8,528	0	0.0	0	0.0	0	0.0
Fredericksburg	27,307	0	0.0	0	0.0	3	11.0
Galax	6,908	0	0.0	0	0.0	3	43.4
Hampton	136,836	4	2.9	1	0.7	2	1.5
Harrisonburg	50,981	1	2.0	0	0.0	3	5.9
Hopewell	22,348	0	0.0	0	0.0	0	0.0
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	0	0.0	0	0.0	23	29.8
Manassas	40,605	0	0.0	0	0.0	3	7.4
Manassas Park	15,798	0	0.0	0	0.0	0	0.0
Martinsville	13,733	0	0.0	0	0.0	0	0.0
Newport News	180,726	4	2.2	0	0.0	2	1.1
Norfolk	245,782	1	0.4	0	0.0	4	1.6
Norton	4,068	0	0.0	0	0.0	0	0.0
Petersburg	31,973	0	0.0	0	0.0	1	3.1
Poquoson	12,097	0	0.0	0	0.0	0	0.0
Portsmouth	96,470	6	6.2	1	1.0	1	1.0
Radford	16,685	0	0.0	1	6.0	8	47.9
Richmond City	210,309	4	1.9	1	0.5	5	2.4
Roanoke City	97,469	1	1.0	0	0.0	7	7.2
Salem	24,970	0	0.0	0	0.0	2	8.0
Staunton	23,921	1	4.2	0	0.0	10	41.8
Suffolk	85,181	1	1.2	0	0.0	3	3.5
Virginia Beach	447,021	6	1.3	2	0.4	9	2.0
Waynesboro	21,107	0	0.0	1	4.7	5	23.7
Williamsburg	15,167	2	13.2	1	6.6	0	0.0
Winchester	26,881	1	3.7	0	0.0	8	29.8

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Legionellosis REPORTED CASES	Legionellosis RATE PER 100,000	Listeriosis REPORTED CASES	Listeriosis RATE PER 100,000	Lyme Disease REPORTED CASES	Lyme Disease RATE PER 100,000
VIRGINIA TOTAL	8,185,867	123	1.5	29	0.4	1,307	16.0
DISTRICT/REGION							

Central Shenandoah	290,054	3	1.0	1	0.3	60	20.7
Lord Fairfax	226,069	3	1.3	0	0.0	111	49.1
Rappahannock	340,815	5	1.5	1	0.3	52	15.3
Rappahannock/Rapidan	169,355	4	2.4	0	0.0	58	34.2
Thomas Jefferson	239,202	3	1.3	2	0.8	58	24.2
Northwest Region	1,265,495	18	1.4	4	0.3	339	26.8

Alexandria	146,294	1	0.7	0	0.0	14	9.6
Arlington	221,045	0	0.0	1	0.5	37	16.7
Fairfax	1,155,292	13	1.1	7	0.6	260	22.5
Loudoun	336,898	4	1.2	5	1.5	168	49.9
Prince William	486,692	2	0.4	1	0.2	58	11.9
Northern Region	2,346,221	20	0.9	14	0.6	537	22.9

Alleghany	178,239	6	3.4	0	0.0	20	11.2
Central Virginia	255,342	2	0.8	0	0.0	52	20.4
Cumberland Plateau	112,262	2	1.8	0	0.0	0	0.0
Lenowisco	93,241	2	2.1	0	0.0	0	0.0
Mount Rogers	192,501	4	2.1	1	0.5	57	29.6
New River	178,933	1	0.6	2	1.1	153	85.5
Pittsylvania/Danville	105,803	0	0.0	0	0.0	7	6.6
Roanoke City	97,469	1	1.0	0	0.0	7	7.2
West Piedmont	141,564	1	0.7	0	0.0	7	4.9
Southwest Region	1,355,354	19	1.4	3	0.2	303	22.4

Chesterfield	369,458	6	1.6	0	0.0	23	6.2
Chickahominy	148,341	3	2.0	2	1.3	9	6.1
Crater	155,663	1	0.6	0	0.0	3	1.9
Henrico	314,932	11	3.5	0	0.0	19	6.0
Piedmont	103,756	5	4.8	0	0.0	9	8.7
Richmond City	210,309	4	1.9	1	0.5	5	2.4
Southside	84,608	0	0.0	0	0.0	5	5.9
Central Region	1,387,067	30	2.2	3	0.2	73	5.3

Chesapeake	228,417	7	3.1	0	0.0	5	2.2
Eastern Shore	45,567	1	2.2	0	0.0	8	17.6
Hampton	136,836	4	2.9	1	0.7	2	1.5
Norfolk	245,782	1	0.4	0	0.0	4	1.6
Peninsula	343,103	9	2.6	1	0.3	13	3.8
Portsmouth	96,470	6	6.2	1	1.0	1	1.0
Three Rivers	141,017	1	0.7	0	0.0	7	5.0
Virginia Beach	447,021	6	1.3	2	0.4	9	2.0
Western Tidewater	147,517	1	0.7	0	0.0	6	4.1
Eastern Region	1,831,730	36	2.0	5	0.3	55	3.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,185,867	75	0.9	7	0.1	109	1.3
LOCALITY							
Accomack County	33,341	0	0.0	0	0.0	0	0.0
Albemarle County	102,251	0	0.0	0	0.0	0	0.0
Alleghany County, Clifton Forge	16,230	1	6.2	0	0.0	0	0.0
Amelia County	12,759	0	0.0	0	0.0	0	0.0
Amherst County	32,384	0	0.0	0	0.0	0	0.0
Appomattox County	15,128	0	0.0	0	0.0	0	0.0
Arlington County	221,045	6	2.7	0	0.0	0	0.0
Augusta County	73,658	0	0.0	0	0.0	0	0.0
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	0	0.0	0	0.0	0	0.0
Bland County	6,738	0	0.0	0	0.0	0	0.0
Botetourt County	33,154	0	0.0	0	0.0	0	0.0
Brunswick County	17,010	0	0.0	0	0.0	0	0.0
Buchanan County	23,859	0	0.0	0	0.0	0	0.0
Buckingham County	17,088	0	0.0	0	0.0	0	0.0
Campbell County	55,163	0	0.0	0	0.0	0	0.0
Caroline County	28,972	2	6.9	0	0.0	0	0.0
Carroll County	29,851	0	0.0	0	0.0	0	0.0
Charles City County	7,157	0	0.0	0	0.0	0	0.0
Charlotte County	12,404	0	0.0	0	0.0	0	0.0
Chesterfield County	323,856	5	1.5	0	0.0	0	0.0
Clarke County	14,323	0	0.0	0	0.0	0	0.0
Craig County	5,213	0	0.0	0	0.0	0	0.0
Culpeper County	47,911	0	0.0	0	0.0	0	0.0
Cumberland County	9,849	0	0.0	0	0.0	0	0.0
Dickenson County	15,690	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,994	0	0.0	0	0.0	0	0.0
Essex County	11,233	0	0.0	0	0.0	0	0.0
Fairfax County	1,118,602	16	1.4	2	0.2	0	0.0
Fauquier County	66,542	0	0.0	0	0.0	0	0.0
Floyd County	15,390	0	0.0	0	0.0	0	0.0
Fluvanna County	25,967	0	0.0	0	0.0	0	0.0
Franklin County	56,411	0	0.0	0	0.0	0	0.0
Frederick County	80,317	0	0.0	0	0.0	0	0.0
Giles County	16,928	0	0.0	0	0.0	0	0.0
Gloucester County	36,886	0	0.0	0	0.0	0	0.0
Goochland County	21,347	0	0.0	0	0.0	0	0.0
Grayson County	15,183	0	0.0	0	0.0	0	0.0
Greene County	18,771	1	5.3	1	5.3	0	0.0
Greensville County	11,851	0	0.0	0	0.0	0	0.0
Halifax County, South Boston	35,849	0	0.0	0	0.0	0	0.0
Hanover County	100,668	1	1.0	0	0.0	1	1.0
Henrico County	314,932	0	0.0	0	0.0	28	8.9
Henry County	52,969	0	0.0	0	0.0	0	0.0
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	0	0.0	0	0.0
James City County	68,967	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,185,867	75	0.9	7	0.1	109	1.3
LOCALITY							
King and Queen County	7,046	0	0.0	0	0.0	0	0.0
King George County	24,500	0	0.0	0	0.0	0	0.0
King William County	15,981	0	0.0	0	0.0	0	0.0
Lancaster County	11,236	0	0.0	0	0.0	0	0.0
Lee County	25,474	0	0.0	0	0.0	0	0.0
Loudoun County	336,898	2	0.6	1	0.3	0	0.0
Louisa County	33,430	0	0.0	0	0.0	0	0.0
Lunenburg County	12,588	0	0.0	0	0.0	0	0.0
Madison County	13,200	0	0.0	0	0.0	0	0.0
Mathews County	8,884	0	0.0	0	0.0	0	0.0
Mecklenburg County	31,749	0	0.0	0	0.0	0	0.0
Middlesex County	10,822	0	0.0	0	0.0	0	0.0
Montgomery County	95,194	0	0.0	0	0.0	1	1.1
Nelson County	14,827	0	0.0	0	0.0	1	6.7
New Kent County	19,169	0	0.0	0	0.0	0	0.0
Northampton County	12,226	0	0.0	0	0.0	0	0.0
Northumberland County	12,346	0	0.0	0	0.0	0	0.0
Nottoway County	15,830	0	0.0	0	0.0	0	0.0
Orange County	34,246	0	0.0	0	0.0	0	0.0
Page County	23,895	0	0.0	0	0.0	0	0.0
Patrick County	18,451	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,807	0	0.0	0	0.0	1	1.6
Powhatan County	28,123	0	0.0	0	0.0	0	0.0
Prince Edward County	23,238	0	0.0	0	0.0	0	0.0
Prince George County	36,941	0	0.0	0	0.0	0	0.0
Prince William County	430,289	18	4.2	1	0.2	2	0.5
Pulaski County	34,736	0	0.0	0	0.0	0	0.0
Rappahannock County	7,456	1	13.4	0	0.0	0	0.0
Richmond County	9,059	0	0.0	0	0.0	0	0.0
Roanoke County	92,901	0	0.0	0	0.0	0	0.0
Rockbridge County	22,394	0	0.0	0	0.0	0	0.0
Rockingham County	77,391	0	0.0	0	0.0	0	0.0
Russell County	28,445	0	0.0	0	0.0	0	0.0
Scott County	22,781	0	0.0	0	0.0	0	0.0
Shenandoah County	42,583	0	0.0	0	0.0	0	0.0
Smyth County	31,718	0	0.0	0	0.0	0	0.0
Southampton County	18,409	0	0.0	0	0.0	0	0.0
Spotsylvania County	125,684	0	0.0	0	0.0	1	0.8
Stafford County	134,352	2	1.5	0	0.0	0	0.0
Surry County	6,844	0	0.0	0	0.0	0	0.0
Sussex County	11,972	0	0.0	0	0.0	0	0.0
Tazewell County	44,268	0	0.0	0	0.0	0	0.0
Warren County	38,070	0	0.0	0	0.0	0	0.0
Washington County	55,190	0	0.0	0	0.0	0	0.0
Westmoreland County	17,524	0	0.0	0	0.0	0	0.0
Wise County	40,918	0	0.0	1	2.4	0	0.0
Wythe County	29,251	0	0.0	0	0.0	0	0.0
York County	66,146	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,185,867	75	0.9	7	0.1	109	1.3
LOCALITY							
Alexandria	146,294	9	6.2	0	0.0	0	0.0
Bristol	17,662	0	0.0	0	0.0	0	0.0
Buena Vista	6,707	0	0.0	0	0.0	0	0.0
Charlottesville	43,956	2	4.6	1	2.3	2	4.6
Chesapeake	228,417	0	0.0	0	0.0	0	0.0
Colonial Heights	17,479	0	0.0	0	0.0	0	0.0
Covington	5,771	0	0.0	0	0.0	0	0.0
Danville	42,996	0	0.0	0	0.0	0	0.0
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	0	0.0	0	0.0
Falls Church	13,229	0	0.0	0	0.0	0	0.0
Franklin City	8,528	0	0.0	0	0.0	0	0.0
Fredericksburg	27,307	2	7.3	0	0.0	0	0.0
Galax	6,908	0	0.0	0	0.0	0	0.0
Hampton	136,836	1	0.7	0	0.0	0	0.0
Harrisonburg	50,981	0	0.0	0	0.0	20	39.2
Hopewell	22,348	0	0.0	0	0.0	0	0.0
Lexington	6,998	0	0.0	0	0.0	2	28.6
Lynchburg	77,113	0	0.0	0	0.0	0	0.0
Manassas	40,605	0	0.0	0	0.0	0	0.0
Manassas Park	15,798	0	0.0	0	0.0	0	0.0
Martinsville	13,733	0	0.0	0	0.0	0	0.0
Newport News	180,726	0	0.0	0	0.0	1	0.6
Norfolk	245,782	1	0.4	0	0.0	0	0.0
Norton	4,068	0	0.0	0	0.0	0	0.0
Petersburg	31,973	0	0.0	0	0.0	0	0.0
Poquoson	12,097	0	0.0	0	0.0	0	0.0
Portsmouth	96,470	0	0.0	0	0.0	0	0.0
Radford	16,685	0	0.0	0	0.0	0	0.0
Richmond City	210,309	2	1.0	0	0.0	48	22.8
Roanoke City	97,469	1	1.0	0	0.0	0	0.0
Salem	24,970	0	0.0	0	0.0	0	0.0
Staunton	23,921	0	0.0	0	0.0	0	0.0
Suffolk	85,181	1	1.2	0	0.0	0	0.0
Virginia Beach	447,021	1	0.2	0	0.0	0	0.0
Waynesboro	21,107	0	0.0	0	0.0	0	0.0
Williamsburg	15,167	0	0.0	0	0.0	1	6.6
Winchester	26,881	0	0.0	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Malaria REPORTED CASES	Malaria RATE PER 100,000	Meningococcal Disease REPORTED CASES	Meningococcal Disease RATE PER 100,000	Mumps REPORTED CASES	Mumps RATE PER 100,000
VIRGINIA TOTAL	8,185,867	75	0.9	7	0.1	109	1.3
DISTRICT/REGION							

Central Shenandoah	290,054	0	0.0	0	0.0	22	7.6
Lord Fairfax	226,069	0	0.0	0	0.0	0	0.0
Rappahannock	340,815	6	1.8	0	0.0	1	0.3
Rappahannock/Rapidan	169,355	1	0.6	0	0.0	0	0.0
Thomas Jefferson	239,202	3	1.3	2	0.8	3	1.3
Northwest Region	1,265,495	10	0.8	2	0.2	26	2.1

Alexandria	146,294	9	6.2	0	0.0	0	0.0
Arlington	221,045	6	2.7	0	0.0	0	0.0
Fairfax	1,155,292	16	1.4	2	0.2	0	0.0
Loudoun	336,898	2	0.6	1	0.3	0	0.0
Prince William	486,692	18	3.7	1	0.2	2	0.4
Northern Region	2,346,221	51	2.2	4	0.2	2	0.1

Alleghany	178,239	1	0.6	0	0.0	0	0.0
Central Virginia	255,342	0	0.0	0	0.0	0	0.0
Cumberland Plateau	112,262	0	0.0	0	0.0	0	0.0
Lenowisco	93,241	0	0.0	1	1.1	0	0.0
Mount Rogers	192,501	0	0.0	0	0.0	0	0.0
New River	178,933	0	0.0	0	0.0	1	0.6
Pittsylvania/Danville	105,803	0	0.0	0	0.0	1	0.9
Roanoke City	97,469	1	1.0	0	0.0	0	0.0
West Piedmont	141,564	0	0.0	0	0.0	0	0.0
Southwest Region	1,355,354	2	0.1	1	0.1	2	0.1

Chesterfield	369,458	5	1.4	0	0.0	0	0.0
Chickahominy	148,341	1	0.7	0	0.0	1	0.7
Crater	155,663	0	0.0	0	0.0	0	0.0
Henrico	314,932	0	0.0	0	0.0	28	8.9
Piedmont	103,756	0	0.0	0	0.0	0	0.0
Richmond City	210,309	2	1.0	0	0.0	48	22.8
Southside	84,608	0	0.0	0	0.0	0	0.0
Central Region	1,387,067	8	0.6	0	0.0	77	5.6

Chesapeake	228,417	0	0.0	0	0.0	0	0.0
Eastern Shore	45,567	0	0.0	0	0.0	0	0.0
Hampton	136,836	1	0.7	0	0.0	0	0.0
Norfolk	245,782	1	0.4	0	0.0	0	0.0
Peninsula	343,103	0	0.0	0	0.0	2	0.6
Portsmouth	96,470	0	0.0	0	0.0	0	0.0
Three Rivers	141,017	0	0.0	0	0.0	0	0.0
Virginia Beach	447,021	1	0.2	0	0.0	0	0.0
Western Tidewater	147,517	1	0.7	0	0.0	0	0.0
Eastern Region	1,831,730	4	0.2	0	0.0	2	0.1

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Pertussis REPORTED CASES	Pertussis RATE PER 100,000	Rabies in Animals REPORTED CASES	Rabies in Animals PERCENT OF TOTAL*	Salmonellosis REPORTED CASES	Salmonellosis RATE PER 100,000
VIRGINIA TOTAL	8,185,867	418	5.1	488	100.0	1,048	12.8
LOCALITY							
Accomack County	33,341	1	3.0	12	2.5	9	27.0
Albemarle County	102,251	17	16.6	5	1.0	6	5.9
Alleghany County, Clifton Forge	16,230	3	18.5	7	1.4	1	6.2
Amelia County	12,759	0	0.0	1	0.2	3	23.5
Amherst County	32,384	12	37.1	2	0.4	1	3.1
Appomattox County	15,128	1	6.6	1	0.2	2	13.2
Arlington County	221,045	10	4.5	5	1.0	35	15.8
Augusta County	73,658	12	16.3	12	2.5	5	6.8
Bath County	4,652	0	0.0	2	0.4	1	21.5
Bedford County, Bedford	75,554	1	1.3	5	1.0	7	9.3
Bland County	6,738	0	0.0	1	0.2	1	14.8
Botetourt County	33,154	7	21.1	6	1.2	3	9.0
Brunswick County	17,010	1	5.9	1	0.2	1	5.9
Buchanan County	23,859	1	4.2	0	0.0	1	4.2
Buckingham County	17,088	1	5.9	8	1.6	4	23.4
Campbell County	55,163	2	3.6	8	1.6	8	14.5
Caroline County	28,972	3	10.4	2	0.4	4	13.8
Carroll County	29,851	7	23.4	3	0.6	0	0.0
Charles City County	7,157	0	0.0	0	0.0	4	55.9
Charlotte County	12,404	1	8.1	3	0.6	3	24.2
Chesterfield County	323,856	3	0.9	5	1.0	33	10.2
Clarke County	14,323	1	7.0	7	1.4	5	34.9
Craig County	5,213	0	0.0	0	0.0	1	19.2
Culpeper County	47,911	2	4.2	5	1.0	4	8.3
Cumberland County	9,849	6	60.9	4	0.8	4	40.6
Dickenson County	15,690	1	6.4	0	0.0	0	0.0
Dinwiddie County	27,994	0	0.0	1	0.2	3	10.7
Essex County	11,233	0	0.0	2	0.4	0	0.0
Fairfax County	1,118,602	33	3.0	45	9.2	126	11.3
Fauquier County	66,542	11	16.5	17	3.5	12	18.0
Floyd County	15,390	3	19.5	1	0.2	3	19.5
Fluvanna County	25,967	1	3.9	1	0.2	3	11.6
Franklin County	56,411	1	1.8	4	0.8	2	3.5
Frederick County	80,317	3	3.7	7	1.4	14	17.4
Giles County	16,928	2	11.8	4	0.8	4	23.6
Gloucester County	36,886	0	0.0	7	1.4	8	21.7
Goochland County	21,347	1	4.7	1	0.2	8	37.5
Grayson County	15,183	3	19.8	3	0.6	0	0.0
Greene County	18,771	1	5.3	1	0.2	4	21.3
Greensville County	11,851	0	0.0	1	0.2	0	0.0
Halifax County, South Boston	35,849	4	11.2	5	1.0	9	25.1
Hanover County	100,668	2	2.0	12	2.5	15	14.9
Henrico County	314,932	13	4.1	11	2.3	21	6.7
Henry County	52,969	7	13.2	5	1.0	5	9.4
Highland County	2,245	0	0.0	1	0.2	1	44.5
Isle of Wight County	35,399	1	2.8	7	1.4	8	22.6
James City County	68,967	2	2.9	0	0.0	14	20.3

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Pertussis REPORTED CASES	Pertussis RATE PER 100,000	Rabies in Animals REPORTED CASES	Rabies in Animals PERCENT OF TOTAL*	Salmonellosis REPORTED CASES	Salmonellosis RATE PER 100,000
VIRGINIA TOTAL	8,185,867	418	5.1	488	100.0	1,048	12.8
LOCALITY							
King and Queen County	7,046	0	0.0	0	0.0	2	28.4
King George County	24,500	1	4.1	2	0.4	8	32.7
King William County	15,981	2	12.5	1	0.2	3	18.8
Lancaster County	11,236	0	0.0	3	0.6	1	8.9
Lee County	25,474	1	3.9	0	0.0	2	7.9
Loudoun County	336,898	18	5.3	17	3.5	51	15.1
Louisa County	33,430	1	3.0	2	0.4	6	17.9
Lunenburg County	12,588	0	0.0	0	0.0	0	0.0
Madison County	13,200	0	0.0	4	0.8	1	7.6
Mathews County	8,884	0	0.0	0	0.0	1	11.3
Mecklenburg County	31,749	1	3.1	3	0.6	5	15.7
Middlesex County	10,822	0	0.0	3	0.6	4	37.0
Montgomery County	95,194	7	7.4	9	1.8	8	8.4
Nelson County	14,827	6	40.5	3	0.6	1	6.7
New Kent County	19,169	1	5.2	4	0.8	4	20.9
Northampton County	12,226	0	0.0	5	1.0	6	49.1
Northumberland County	12,346	0	0.0	1	0.2	1	8.1
Nottoway County	15,830	1	6.3	3	0.6	5	31.6
Orange County	34,246	2	5.8	3	0.6	8	23.4
Page County	23,895	0	0.0	6	1.2	6	25.1
Patrick County	18,451	0	0.0	0	0.0	2	10.8
Pittsylvania County	62,807	4	6.4	10	2.0	7	11.1
Powhatan County	28,123	2	7.1	0	0.0	6	21.3
Prince Edward County	23,238	3	12.9	6	1.2	7	30.1
Prince George County	36,941	0	0.0	2	0.4	4	10.8
Prince William County	430,289	15	3.5	9	1.8	48	11.2
Pulaski County	34,736	2	5.8	3	0.6	2	5.8
Rappahannock County	7,456	2	26.8	3	0.6	2	26.8
Richmond County	9,059	0	0.0	3	0.6	0	0.0
Roanoke County	92,901	26	28.0	0	0.0	12	12.9
Rockbridge County	22,394	9	40.2	4	0.8	3	13.4
Rockingham County	77,391	4	5.2	5	1.0	17	22.0
Russell County	28,445	0	0.0	6	1.2	5	17.6
Scott County	22,781	0	0.0	0	0.0	0	0.0
Shenandoah County	42,583	1	2.3	10	2.0	3	7.0
Smyth County	31,718	0	0.0	4	0.8	3	9.5
Southampton County	18,409	0	0.0	2	0.4	2	10.9
Spotsylvania County	125,684	14	11.1	10	2.0	15	11.9
Stafford County	134,352	4	3.0	8	1.6	30	22.3
Surry County	6,844	0	0.0	0	0.0	4	58.4
Sussex County	11,972	0	0.0	0	0.0	0	0.0
Tazewell County	44,268	2	4.5	1	0.2	6	13.6
Warren County	38,070	1	2.6	5	1.0	3	7.9
Washington County	55,190	6	10.9	2	0.4	7	12.7
Westmoreland County	17,524	0	0.0	0	0.0	2	11.4
Wise County	40,918	1	2.4	1	0.2	6	14.7
Wythe County	29,251	1	3.4	2	0.4	7	23.9
York County	66,146	4	6.0	0	0.0	8	12.1

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Pertussis REPORTED CASES	Pertussis RATE PER 100,000	Rabies in Animals REPORTED CASES	Rabies in Animals PERCENT OF TOTAL*	Salmonellosis REPORTED CASES	Salmonellosis RATE PER 100,000
VIRGINIA TOTAL	8,185,867	418	5.1	488	100.0	1,048	12.8
LOCALITY							
Alexandria	146,294	4	2.7	3	0.6	15	10.3
Bristol	17,662	0	0.0	1	0.2	1	5.7
Buena Vista	6,707	3	44.7	0	0.0	0	0.0
Charlottesville	43,956	1	2.3	1	0.2	8	18.2
Chesapeake	228,417	15	6.6	7	1.4	35	15.3
Colonial Heights	17,479	1	5.7	1	0.2	3	17.2
Covington	5,771	0	0.0	0	0.0	0	0.0
Danville	42,996	0	0.0	3	0.6	5	11.6
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	2	0.4	1	4.3
Falls Church	13,229	0	0.0	0	0.0	0	0.0
Franklin City	8,528	0	0.0	0	0.0	2	23.5
Fredericksburg	27,307	1	3.7	0	0.0	6	22.0
Galax	6,908	0	0.0	0	0.0	2	29.0
Hampton	136,836	3	2.2	4	0.8	12	8.8
Harrisonburg	50,981	0	0.0	0	0.0	7	13.7
Hopewell	22,348	0	0.0	0	0.0	4	17.9
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	0	0.0	10	2.0	13	16.9
Manassas	40,605	0	0.0	1	0.2	1	2.5
Manassas Park	15,798	0	0.0	0	0.0	2	12.7
Martinsville	13,733	5	36.4	0	0.0	3	21.8
Newport News	180,726	2	1.1	13	2.7	24	13.3
Norfolk	245,782	6	2.4	3	0.6	21	8.5
Norton	4,068	0	0.0	0	0.0	0	0.0
Petersburg	31,973	0	0.0	1	0.2	2	6.3
Poquoson	12,097	1	8.3	0	0.0	4	33.1
Portsmouth	96,470	1	1.0	0	0.0	13	13.5
Radford	16,685	4	24.0	0	0.0	4	24.0
Richmond City	210,309	1	0.5	3	0.6	14	6.7
Roanoke City	97,469	2	2.1	10	2.0	9	9.2
Salem	24,970	0	0.0	0	0.0	0	0.0
Staunton	23,921	0	0.0	2	0.4	3	12.5
Suffolk	85,181	3	3.5	1	0.2	23	27.0
Virginia Beach	447,021	40	8.9	10	2.0	51	11.4
Waynesboro	21,107	0	0.0	0	0.0	2	9.5
Williamsburg	15,167	0	0.0	4	0.8	12	79.1
Winchester	26,881	2	7.4	2	0.4	6	22.3

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Pertussis REPORTED CASES	Pertussis RATE PER 100,000	Rabies in Animals REPORTED CASES	Rabies in Animals PERCENT OF TOTAL*	Salmonellosis REPORTED CASES	Salmonellosis RATE PER 100,000
VIRGINIA TOTAL	8,185,867	418	5.1	488	100.0	1,048	12.8
DISTRICT/REGION							

Central Shenandoah	290,054	28	9.7	26	5.3	39	13.4
Lord Fairfax	226,069	8	3.5	37	7.6	37	16.4
Rappahannock	340,815	23	6.7	22	4.5	63	18.5
Rappahannock/Rapidan	169,355	17	10.0	32	6.6	27	15.9
Thomas Jefferson	239,202	27	11.3	13	2.7	28	11.7
Northwest Region	1,265,495	103	8.1	130	26.6	194	15.3

Alexandria	146,294	4	2.7	3	0.6	15	10.3
Arlington	221,045	10	4.5	5	1.0	35	15.8
Fairfax	1,155,292	33	2.9	47	9.6	127	11.0
Loudoun	336,898	18	5.3	17	3.5	51	15.1
Prince William	486,692	15	3.1	10	2.0	51	10.5
Northern Region	2,346,221	80	3.4	82	16.8	279	11.9

Alleghany	178,239	36	20.2	13	2.7	17	9.5
Central Virginia	255,342	16	6.3	26	5.3	31	12.1
Cumberland Plateau	112,262	4	3.6	7	1.4	12	10.7
Lenowisco	93,241	2	2.1	1	0.2	8	8.6
Mount Rogers	192,501	17	8.8	16	3.3	21	10.9
New River	178,933	18	10.1	17	3.5	21	11.7
Pittsylvania/Danville	105,803	4	3.8	13	2.7	12	11.3
Roanoke City	97,469	2	2.1	10	2.0	9	9.2
West Piedmont	141,564	13	9.2	9	1.8	12	8.5
Southwest Region	1,355,354	112	8.3	112	23.0	143	10.6

Chesterfield	369,458	6	1.6	6	1.2	42	11.4
Chickahominy	148,341	4	2.7	17	3.5	31	20.9
Crater	155,663	0	0.0	5	1.0	17	10.9
Henrico	314,932	13	4.1	11	2.3	21	6.7
Piedmont	103,756	12	11.6	25	5.1	26	25.1
Richmond City	210,309	1	0.5	3	0.6	14	6.7
Southside	84,608	6	7.1	9	1.8	15	17.7
Central Region	1,387,067	42	3.0	76	15.6	166	12.0

Chesapeake	228,417	15	6.6	7	1.4	35	15.3
Eastern Shore	45,567	1	2.2	17	3.5	15	32.9
Hampton	136,836	3	2.2	4	0.8	12	8.8
Norfolk	245,782	6	2.4	3	0.6	21	8.5
Peninsula	343,103	9	2.6	17	3.5	62	18.1
Portsmouth	96,470	1	1.0	0	0.0	13	13.5
Three Rivers	141,017	2	1.4	20	4.1	22	15.6
Virginia Beach	447,021	40	8.9	10	2.0	51	11.4
Western Tidewater	147,517	4	2.7	10	2.0	35	23.7
Eastern Region	1,831,730	81	4.4	88	18.0	266	14.5

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* Population rate is not applicable for rabies in animals.

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Shigellosis REPORTED CASES	Shigellosis RATE PER 100,000	Spotted Fever Rickettsiosis, including RMSF REPORTED CASES	Spotted Fever Rickettsiosis, including RMSF RATE PER 100,000	*Staphylococcus aureus* Infection, Invasive (MRSA) REPORTED CASES	*Staphylococcus aureus* Infection, Invasive (MRSA) RATE PER 100,000
VIRGINIA TOTAL	8,185,867	115	1.4	350	4.3	1,247	15.2
LOCALITY							
Accomack County	33,341	0	0.0	1	3.0	1	3.0
Albemarle County	102,251	0	0.0	2	2.0	5	4.9
Alleghany County, Clifton Forge	16,230	0	0.0	1	6.2	1	6.2
Amelia County	12,759	0	0.0	0	0.0	0	0.0
Amherst County	32,384	0	0.0	5	15.4	6	18.5
Appomattox County	15,128	0	0.0	6	39.7	1	6.6
Arlington County	221,045	7	3.2	6	2.7	19	8.6
Augusta County	73,658	1	1.4	3	4.1	7	9.5
Bath County	4,652	0	0.0	0	0.0	1	21.5
Bedford County, Bedford	75,554	0	0.0	14	18.5	4	5.3
Bland County	6,738	0	0.0	0	0.0	3	44.5
Botetourt County	33,154	0	0.0	1	3.0	5	15.1
Brunswick County	17,010	0	0.0	3	17.6	0	0.0
Buchanan County	23,859	0	0.0	0	0.0	2	8.4
Buckingham County	17,088	0	0.0	3	17.6	1	5.9
Campbell County	55,163	1	1.8	7	12.7	2	3.6
Caroline County	28,972	0	0.0	3	10.4	4	13.8
Carroll County	29,851	0	0.0	0	0.0	4	13.4
Charles City County	7,157	0	0.0	1	14.0	0	0.0
Charlotte County	12,404	0	0.0	0	0.0	3	24.2
Chesterfield County	323,856	3	0.9	25	7.7	27	8.3
Clarke County	14,323	0	0.0	1	7.0	1	7.0
Craig County	5,213	0	0.0	0	0.0	3	57.5
Culpeper County	47,911	0	0.0	1	2.1	5	10.4
Cumberland County	9,849	0	0.0	2	20.3	2	20.3
Dickenson County	15,690	0	0.0	1	6.4	2	12.7
Dinwiddie County	27,994	0	0.0	2	7.1	5	17.9
Essex County	11,233	0	0.0	0	0.0	0	0.0
Fairfax County	1,118,602	29	2.6	23	2.1	95	8.5
Fauquier County	66,542	0	0.0	7	10.5	10	15.0
Floyd County	15,390	0	0.0	0	0.0	2	13.0
Fluvanna County	25,967	0	0.0	8	30.8	2	7.7
Franklin County	56,411	0	0.0	0	0.0	15	26.6
Frederick County	80,317	0	0.0	2	2.5	10	12.5
Giles County	16,928	0	0.0	1	5.9	7	41.4
Gloucester County	36,886	0	0.0	0	0.0	0	0.0
Goochland County	21,347	0	0.0	0	0.0	0	0.0
Grayson County	15,183	1	6.6	0	0.0	0	0.0
Greene County	18,771	0	0.0	0	0.0	0	0.0
Greensville County	11,851	0	0.0	1	8.4	3	25.3
Halifax County, South Boston	35,849	0	0.0	0	0.0	16	44.6
Hanover County	100,668	0	0.0	1	1.0	2	2.0
Henrico County	314,932	1	0.3	18	5.7	77	24.4
Henry County	52,969	0	0.0	8	15.1	22	41.5
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	1	2.8	5	14.1
James City County	68,967	0	0.0	4	5.8	2	2.9

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		**Shigellosis**		**Spotted Fever Rickettsiosis, including RMSF**		***Staphylococcus aureus* Infection, Invasive (MRSA)**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	115	1.4	350	4.3	1,247	15.2
LOCALITY							
King and Queen County	7,046	1	14.2	0	0.0	0	0.0
King George County	24,500	0	0.0	5	20.4	5	20.4
King William County	15,981	0	0.0	0	0.0	0	0.0
Lancaster County	11,236	0	0.0	0	0.0	0	0.0
Lee County	25,474	2	7.9	1	3.9	12	47.1
Loudoun County	336,898	11	3.3	2	0.6	8	2.4
Louisa County	33,430	0	0.0	9	26.9	3	9.0
Lunenburg County	12,588	0	0.0	3	23.8	2	15.9
Madison County	13,200	0	0.0	0	0.0	1	7.6
Mathews County	8,884	0	0.0	0	0.0	0	0.0
Mecklenburg County	31,749	0	0.0	5	15.7	8	25.2
Middlesex County	10,822	0	0.0	0	0.0	1	9.2
Montgomery County	95,194	0	0.0	1	1.1	18	18.9
Nelson County	14,827	0	0.0	2	13.5	0	0.0
New Kent County	19,169	0	0.0	0	0.0	0	0.0
Northampton County	12,226	0	0.0	1	8.2	2	16.4
Northumberland County	12,346	0	0.0	0	0.0	0	0.0
Nottoway County	15,830	0	0.0	5	31.6	2	12.6
Orange County	34,246	0	0.0	4	11.7	4	11.7
Page County	23,895	0	0.0	0	0.0	2	8.4
Patrick County	18,451	0	0.0	1	5.4	3	16.3
Pittsylvania County	62,807	0	0.0	21	33.4	11	17.5
Powhatan County	28,123	0	0.0	9	32.0	3	10.7
Prince Edward County	23,238	0	0.0	2	8.6	2	8.6
Prince George County	36,941	0	0.0	2	5.4	1	2.7
Prince William County	430,289	11	2.6	4	0.9	38	8.8
Pulaski County	34,736	0	0.0	0	0.0	13	37.4
Rappahannock County	7,456	0	0.0	0	0.0	1	13.4
Richmond County	9,059	0	0.0	0	0.0	0	0.0
Roanoke County	92,901	0	0.0	1	1.1	26	28.0
Rockbridge County	22,394	0	0.0	0	0.0	4	17.9
Rockingham County	77,391	2	2.6	2	2.6	23	29.7
Russell County	28,445	0	0.0	0	0.0	9	31.6
Scott County	22,781	0	0.0	1	4.4	9	39.5
Shenandoah County	42,583	0	0.0	5	11.7	14	32.9
Smyth County	31,718	1	3.2	0	0.0	5	15.8
Southampton County	18,409	0	0.0	3	16.3	4	21.7
Spotsylvania County	125,684	0	0.0	4	3.2	28	22.3
Stafford County	134,352	1	0.7	11	8.2	29	21.6
Surry County	6,844	0	0.0	0	0.0	1	14.6
Sussex County	11,972	0	0.0	0	0.0	1	8.4
Tazewell County	44,268	0	0.0	0	0.0	13	29.4
Warren County	38,070	1	2.6	4	10.5	4	10.5
Washington County	55,190	0	0.0	0	0.0	15	27.2
Westmoreland County	17,524	0	0.0	0	0.0	0	0.0
Wise County	40,918	0	0.0	1	2.4	17	41.5
Wythe County	29,251	1	3.4	1	3.4	14	47.9
York County	66,146	2	3.0	3	4.5	5	7.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Shigellosis REPORTED CASES	Shigellosis RATE PER 100,000	Spotted Fever Rickettsiosis, including RMSF REPORTED CASES	Spotted Fever Rickettsiosis, including RMSF RATE PER 100,000	*Staphylococcus aureus* Infection, Invasive (MRSA) REPORTED CASES	*Staphylococcus aureus* Infection, Invasive (MRSA) RATE PER 100,000
VIRGINIA TOTAL	8,185,867	115	1.4	350	4.3	1,247	15.2
LOCALITY							
Alexandria	146,294	2	1.4	1	0.7	14	9.6
Bristol	17,662	0	0.0	0	0.0	8	45.3
Buena Vista	6,707	0	0.0	0	0.0	0	0.0
Charlottesville	43,956	1	2.3	2	4.6	1	2.3
Chesapeake	228,417	2	0.9	4	1.8	33	14.4
Colonial Heights	17,479	0	0.0	2	11.4	2	11.4
Covington	5,771	0	0.0	0	0.0	0	0.0
Danville	42,996	0	0.0	22	51.2	26	60.5
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	0	0.0	1	4.3
Falls Church	13,229	0	0.0	0	0.0	0	0.0
Franklin City	8,528	0	0.0	0	0.0	1	11.7
Fredericksburg	27,307	1	3.7	4	14.6	4	14.6
Galax	6,908	0	0.0	0	0.0	2	29.0
Hampton	136,836	0	0.0	1	0.7	26	19.0
Harrisonburg	50,981	1	2.0	1	2.0	4	7.8
Hopewell	22,348	0	0.0	0	0.0	4	17.9
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	1	1.3	6	7.8	8	10.4
Manassas	40,605	1	2.5	1	2.5	5	12.3
Manassas Park	15,798	0	0.0	0	0.0	0	0.0
Martinsville	13,733	0	0.0	2	14.6	10	72.8
Newport News	180,726	3	1.7	5	2.8	29	16.0
Norfolk	245,782	8	3.3	0	0.0	69	28.1
Norton	4,068	0	0.0	0	0.0	2	49.2
Petersburg	31,973	2	6.3	2	6.3	5	15.6
Poquoson	12,097	0	0.0	2	16.5	0	0.0
Portsmouth	96,470	1	1.0	3	3.1	27	28.0
Radford	16,685	0	0.0	0	0.0	8	47.9
Richmond City	210,309	2	1.0	3	1.4	64	30.4
Roanoke City	97,469	1	1.0	1	1.0	56	57.5
Salem	24,970	0	0.0	0	0.0	1	4.0
Staunton	23,921	1	4.2	0	0.0	6	25.1
Suffolk	85,181	1	1.2	1	1.2	13	15.3
Virginia Beach	447,021	9	2.0	4	0.9	63	14.1
Waynesboro	21,107	0	0.0	3	14.2	4	19.0
Williamsburg	15,167	2	13.2	3	19.8	5	33.0
Winchester	26,881	0	0.0	2	7.4	3	11.2

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		**Shigellosis**		**Spotted Fever Rickettsiosis, including RMSF**		***Staphylococcus aureus* Infection, Invasive (MRSA)**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	115	1.4	350	4.3	1,247	15.2
DISTRICT/REGION							

Central Shenandoah	290,054	5	1.7	9	3.1	49	16.9
Lord Fairfax	226,069	1	0.4	14	6.2	34	15.0
Rappahannock	340,815	2	0.6	27	7.9	70	20.5
Rappahannock/Rapidan	169,355	0	0.0	12	7.1	21	12.4
Thomas Jefferson	239,202	1	0.4	23	9.6	11	4.6
Northwest Region	1,265,495	9	0.7	85	6.7	185	14.6

Alexandria	146,294	2	1.4	1	0.7	14	9.6
Arlington	221,045	7	3.2	6	2.7	19	8.6
Fairfax	1,155,292	29	2.5	23	2.0	96	8.3
Loudoun	336,898	11	3.3	2	0.6	8	2.4
Prince William	486,692	12	2.5	5	1.0	43	8.8
Northern Region	2,346,221	61	2.6	37	1.6	180	7.7

Alleghany	178,239	0	0.0	3	1.7	36	20.2
Central Virginia	255,342	2	0.8	38	14.9	21	8.2
Cumberland Plateau	112,262	0	0.0	1	0.9	26	23.2
Lenowisco	93,241	2	2.1	3	3.2	40	42.9
Mount Rogers	192,501	3	1.6	1	0.5	51	26.5
New River	178,933	0	0.0	2	1.1	48	26.8
Pittsylvania/Danville	105,803	0	0.0	43	40.6	37	35.0
Roanoke City	97,469	1	1.0	1	1.0	56	57.5
West Piedmont	141,564	0	0.0	11	7.8	50	35.3
Southwest Region	1,355,354	8	0.6	103	7.6	365	26.9

Chesterfield	369,458	3	0.8	36	9.7	32	8.7
Chickahominy	148,341	0	0.0	2	1.3	2	1.3
Crater	155,663	2	1.3	7	4.5	20	12.8
Henrico	314,932	1	0.3	18	5.7	77	24.4
Piedmont	103,756	0	0.0	15	14.5	12	11.6
Richmond City	210,309	2	1.0	3	1.4	64	30.4
Southside	84,608	0	0.0	8	9.5	24	28.4
Central Region	1,387,067	8	0.6	89	6.4	231	16.7

Chesapeake	228,417	2	0.9	4	1.8	33	14.4
Eastern Shore	45,567	0	0.0	2	4.4	3	6.6
Hampton	136,836	0	0.0	1	0.7	26	19.0
Norfolk	245,782	8	3.3	0	0.0	69	28.1
Peninsula	343,103	7	2.0	17	5.0	41	11.9
Portsmouth	96,470	1	1.0	3	3.1	27	28.0
Three Rivers	141,017	1	0.7	0	0.0	1	0.7
Virginia Beach	447,021	9	2.0	4	0.9	63	14.1
Western Tidewater	147,517	1	0.7	5	3.4	23	15.6
Eastern Region	1,831,730	29	1.6	36	2.0	286	15.6

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		**Streptococcal Disease, Group A, Invasive or TSS**		**Syphilis, Early**		**Tuberculosis**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	190	2.3	676	8.3	180	2.2
LOCALITY							
Accomack County	33,341	0	0.0	2	6.0	0	0.0
Albemarle County	102,251	3	2.9	3	2.9	2	2.0
Alleghany County, Clifton Forge	16,230	0	0.0	0	0.0	0	0.0
Amelia County	12,759	0	0.0	1	7.8	0	0.0
Amherst County	32,384	1	3.1	9	27.8	1	3.1
Appomattox County	15,128	0	0.0	3	19.8	0	0.0
Arlington County	221,045	3	1.4	36	16.3	10	4.5
Augusta County	73,658	3	4.1	3	4.1	0	0.0
Bath County	4,652	0	0.0	0	0.0	0	0.0
Bedford County, Bedford	75,554	2	2.6	1	1.3	0	0.0
Bland County	6,738	0	0.0	0	0.0	0	0.0
Botetourt County	33,154	2	6.0	0	0.0	0	0.0
Brunswick County	17,010	0	0.0	2	11.8	1	5.9
Buchanan County	23,859	0	0.0	0	0.0	0	0.0
Buckingham County	17,088	0	0.0	1	5.9	0	0.0
Campbell County	55,163	1	1.8	12	21.8	0	0.0
Caroline County	28,972	2	6.9	1	3.5	0	0.0
Carroll County	29,851	0	0.0	0	0.0	0	0.0
Charles City County	7,157	0	0.0	1	14.0	0	0.0
Charlotte County	12,404	1	8.1	1	8.1	0	0.0
Chesterfield County	323,856	8	2.5	8	2.5	5	1.5
Clarke County	14,323	1	7.0	0	0.0	1	7.0
Craig County	5,213	0	0.0	0	0.0	0	0.0
Culpeper County	47,911	2	4.2	0	0.0	1	2.1
Cumberland County	9,849	0	0.0	0	0.0	0	0.0
Dickenson County	15,690	0	0.0	0	0.0	0	0.0
Dinwiddie County	27,994	0	0.0	1	3.6	0	0.0
Essex County	11,233	0	0.0	0	0.0	0	0.0
Fairfax County	1,118,602	16	1.4	63	5.6	59	5.3
Fauquier County	66,542	0	0.0	0	0.0	2	3.0
Floyd County	15,390	0	0.0	0	0.0	0	0.0
Fluvanna County	25,967	1	3.9	1	3.9	0	0.0
Franklin County	56,411	2	3.5	5	8.9	0	0.0
Frederick County	80,317	2	2.5	0	0.0	0	0.0
Giles County	16,928	2	11.8	0	0.0	0	0.0
Gloucester County	36,886	0	0.0	0	0.0	0	0.0
Goochland County	21,347	4	18.7	1	4.7	0	0.0
Grayson County	15,183	0	0.0	0	0.0	0	0.0
Greene County	18,771	3	16.0	0	0.0	0	0.0
Greensville County	11,851	0	0.0	0	0.0	0	0.0
Halifax County, South Boston	35,849	0	0.0	1	2.8	0	0.0
Hanover County	100,668	2	2.0	5	5.0	2	2.0
Henrico County	314,932	5	1.6	38	12.1	6	1.9
Henry County	52,969	1	1.9	0	0.0	1	1.9
Highland County	2,245	0	0.0	0	0.0	0	0.0
Isle of Wight County	35,399	0	0.0	2	5.6	0	0.0
James City County	68,967	2	2.9	0	0.0	0	0.0

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Streptococcal Disease, Group A, Invasive or TSS: REPORTED CASES	Streptococcal Disease, Group A, Invasive or TSS: RATE PER 100,000	Syphilis, Early: REPORTED CASES	Syphilis, Early: RATE PER 100,000	Tuberculosis: REPORTED CASES	Tuberculosis: RATE PER 100,000
VIRGINIA TOTAL	8,185,867	190	2.3	676	8.3	180	2.2
LOCALITY							
King and Queen County	7,046	0	0.0	0	0.0	0	0.0
King George County	24,500	1	4.1	0	0.0	0	0.0
King William County	15,981	1	6.3	0	0.0	0	0.0
Lancaster County	11,236	0	0.0	2	17.8	0	0.0
Lee County	25,474	0	0.0	0	0.0	1	3.9
Loudoun County	336,898	3	0.9	15	4.5	7	2.1
Louisa County	33,430	1	3.0	0	0.0	1	3.0
Lunenburg County	12,588	1	7.9	0	0.0	1	7.9
Madison County	13,200	0	0.0	0	0.0	1	7.6
Mathews County	8,884	0	0.0	0	0.0	0	0.0
Mecklenburg County	31,749	0	0.0	1	3.1	2	6.3
Middlesex County	10,822	0	0.0	0	0.0	0	0.0
Montgomery County	95,194	0	0.0	2	2.1	1	1.1
Nelson County	14,827	1	6.7	0	0.0	0	0.0
New Kent County	19,169	0	0.0	2	10.4	0	0.0
Northampton County	12,226	0	0.0	0	0.0	0	0.0
Northumberland County	12,346	0	0.0	0	0.0	0	0.0
Nottoway County	15,830	0	0.0	1	6.3	0	0.0
Orange County	34,246	2	5.8	0	0.0	0	0.0
Page County	23,895	0	0.0	0	0.0	0	0.0
Patrick County	18,451	0	0.0	0	0.0	0	0.0
Pittsylvania County	62,807	3	4.8	6	9.6	0	0.0
Powhatan County	28,123	0	0.0	0	0.0	0	0.0
Prince Edward County	23,238	1	4.3	1	4.3	1	4.3
Prince George County	36,941	1	2.7	4	10.8	0	0.0
Prince William County	430,289	5	1.2	39	9.1	13	3.0
Pulaski County	34,736	0	0.0	1	2.9	0	0.0
Rappahannock County	7,456	0	0.0	0	0.0	0	0.0
Richmond County	9,059	0	0.0	0	0.0	0	0.0
Roanoke County	92,901	6	6.5	1	1.1	0	0.0
Rockbridge County	22,394	0	0.0	0	0.0	0	0.0
Rockingham County	77,391	2	2.6	1	1.3	0	0.0
Russell County	28,445	0	0.0	0	0.0	0	0.0
Scott County	22,781	0	0.0	0	0.0	0	0.0
Shenandoah County	42,583	1	2.3	0	0.0	0	0.0
Smyth County	31,718	0	0.0	0	0.0	0	0.0
Southampton County	18,409	0	0.0	3	16.3	0	0.0
Spotsylvania County	125,684	3	2.4	8	6.4	0	0.0
Stafford County	134,352	4	3.0	4	3.0	0	0.0
Surry County	6,844	0	0.0	0	0.0	0	0.0
Sussex County	11,972	0	0.0	1	8.4	0	0.0
Tazewell County	44,268	1	2.3	0	0.0	0	0.0
Warren County	38,070	3	7.9	0	0.0	0	0.0
Washington County	55,190	0	0.0	0	0.0	1	1.8
Westmoreland County	17,524	0	0.0	0	0.0	0	0.0
Wise County	40,918	1	2.4	3	7.3	0	0.0
Wythe County	29,251	1	3.4	0	0.0	0	0.0
York County	66,146	2	3.0	2	3.0	1	1.5

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:

LOCALITY/DISTRICT/REGION	2012 POPULATION	Streptococcal Disease, Group A, Invasive or TSS: REPORTED CASES	Streptococcal Disease, Group A, Invasive or TSS: RATE PER 100,000	Syphilis, Early: REPORTED CASES	Syphilis, Early: RATE PER 100,000	Tuberculosis: REPORTED CASES	Tuberculosis: RATE PER 100,000
VIRGINIA TOTAL	8,185,867	190	2.3	676	8.3	180	2.2
LOCALITY							
Alexandria	146,294	3	2.1	27	18.5	15	10.3
Bristol	17,662	0	0.0	0	0.0	1	5.7
Buena Vista	6,707	0	0.0	1	14.9	0	0.0
Charlottesville	43,956	1	2.3	5	11.4	3	6.8
Chesapeake	228,417	12	5.3	13	5.7	2	0.9
Colonial Heights	17,479	0	0.0	1	5.7	0	0.0
Covington	5,771	0	0.0	0	0.0	0	0.0
Danville	42,996	2	4.7	7	16.3	2	4.7
Emporia	5,740	0	0.0	0	0.0	0	0.0
Fairfax City	23,461	0	0.0	0	0.0	0	0.0
Falls Church	13,229	0	0.0	2	15.1	0	0.0
Franklin City	8,528	0	0.0	0	0.0	0	0.0
Fredericksburg	27,307	2	7.3	3	11.0	0	0.0
Galax	6,908	0	0.0	0	0.0	0	0.0
Hampton	136,836	4	2.9	19	13.9	1	0.7
Harrisonburg	50,981	2	3.9	4	7.8	0	0.0
Hopewell	22,348	2	8.9	3	13.4	3	13.4
Lexington	6,998	0	0.0	0	0.0	0	0.0
Lynchburg	77,113	3	3.9	18	23.3	0	0.0
Manassas	40,605	0	0.0	3	7.4	1	2.5
Manassas Park	15,798	0	0.0	0	0.0	2	12.7
Martinsville	13,733	0	0.0	0	0.0	0	0.0
Newport News	180,726	1	0.6	34	18.8	2	1.1
Norfolk	245,782	9	3.7	61	24.8	6	2.4
Norton	4,068	0	0.0	0	0.0	0	0.0
Petersburg	31,973	1	3.1	7	21.9	1	3.1
Poquoson	12,097	1	8.3	0	0.0	0	0.0
Portsmouth	96,470	4	4.1	28	29.0	1	1.0
Radford	16,685	1	6.0	0	0.0	0	0.0
Richmond City	210,309	8	3.8	71	33.8	8	3.8
Roanoke City	97,469	13	13.3	11	11.3	1	1.0
Salem	24,970	1	4.0	0	0.0	0	0.0
Staunton	23,921	1	4.2	0	0.0	0	0.0
Suffolk	85,181	1	1.2	9	10.6	2	2.3
Virginia Beach	447,021	5	1.1	47	10.5	7	1.6
Waynesboro	21,107	0	0.0	1	4.7	0	0.0
Williamsburg	15,167	0	0.0	3	19.8	0	0.0
Winchester	26,881	0	0.0	0	0.0	1	3.7

Number of Cases and Rate for each Locality, District, and Region for these Diseases in 2013:		**Streptococcal Disease, Group A, Invasive or TSS**		**Syphilis, Early**		**Tuberculosis**	
LOCALITY/DISTRICT/REGION	2012 POPULATION	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000	REPORTED CASES	RATE PER 100,000
VIRGINIA TOTAL	8,185,867	190	2.3	676	8.3	180	2.2
DISTRICT/REGION							

Central Shenandoah	290,054	8	2.8	10	3.4	0	0.0
Lord Fairfax	226,069	7	3.1	0	0.0	2	0.9
Rappahannock	340,815	12	3.5	16	4.7	0	0.0
Rappahannock/Rapidan	169,355	4	2.4	0	0.0	4	2.4
Thomas Jefferson	239,202	10	4.2	9	3.8	6	2.5
Northwest Region	1,265,495	41	3.2	35	2.8	12	0.9

Alexandria	146,294	3	2.1	27	18.5	15	10.3
Arlington	221,045	3	1.4	36	16.3	10	4.5
Fairfax	1,155,292	16	1.4	65	5.6	59	5.1
Loudoun	336,898	3	0.9	15	4.5	7	2.1
Prince William	486,692	5	1.0	42	8.6	16	3.3
Northern Region	2,346,221	30	1.3	185	7.9	107	4.6

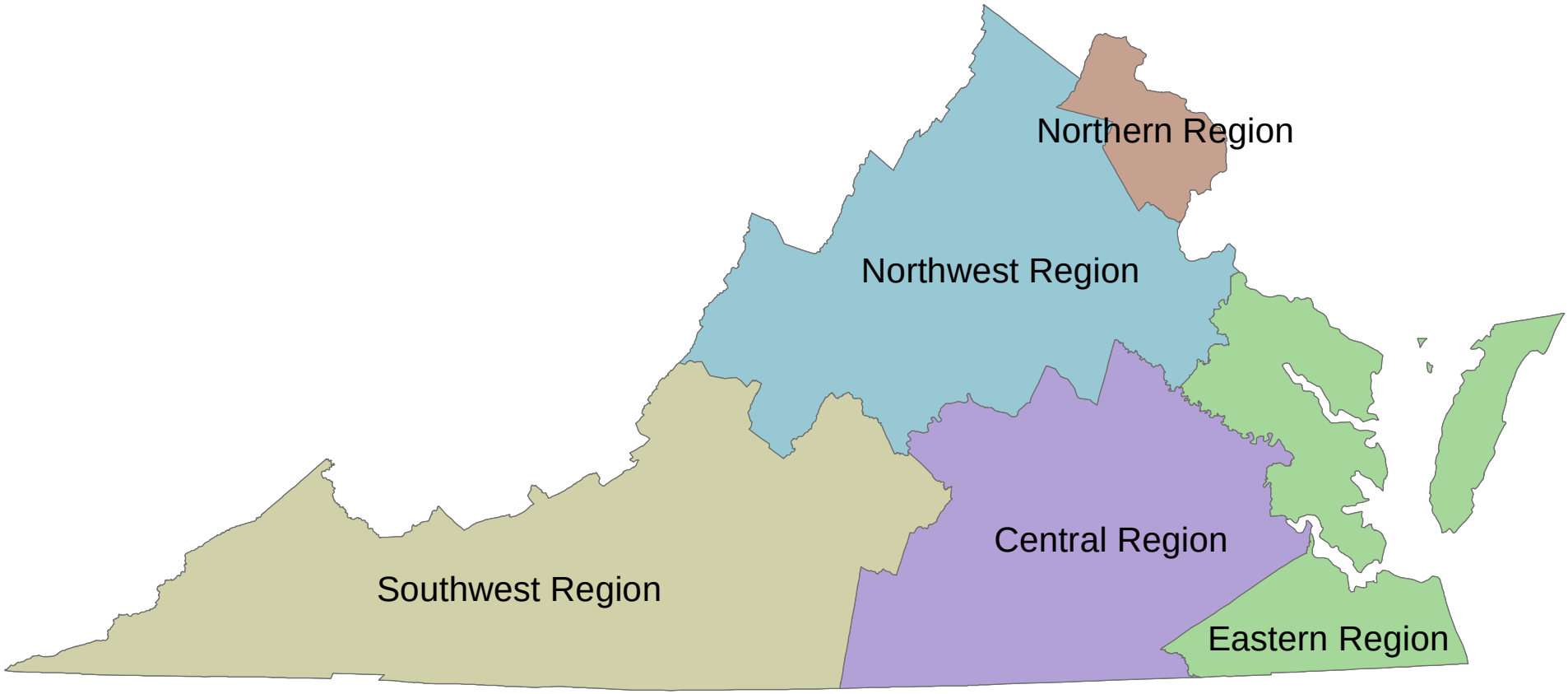
Alleghany	178,239	9	5.0	1	0.6	0	0.0
Central Virginia	255,342	7	2.7	43	16.8	1	0.4
Cumberland Plateau	112,262	1	0.9	0	0.0	0	0.0
Lenowisco	93,241	1	1.1	3	3.2	1	1.1
Mount Rogers	192,501	1	0.5	0	0.0	2	1.0
New River	178,933	3	1.7	3	1.7	1	0.6
Pittsylvania/Danville	105,803	5	4.7	13	12.3	2	1.9
Roanoke City	97,469	13	13.3	11	11.3	1	1.0
West Piedmont	141,564	3	2.1	5	3.5	1	0.7
Southwest Region	1,355,354	43	3.2	79	5.8	9	0.7

Chesterfield	369,458	8	2.2	9	2.4	5	1.4
Chickahominy	148,341	6	4.0	9	6.1	2	1.3
Crater	155,663	4	2.6	16	10.3	4	2.6
Henrico	314,932	5	1.6	38	12.1	6	1.9
Piedmont	103,756	3	2.9	5	4.8	2	1.9
Richmond City	210,309	8	3.8	71	33.8	8	3.8
Southside	84,608	0	0.0	4	4.7	3	3.5
Central Region	1,387,067	34	2.5	152	11.0	30	2.2

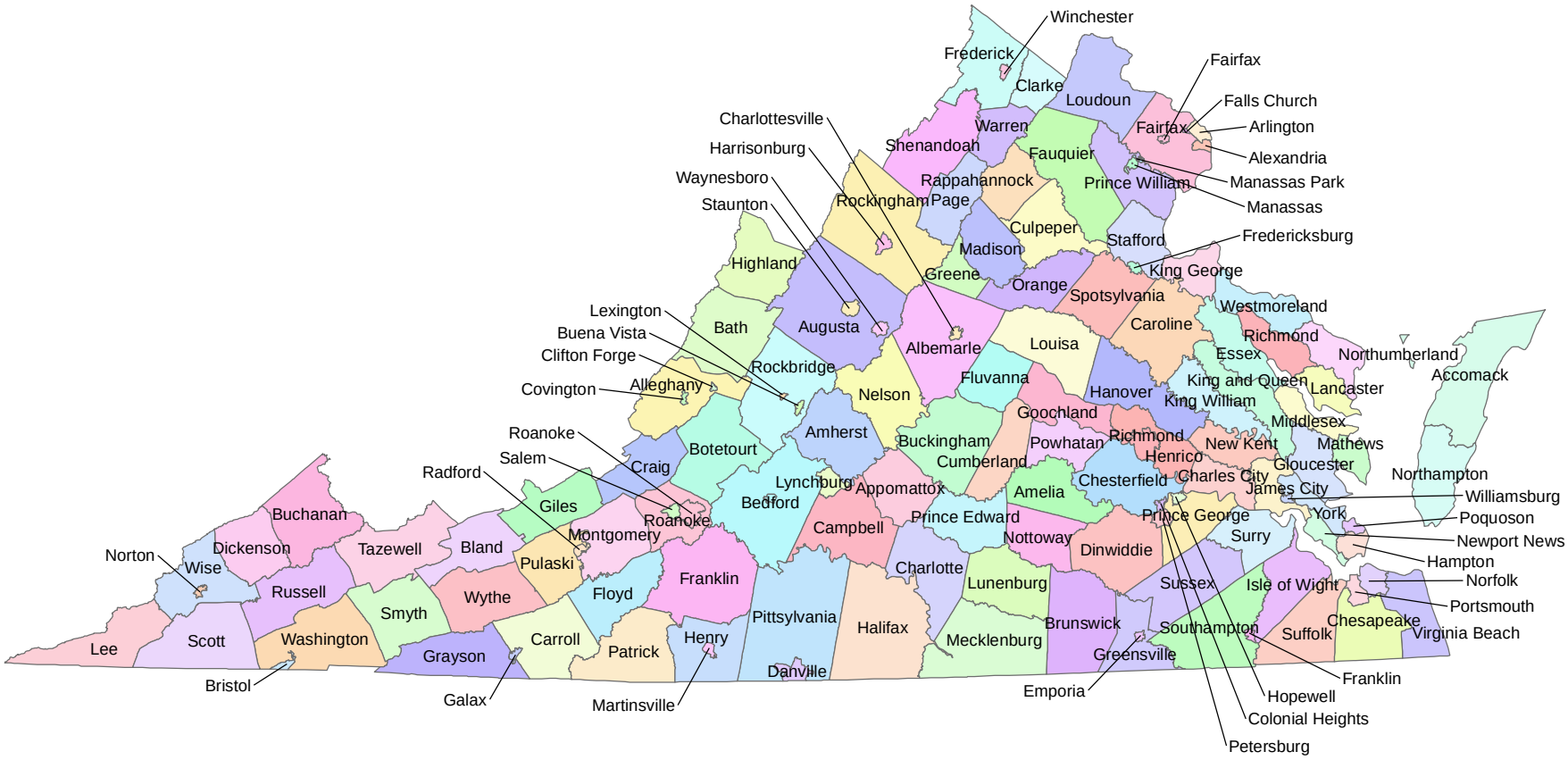
Chesapeake	228,417	12	5.3	13	5.7	2	0.9
Eastern Shore	45,567	0	0.0	2	4.4	0	0.0
Hampton	136,836	4	2.9	19	13.9	1	0.7
Norfolk	245,782	9	3.7	61	24.8	6	2.4
Peninsula	343,103	6	1.7	39	11.4	3	0.9
Portsmouth	96,470	4	4.1	28	29.0	1	1.0
Three Rivers	141,017	1	0.7	2	1.4	0	0.0
Virginia Beach	447,021	5	1.1	47	10.5	7	1.6
Western Tidewater	147,517	1	0.7	14	9.5	2	1.4
Eastern Region	1,831,730	42	2.3	225	12.3	22	1.2

MAPS OF INCIDENCE RATES FOR SELECTED DISEASES BY LOCALITY

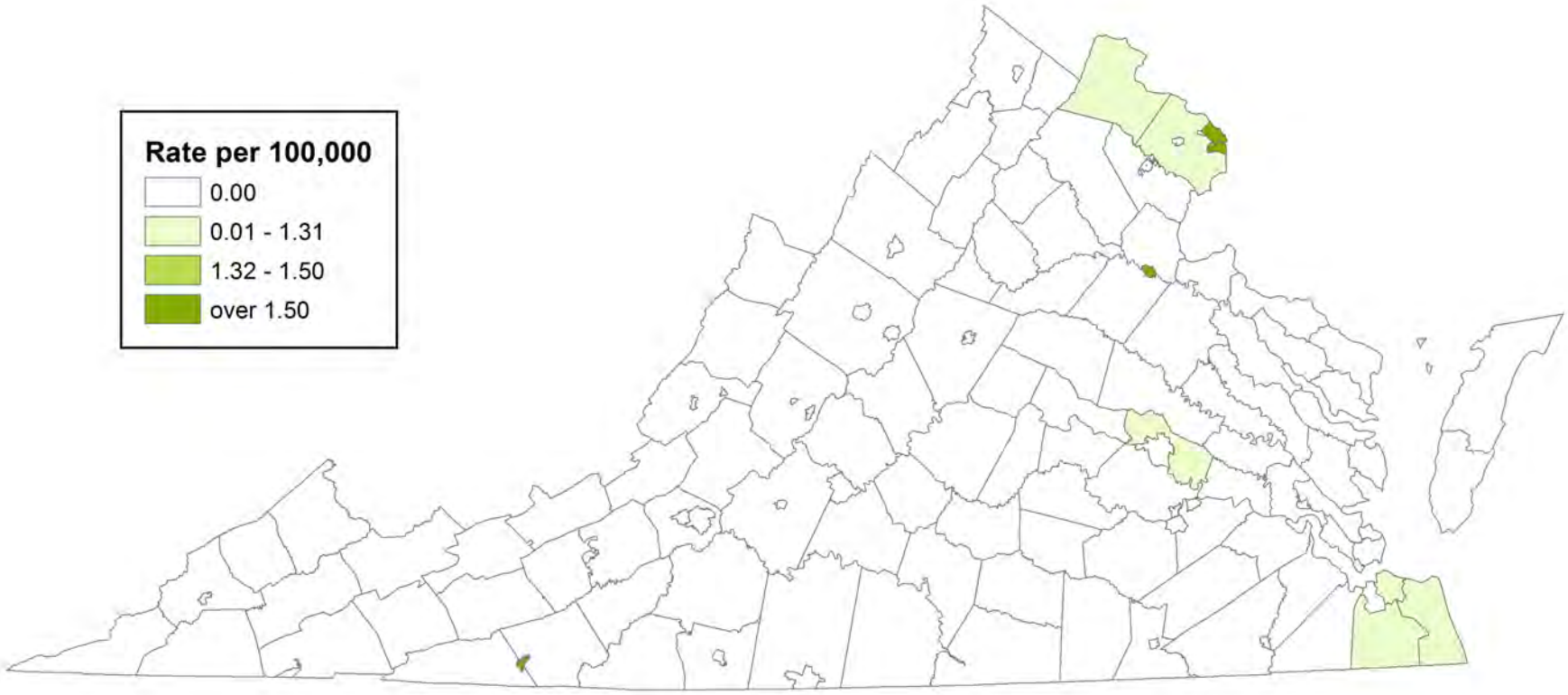
Health Planning Regions in Virginia



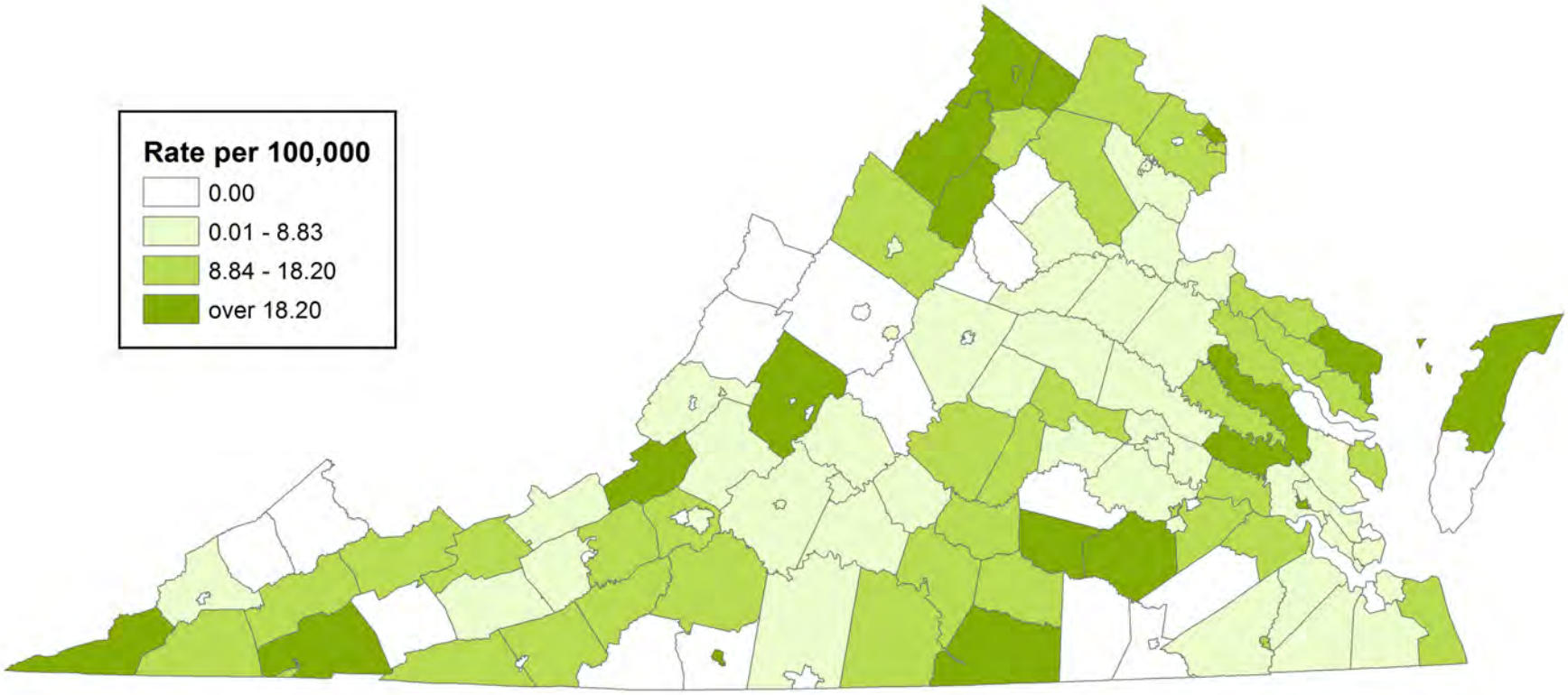
Virginia Localities



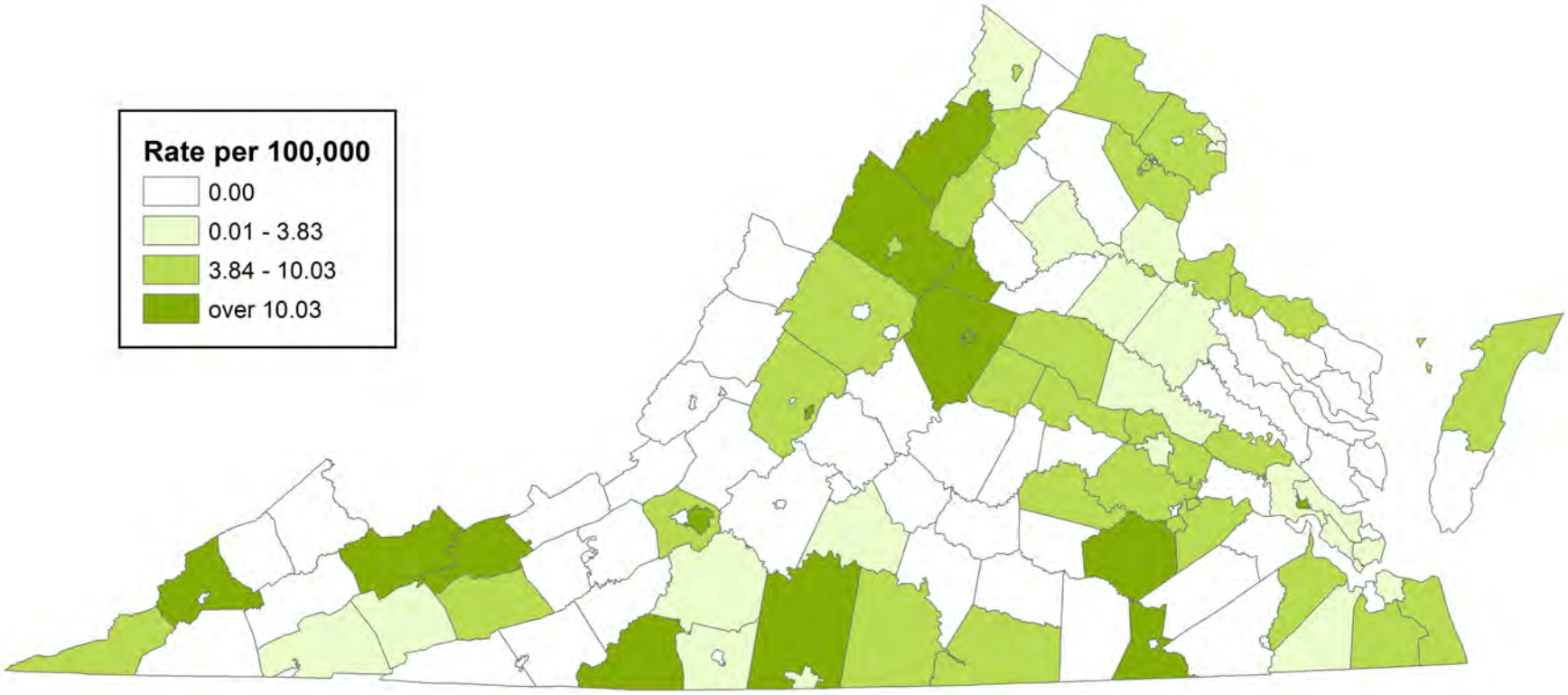
Amebiasis Incidence Rate by Locality
Virginia, 2013



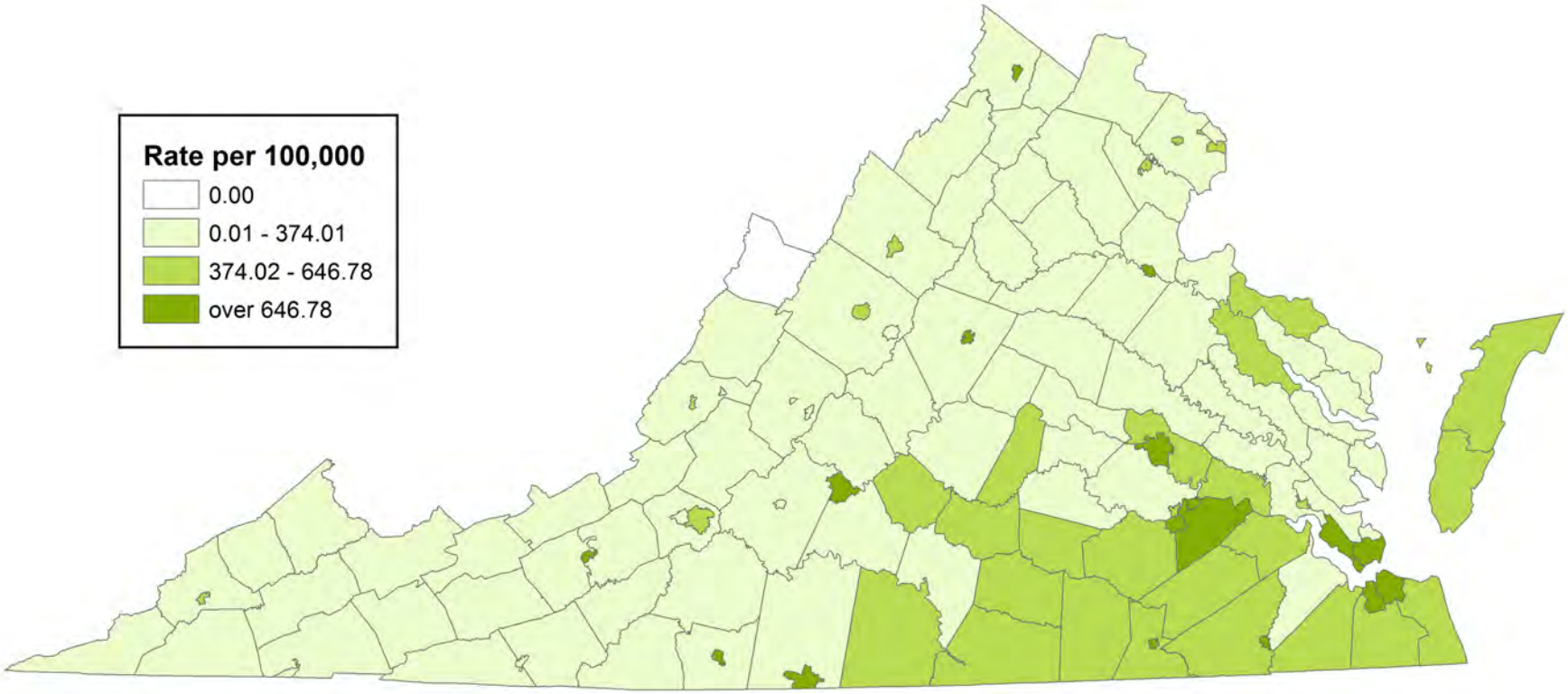
Campylobacteriosis Incidence Rate by Locality
Virginia, 2013



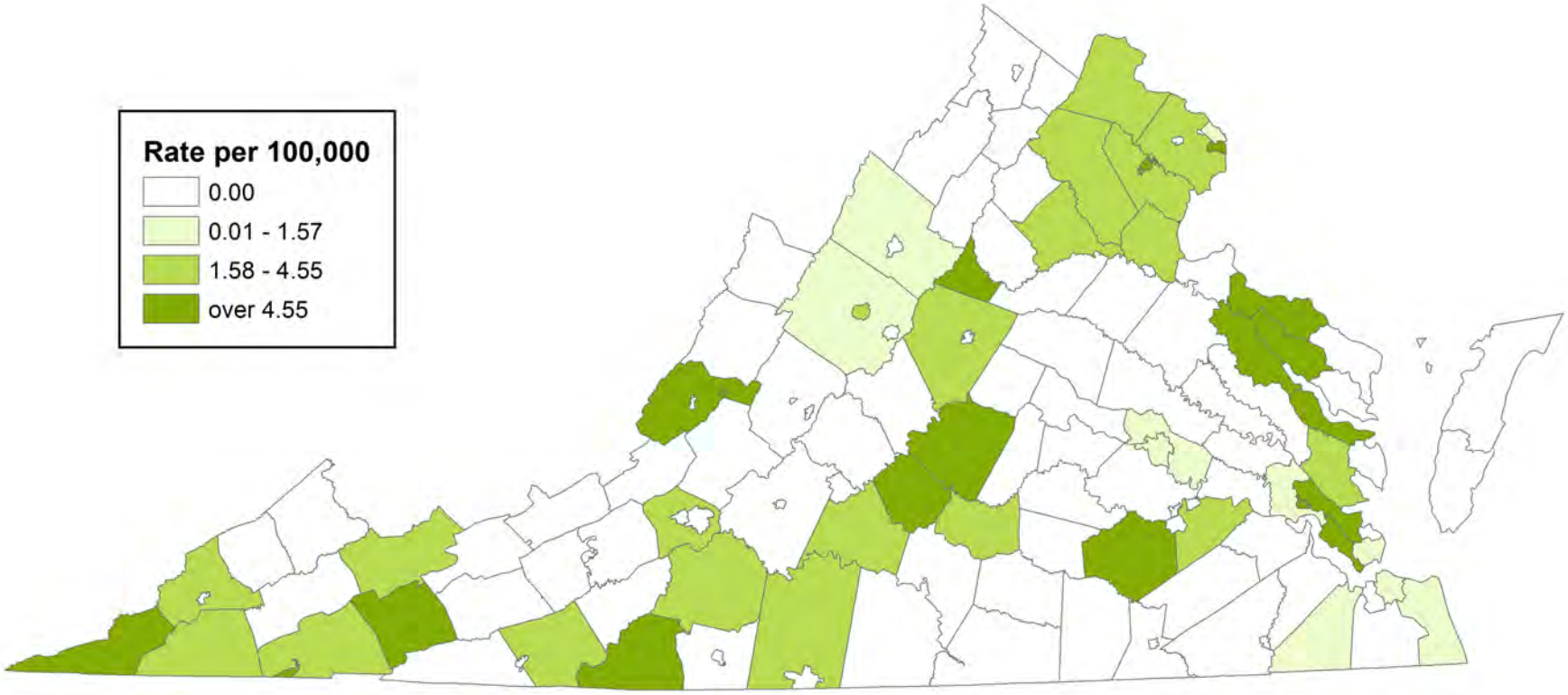
Chickenpox Incidence Rate by Locality
Virginia, 2013



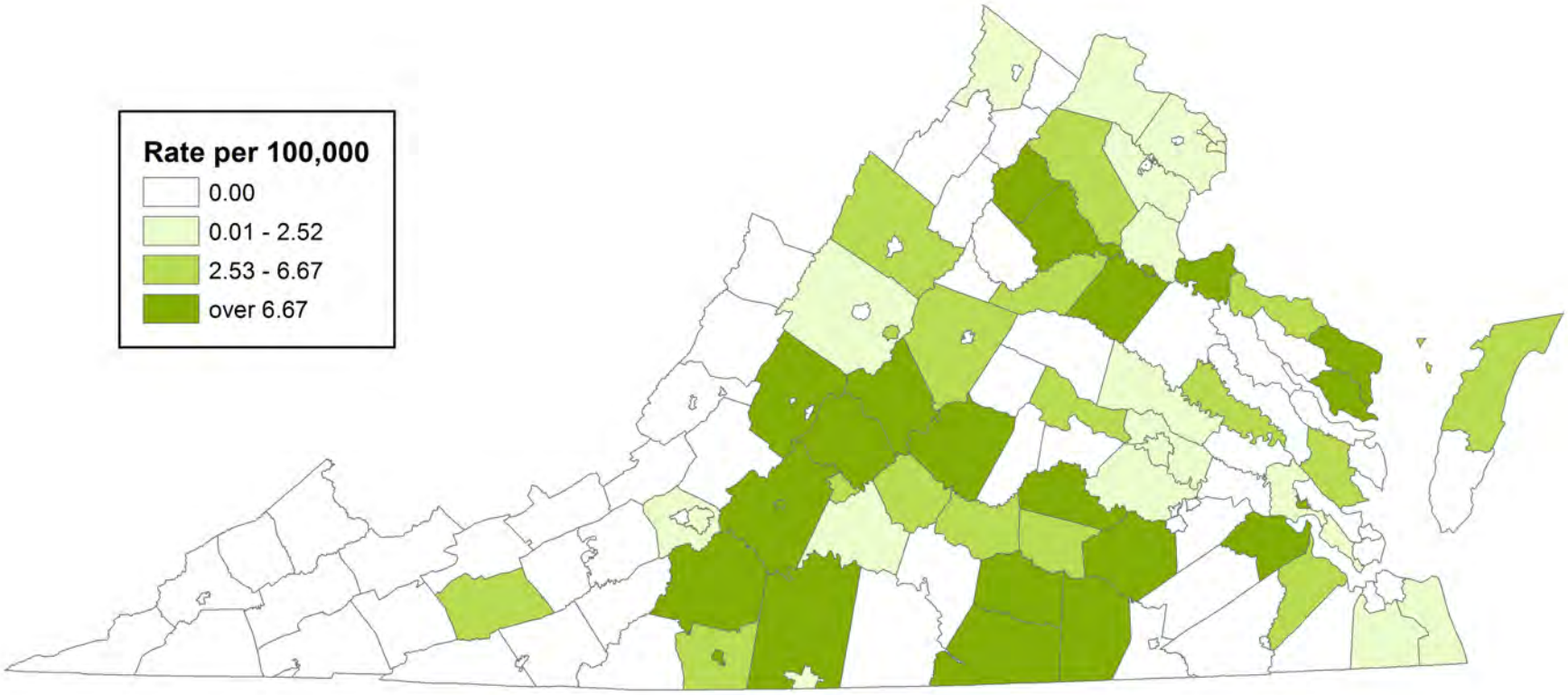
Chlamydia trachomatis Infection Incidence Rate by Locality Virginia, 2013



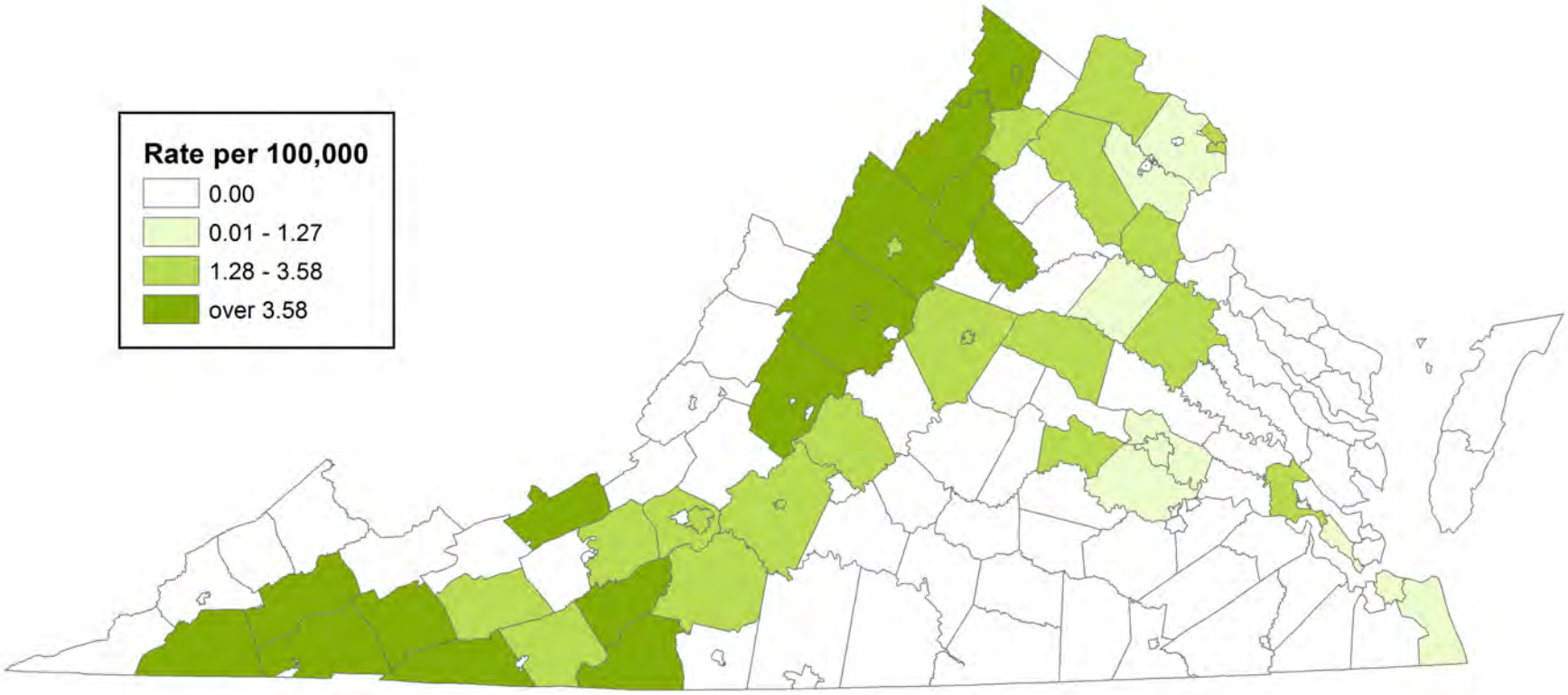
Cryptosporidiosis Incidence Rate by Locality
Virginia, 2013



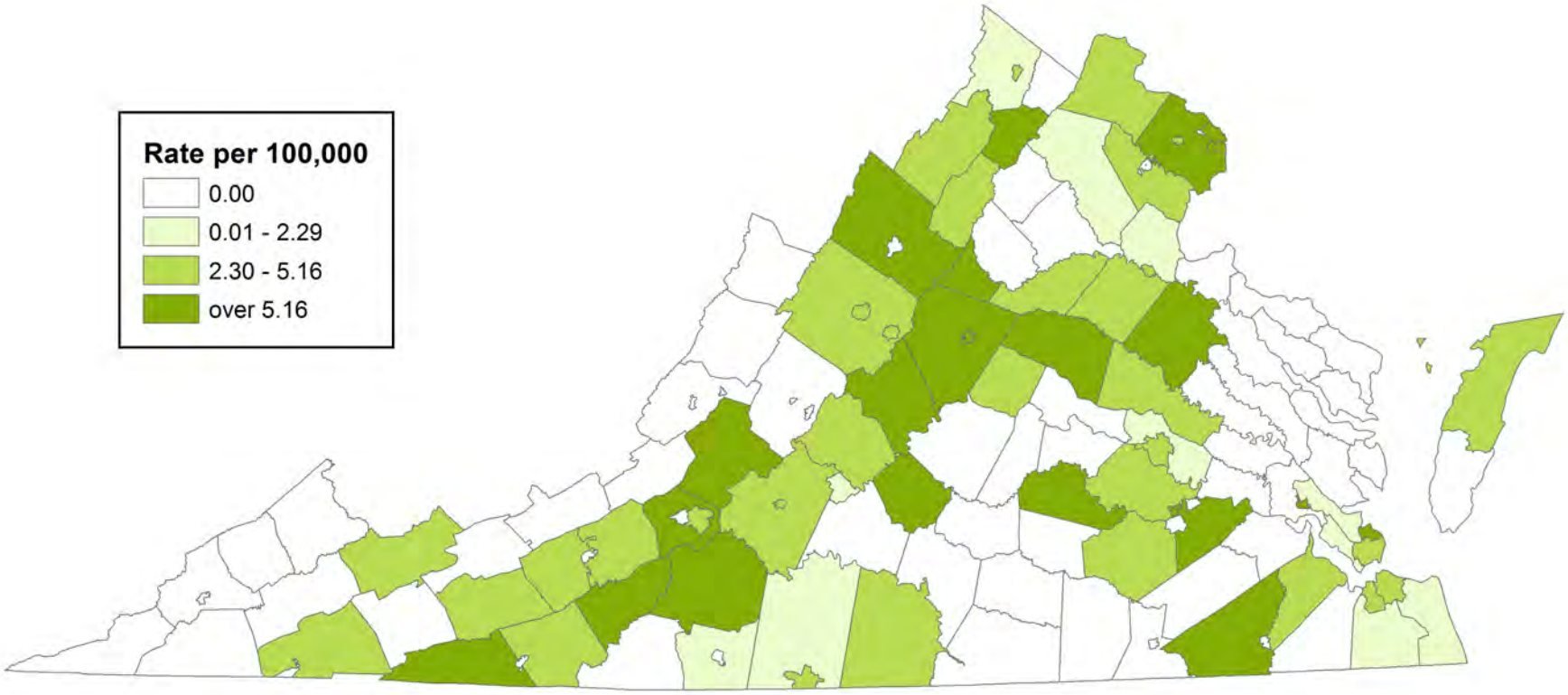
Ehrlichiosis / Anaplasmosis Incidence Rate by Locality
Virginia, 2013



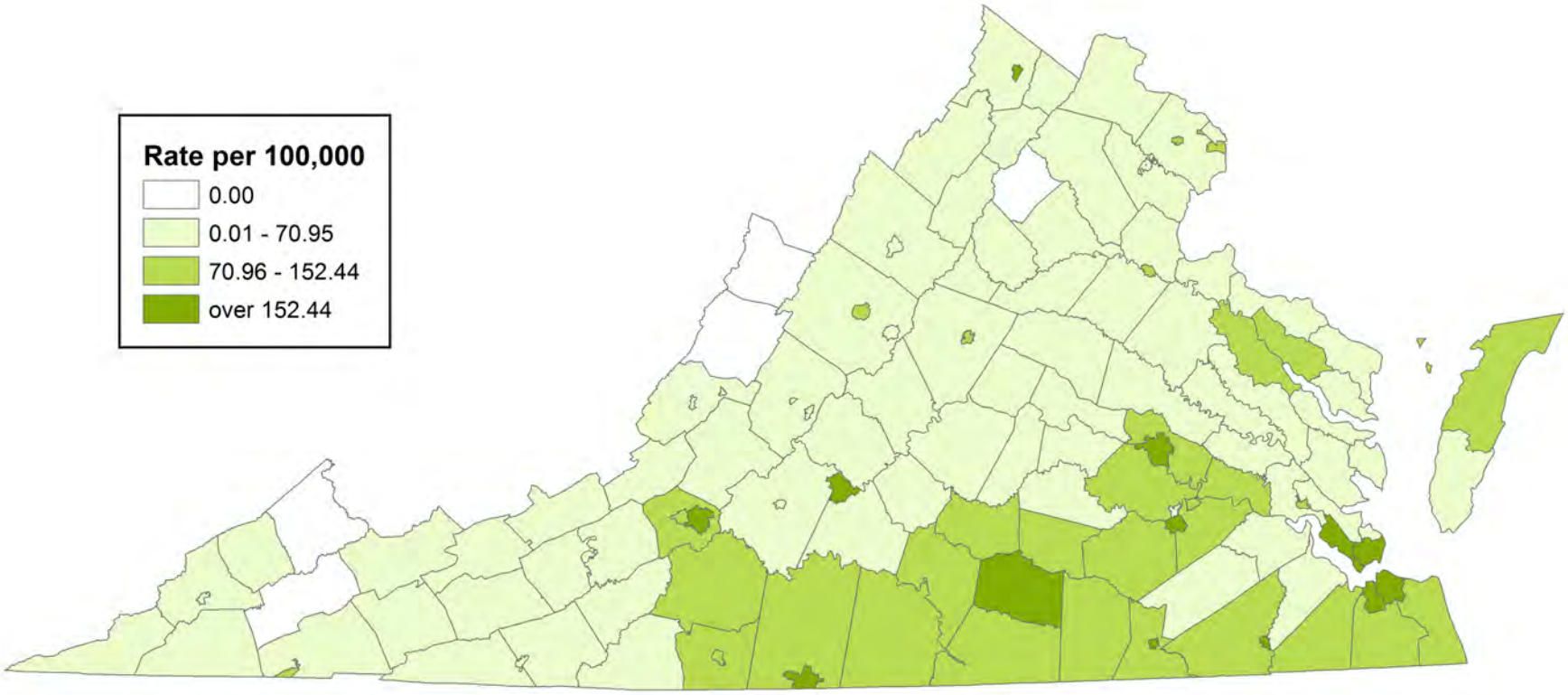
Escherichia coli Infection, Shiga Toxin-Producing Incidence Rate by Locality, Virginia, 2013



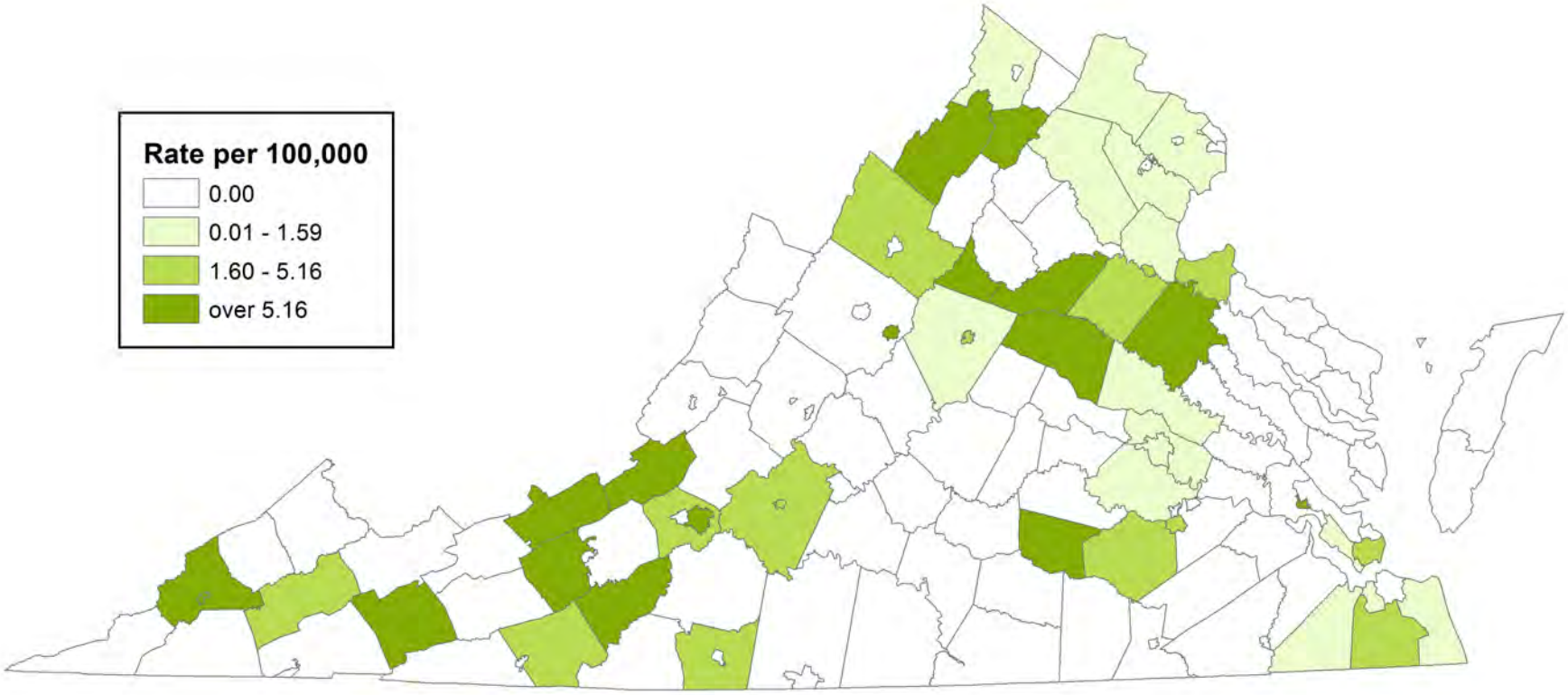
Giardiasis Incidence Rate by Locality
Virginia, 2013



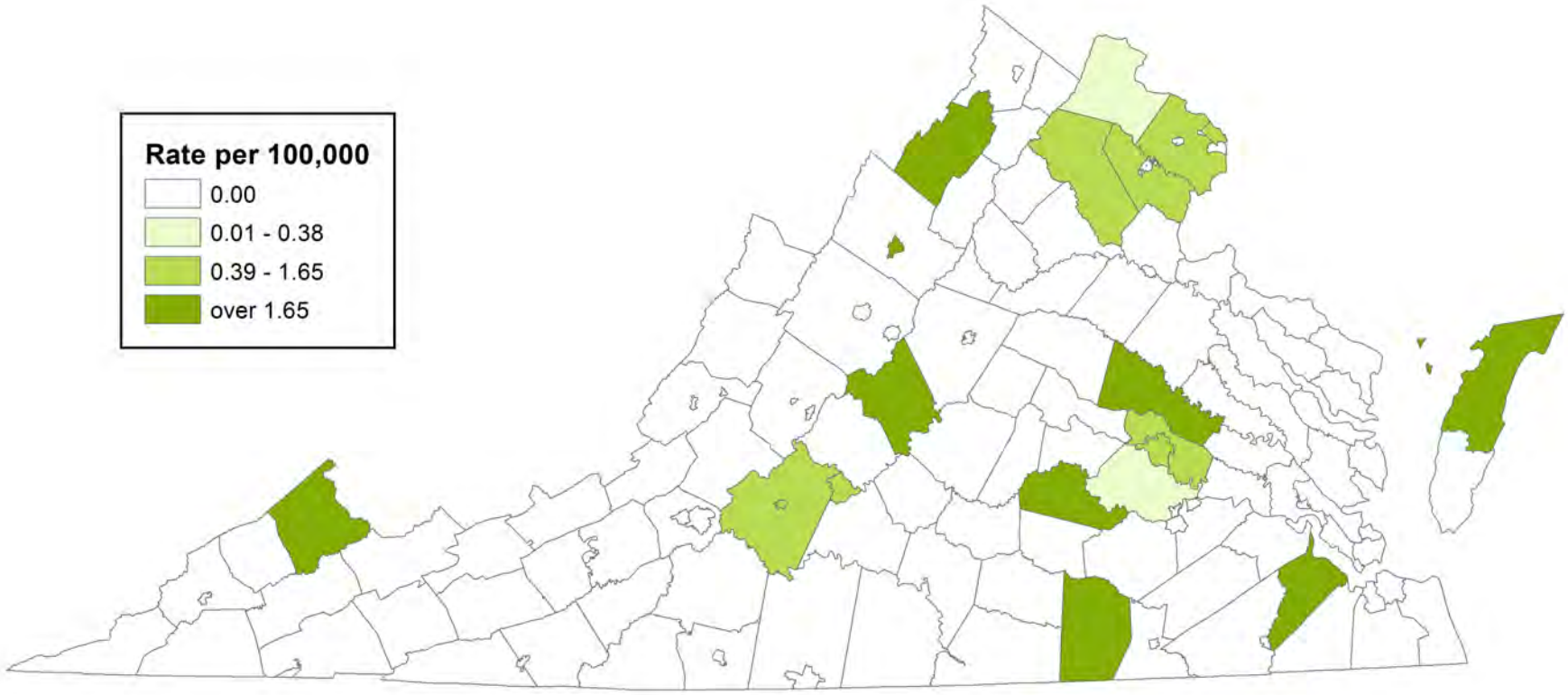
Gonorrhea Incidence Rate by Locality
Virginia, 2013



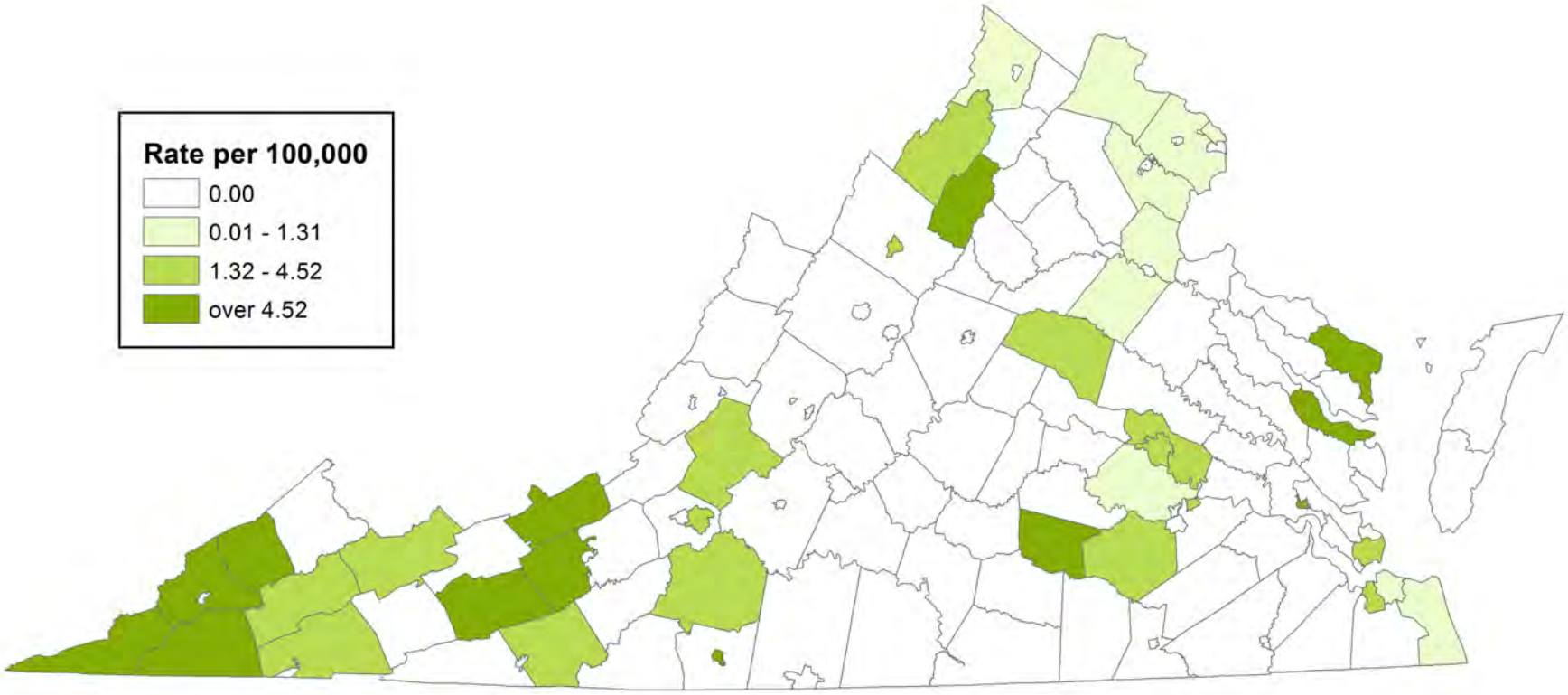
Haemophilus influenzae Infection, Invasive Incidence Rate by Locality, Virginia, 2013



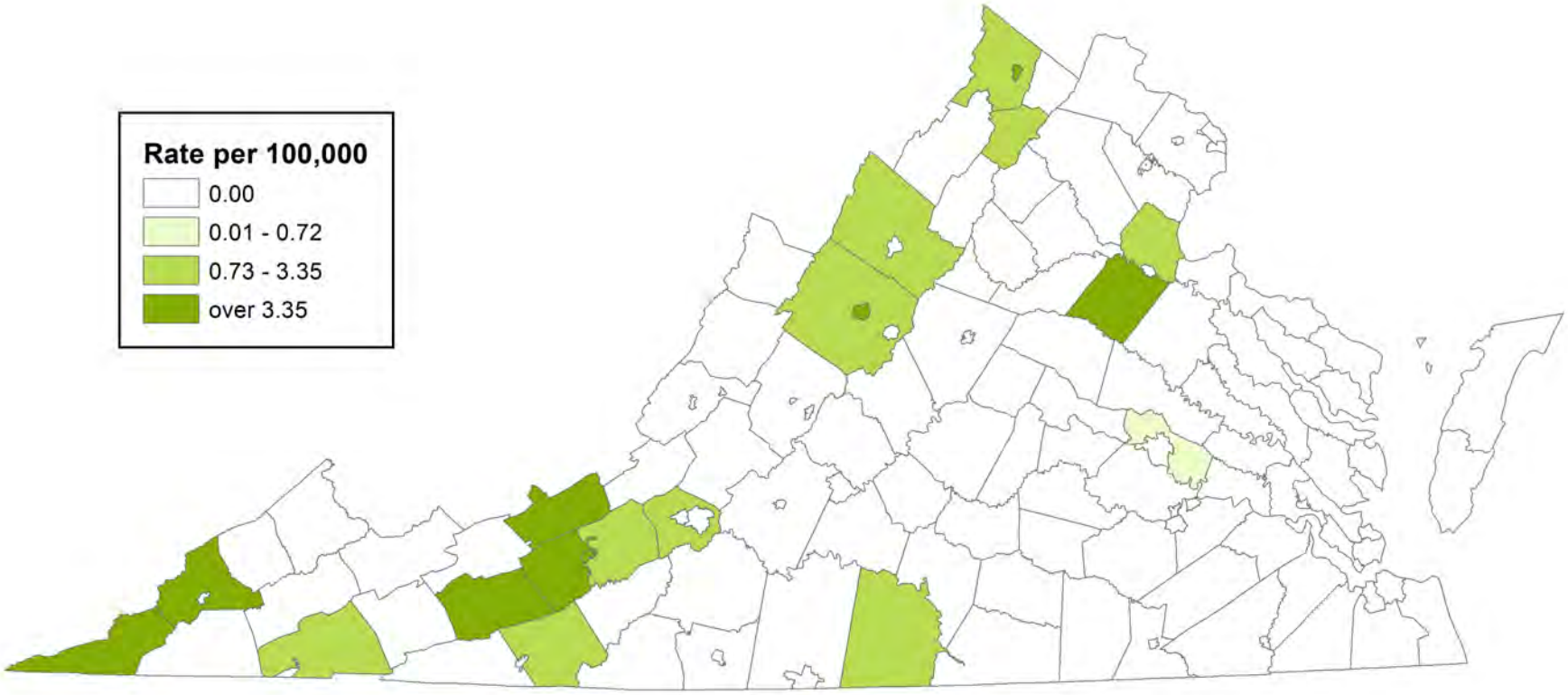
Hepatitis A Incidence Rate by Locality
Virginia, 2013



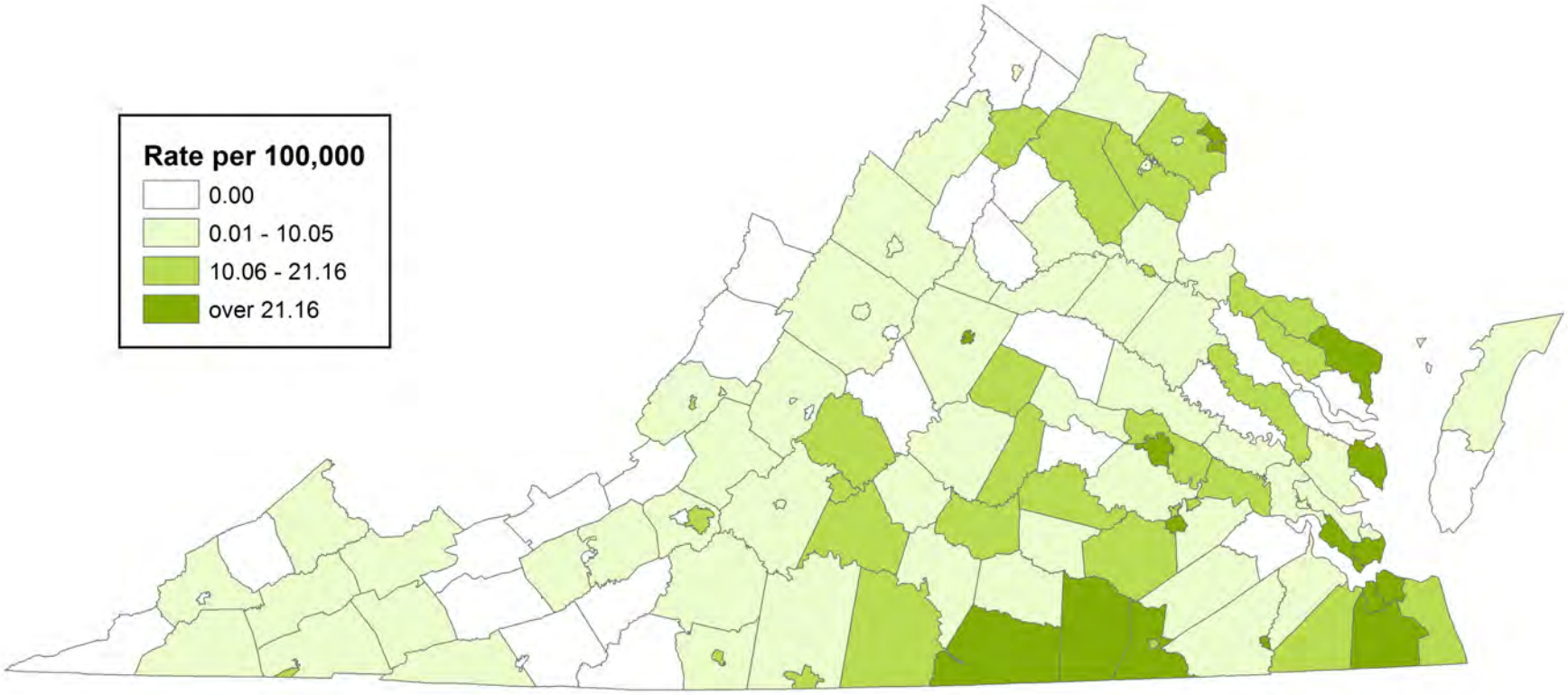
Hepatitis B, Acute, Incidence Rate by Locality
Virginia, 2013



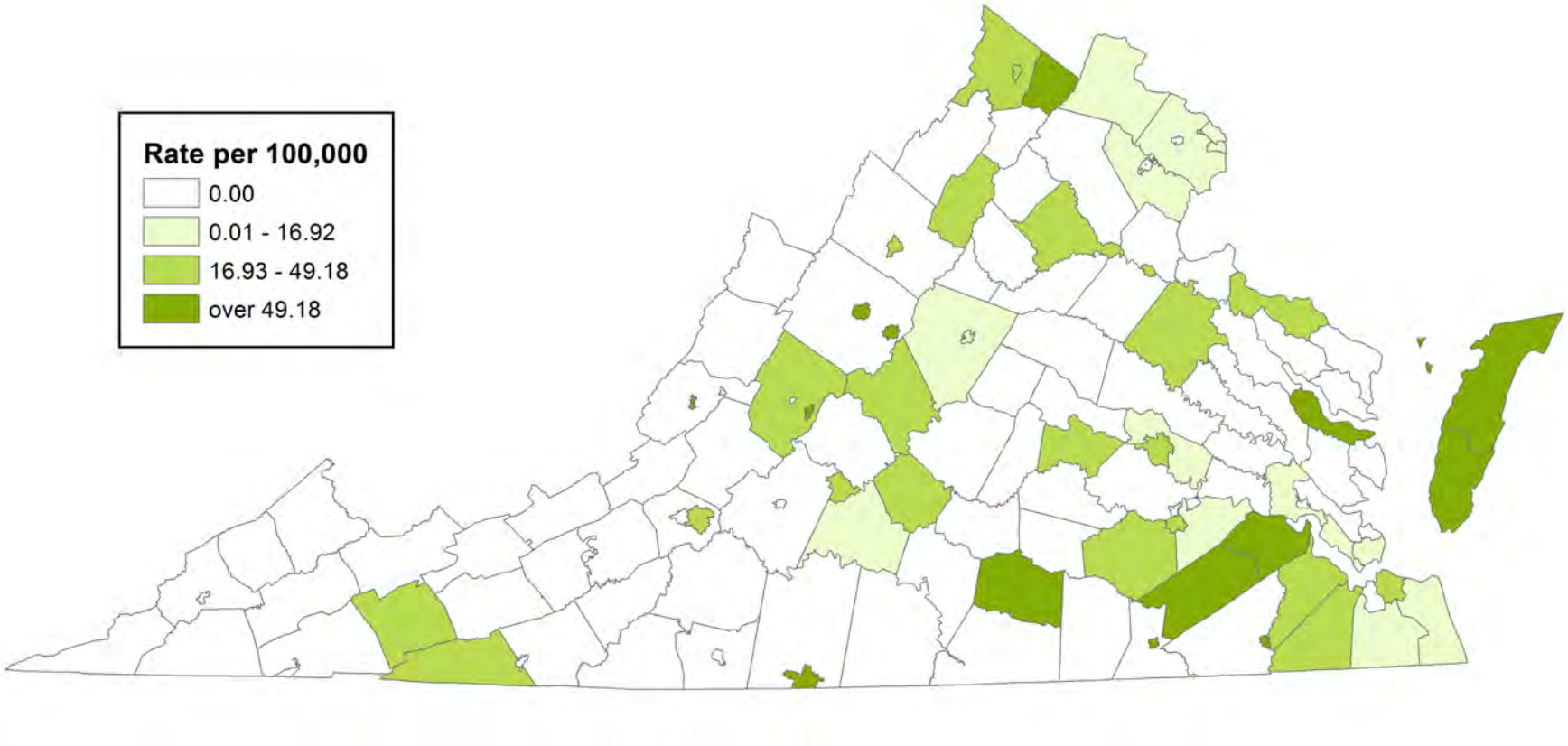
Hepatitis C, Acute, Incidence Rate by Locality
Virginia, 2013



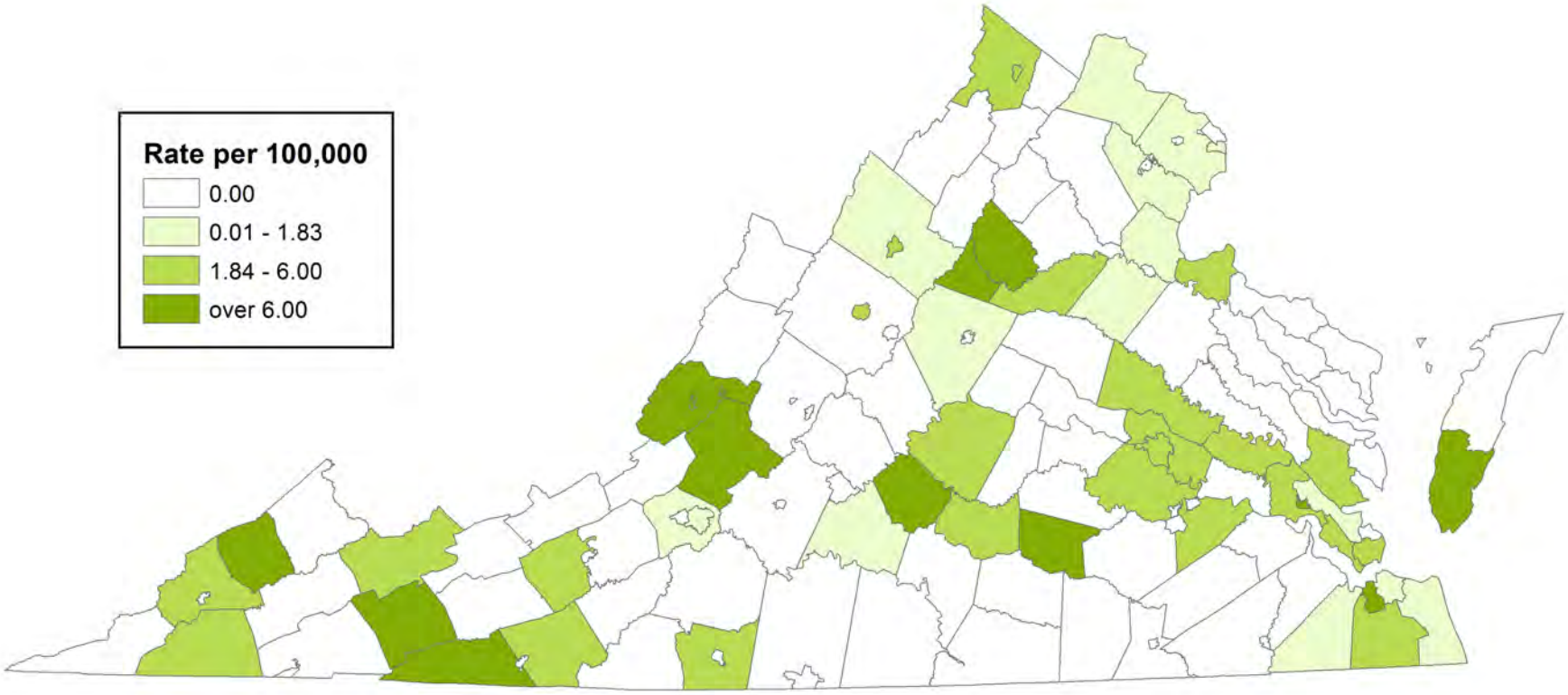
HIV Disease Incidence Rate by Locality
Virginia, 2013



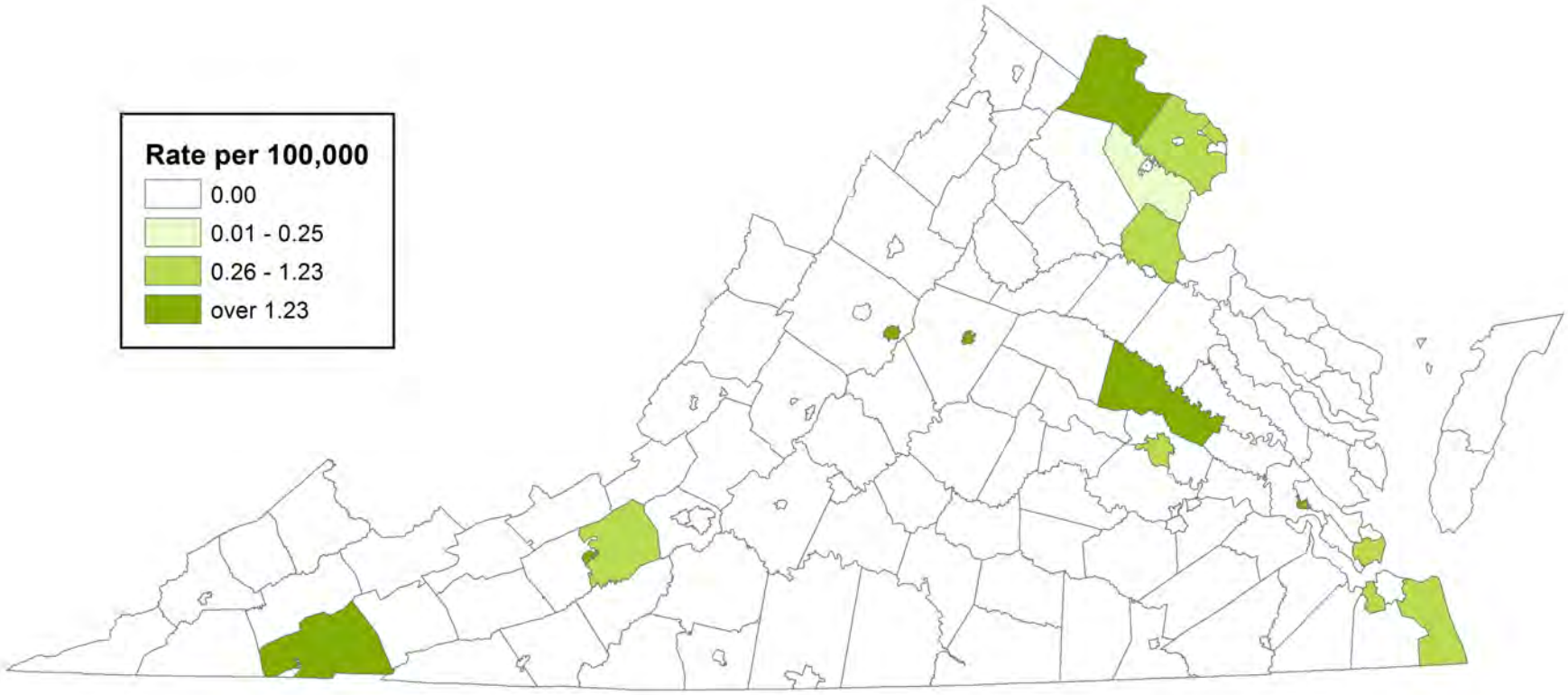
Lead - Elevated Blood Levels in Children
Incidence Rate by Locality, Virginia, 2013



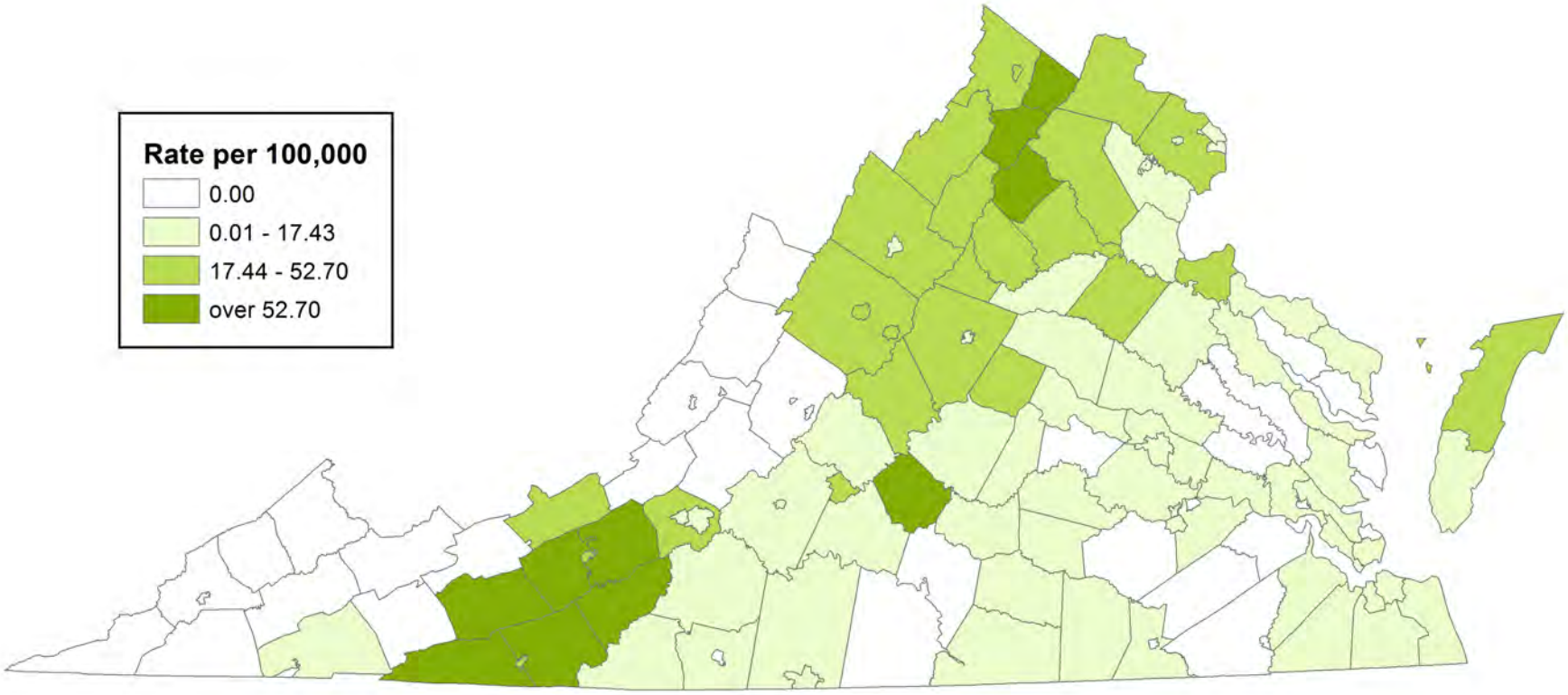
Legionellosis Incidence Rate by Locality
Virginia, 2013



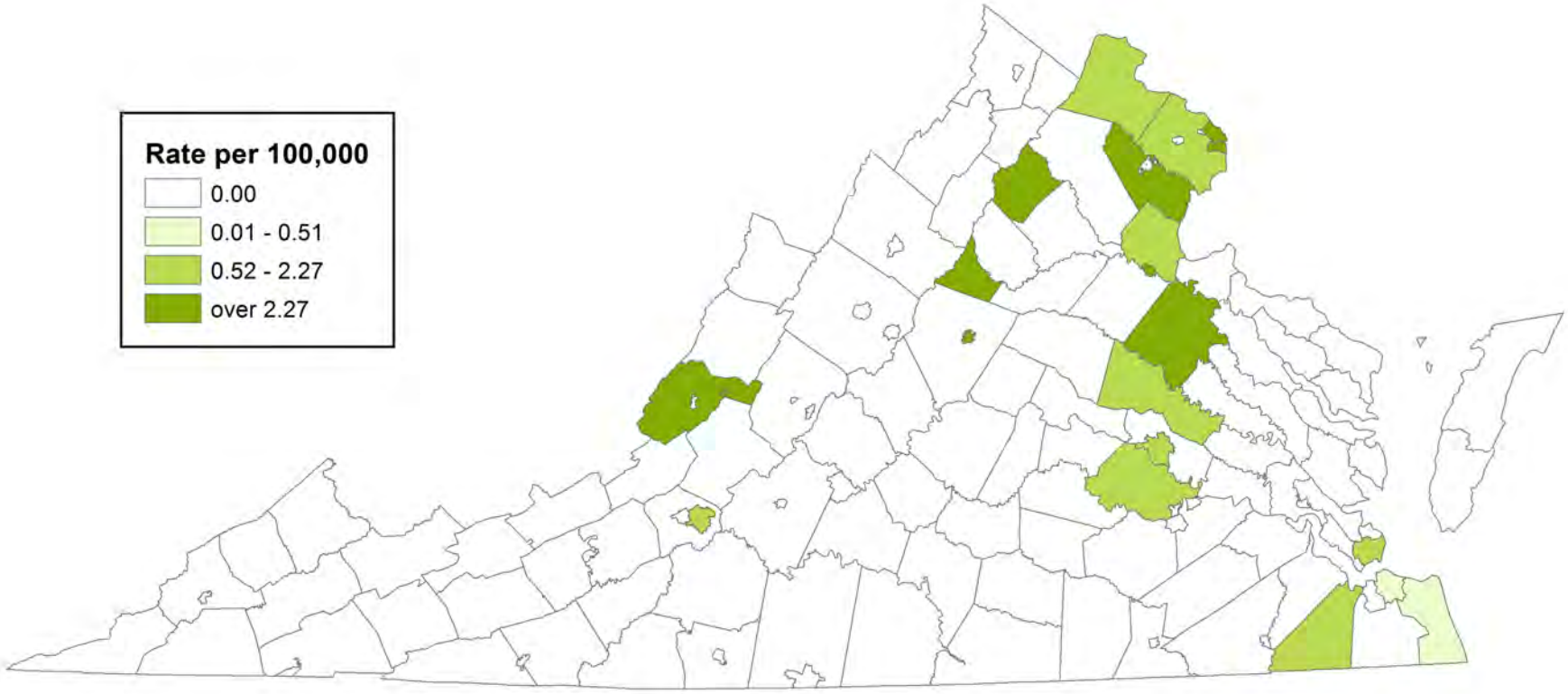
Listeriosis Incidence Rate by Locality
Virginia, 2013



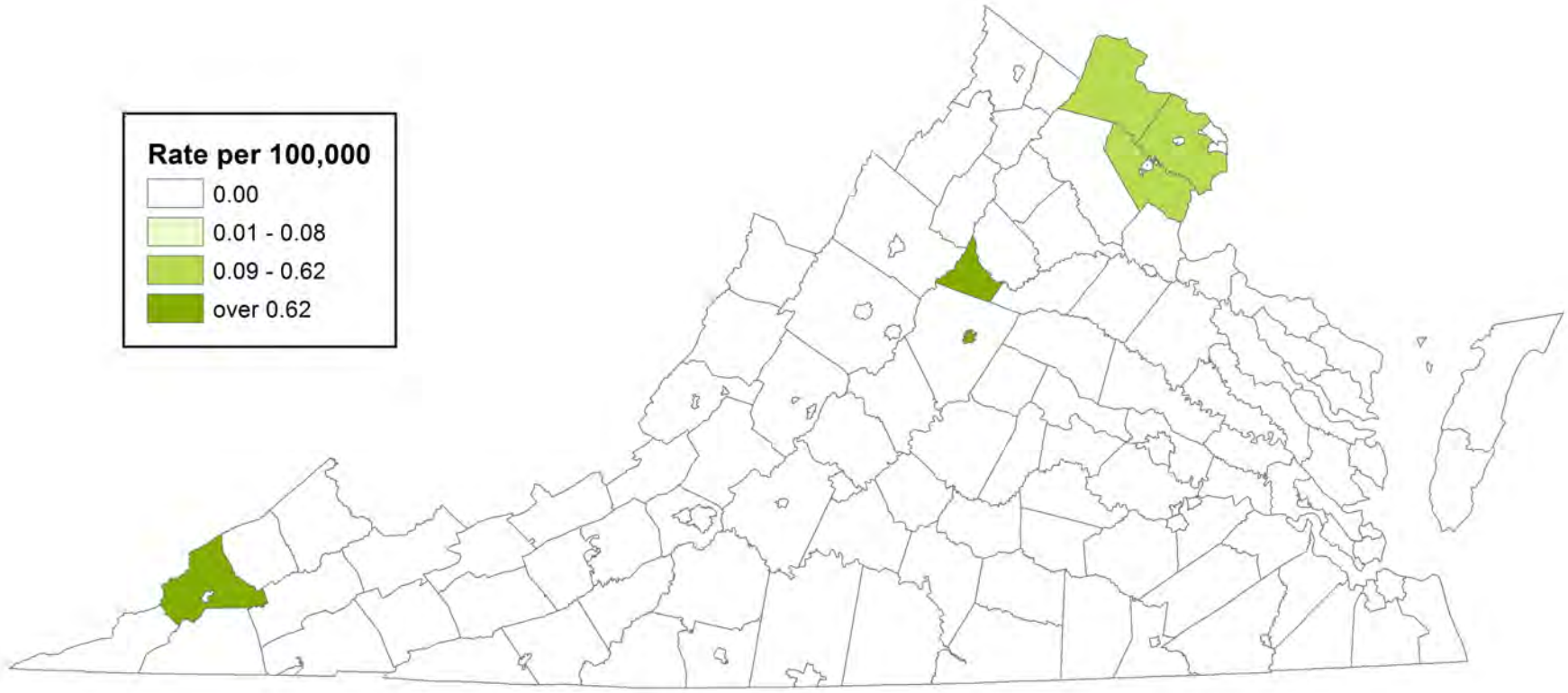
Lyme Disease Incidence Rate by Locality
Virginia, 2013



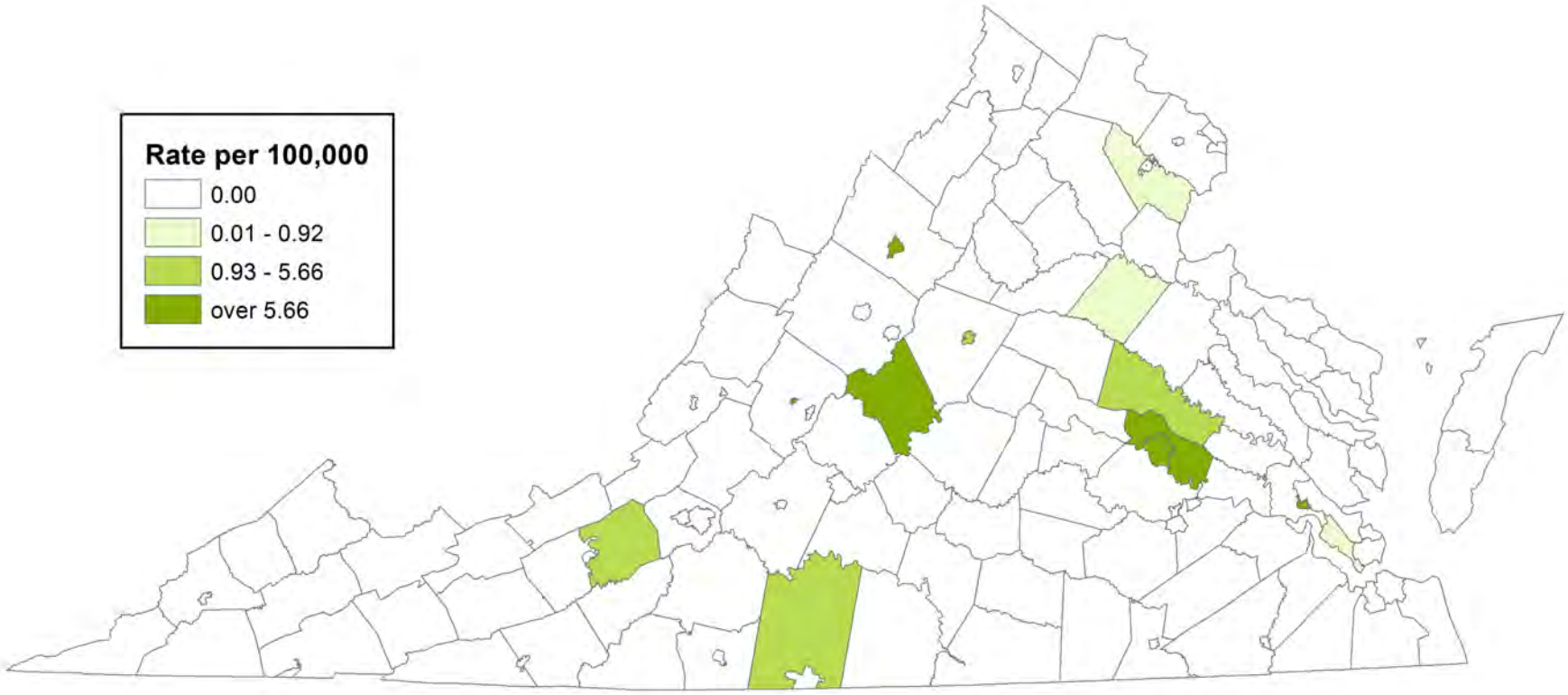
Malaria Incidence Rate by Locality
Virginia, 2013



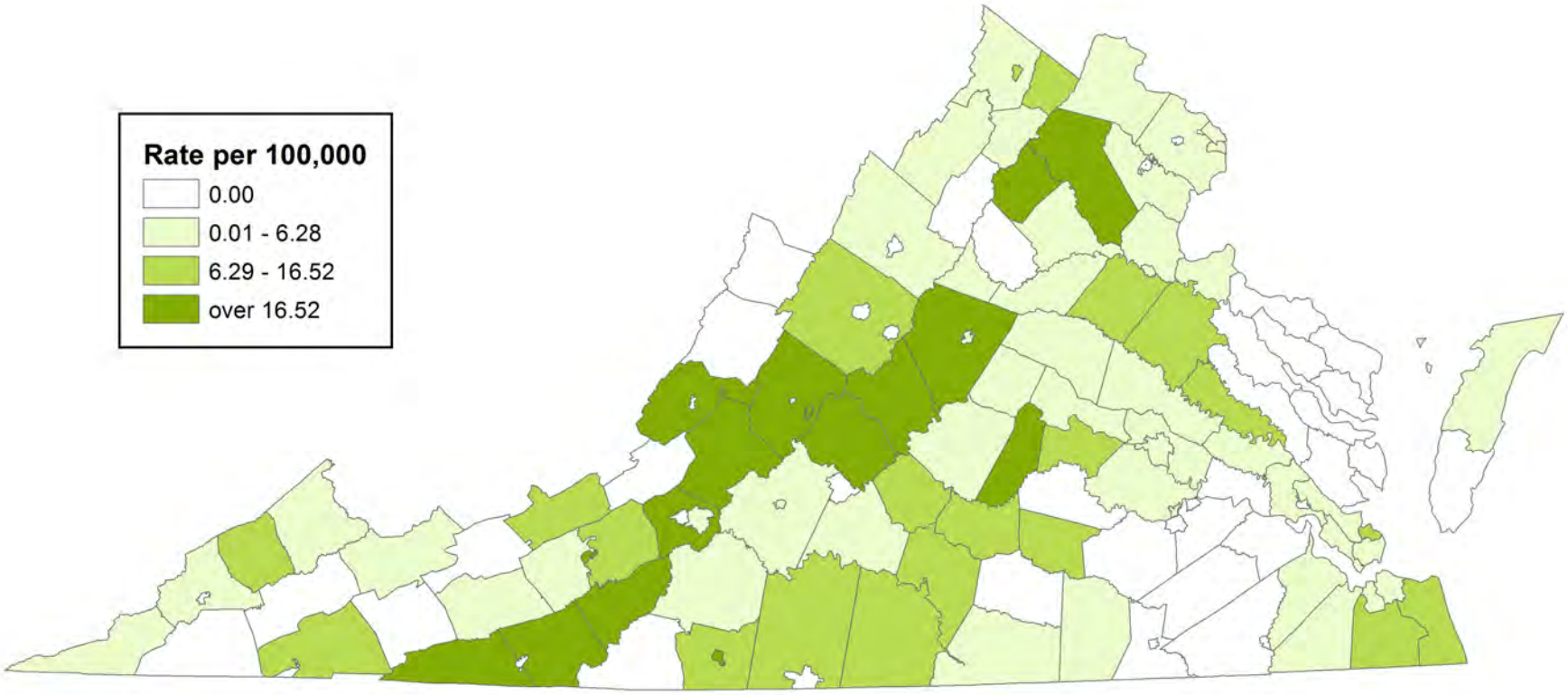
Meningococcal Disease Incidence Rate by Locality
Virginia, 2013



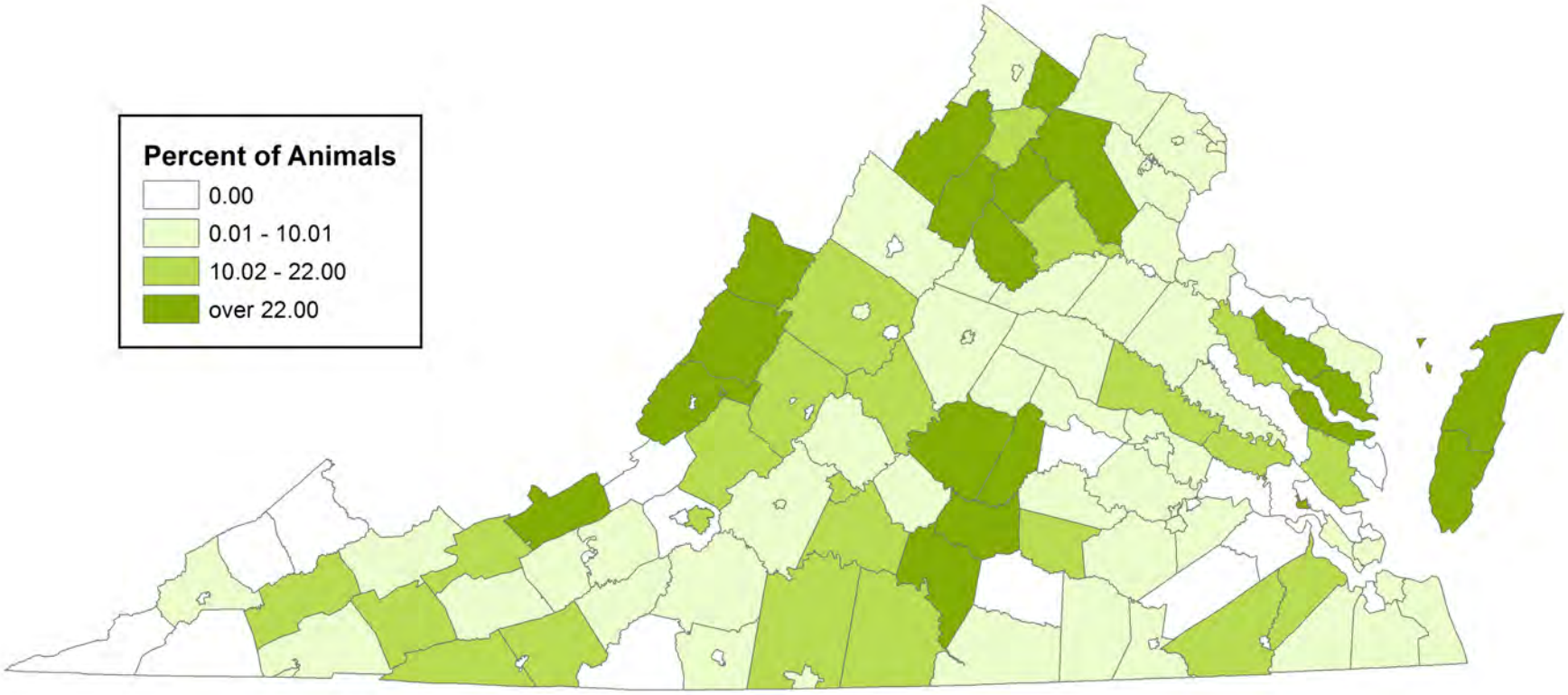
Mumps Incidence Rate by Locality
Virginia, 2013



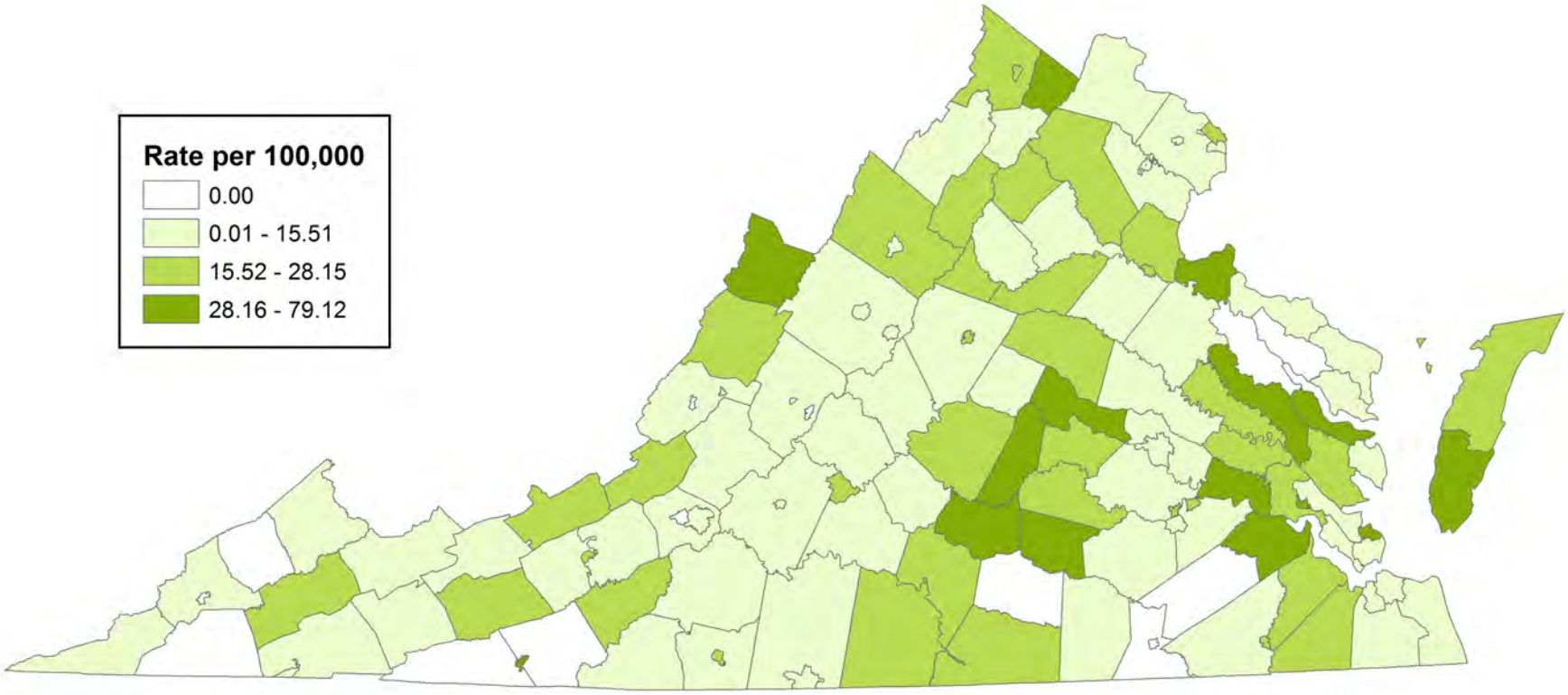
Pertussis Incidence Rate by Locality
Virginia, 2013



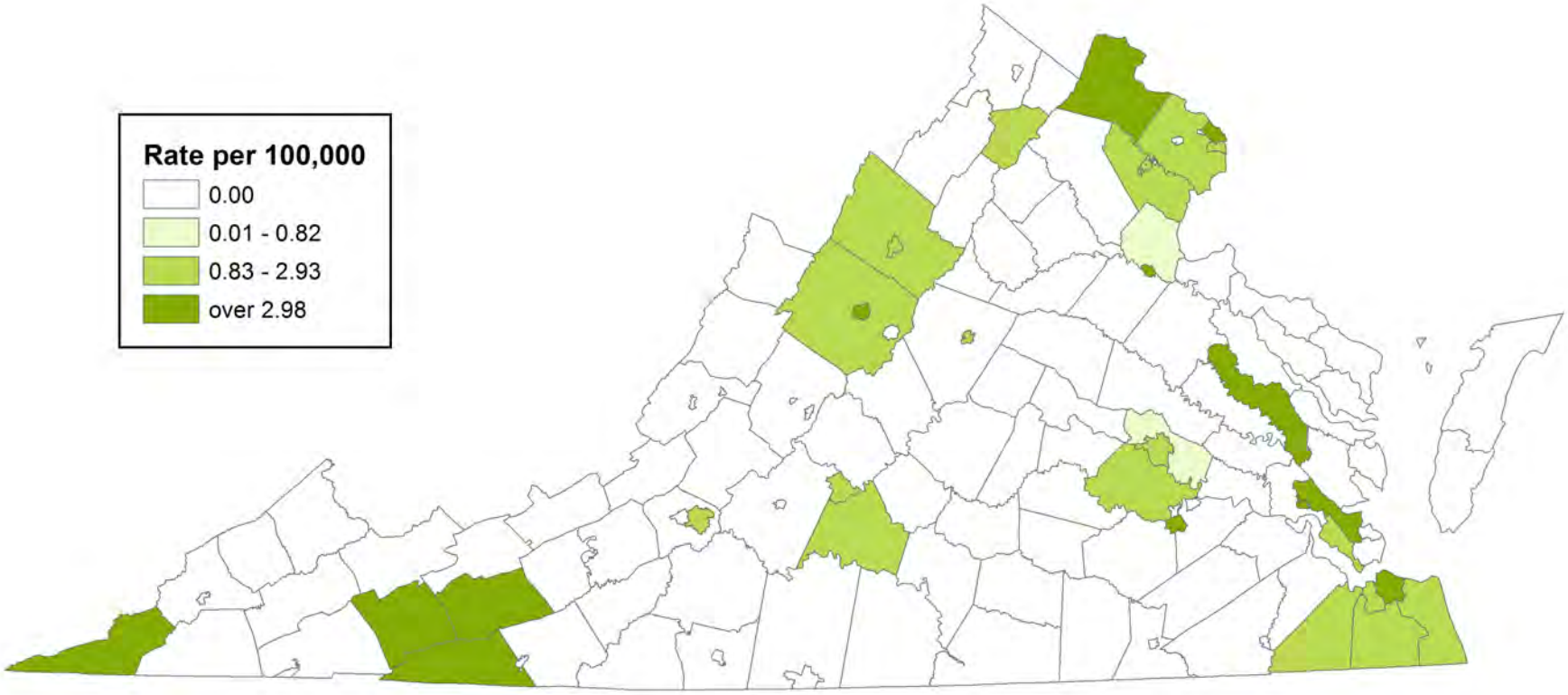
Rabies - Percent of Animals Testing Positive by Locality
Virginia, 2013



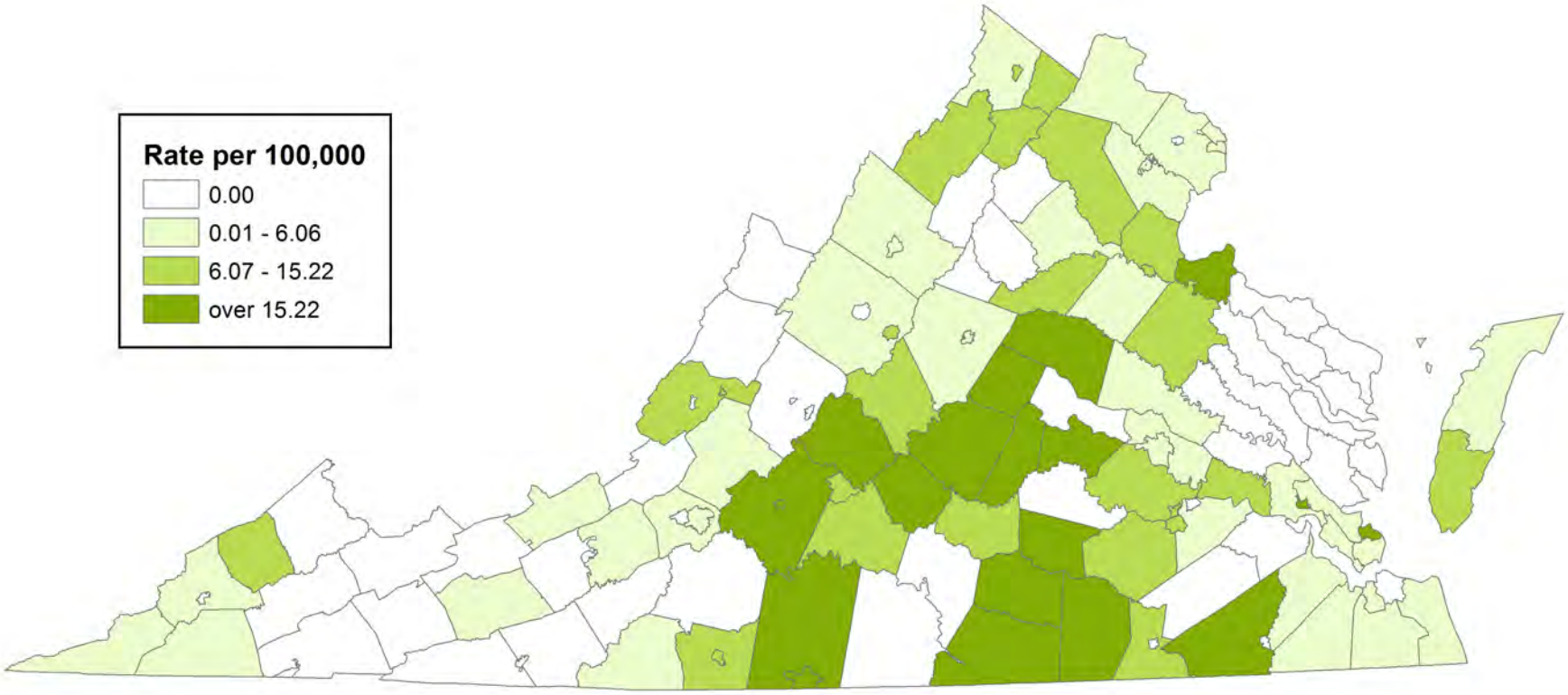
Salmonellosis Incidence Rate by Locality
Virginia, 2013



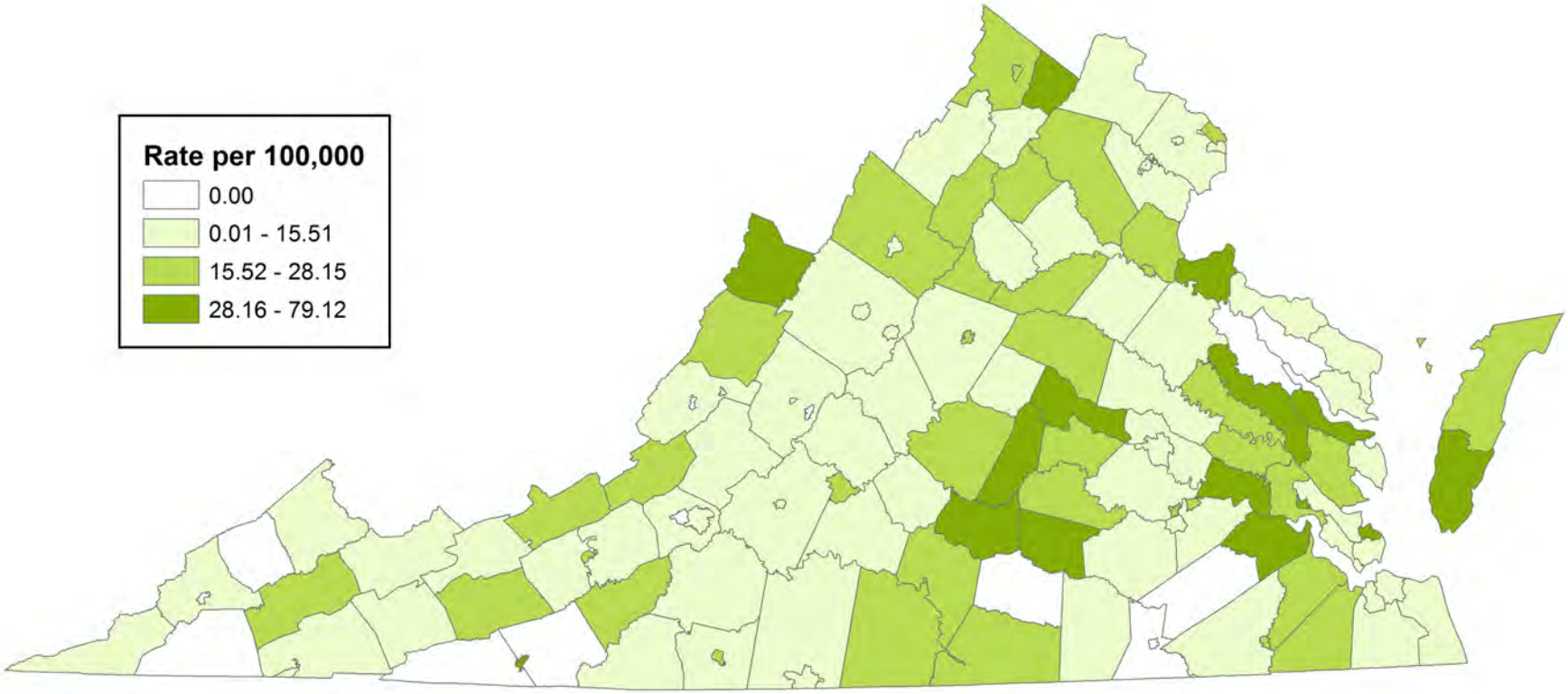
Shigellosis Incidence Rate by Locality
Virginia, 2013



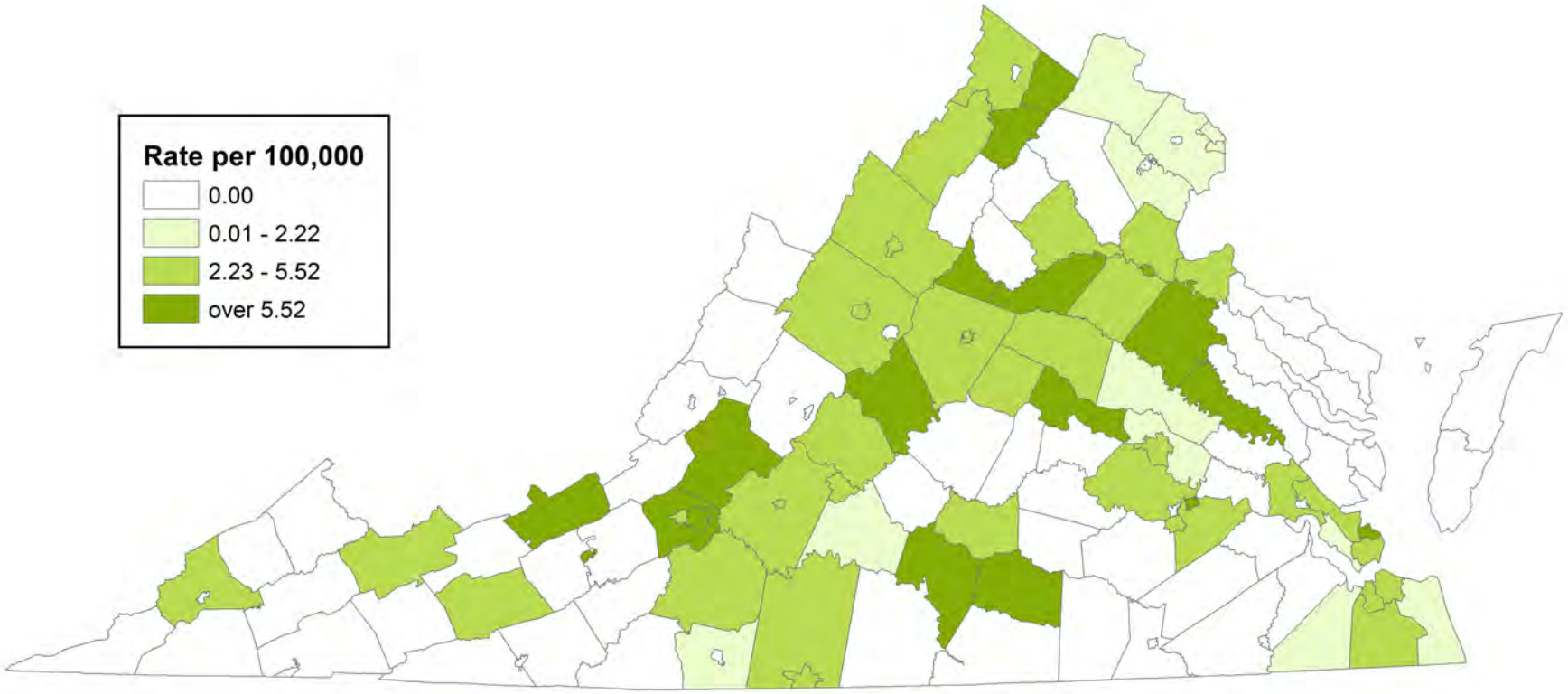
Spotted Fever Rickettsiosis, including RMSF
Incidence Rate by Locality, Virginia, 2013



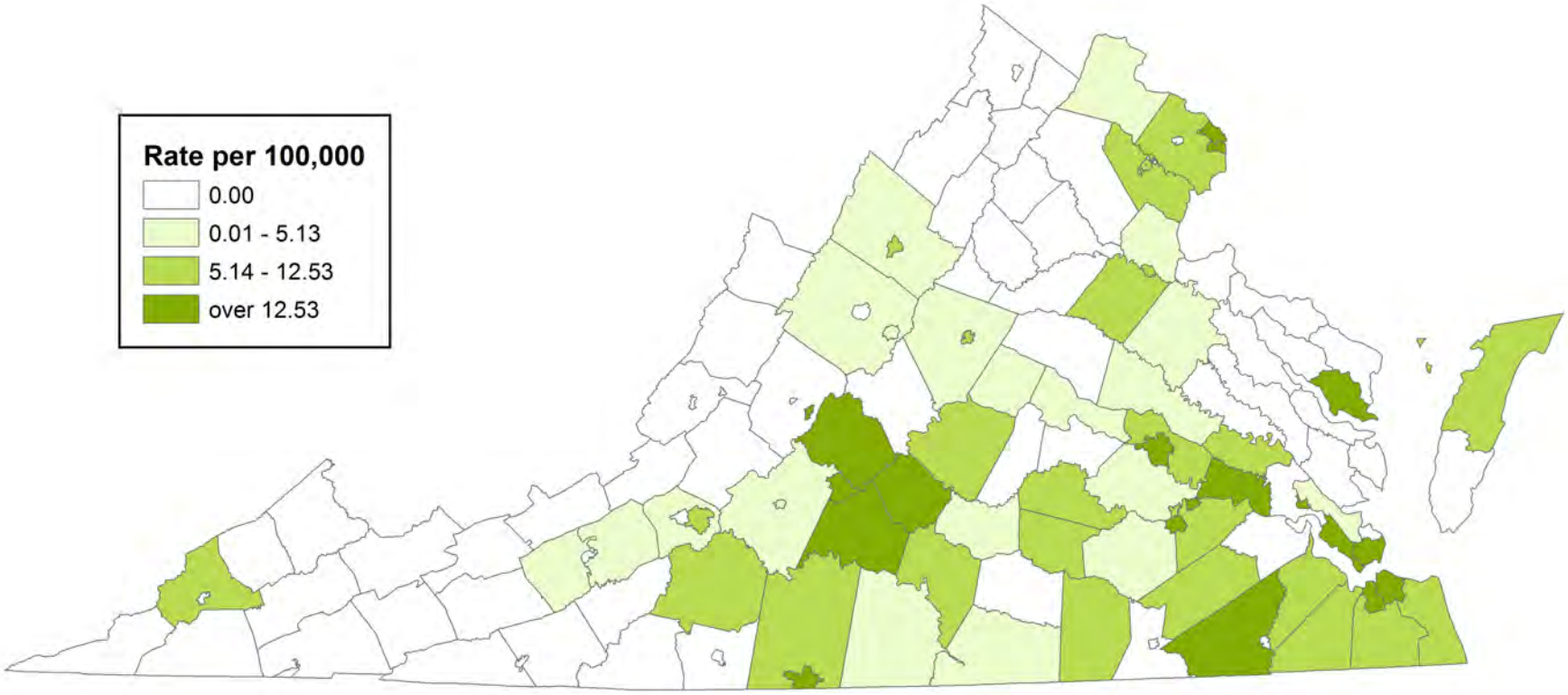
Staphylococcus aureus Infection, Invasive, Methicillin-Resistant (MRSA), Incidence Rate by Locality Virginia, 2013



Streptococcal Disease, Group A, Invasive or TSS Incidence Rate by Locality, Virginia, 2013



Syphilis, Early Stage, Incidence Rate by Locality
Virginia, 2013



Tuberculosis Incidence by Locality
Virginia, 2013