

# US VIRGIN ISLANDS DEPARTMENT OF HEALTH

## Epidemiology Division

### *2022 Annual Report*



## Message from the Commissioner

I would like to acknowledge the staff of the Epidemiology Division (VIDOH-EPI) and the Public Health Laboratory who have worked tirelessly over the last few years to support the U.S. Virgin Islands during the COVID-19 pandemic, while also expanding laboratory and epidemiologic capacity for a wide range of infectious diseases. This forward movement increases the resiliency of our public health system through a focus on identification of potential public health threats, timely collection of data, and synthesis of that data to mitigate hazards that could affect our community. As the Territorial Epidemiologist, Dr. Esther Ellis continues to lead the Epidemiology Division, where her team serves on both the front lines of public health and behind the public health data infrastructure of the U.S. Virgin Islands. I would also like to thank the staff of clinics and laboratories across the territory who work in partnership with VIDOH-EPI to identify public health threats and support epidemiologic investigations. These collaborative efforts allow for crucial data collection to inform public health policy and public health actions. I look forward to sharing the news of the future accomplishments of the Epidemiology Division and Public Health Laboratory in the next year and feel honored to continue to serve the Virgin Islands community alongside these scientists and public health practitioners as we transition out of the COVID-19 Public Health Emergency Declaration and into a bright and resilient public health future.

 **Justa “Tita” Encarnacion, RN, BSN, MBA/HCM**

## Message from the Director

Accomplishments highlighted in this year’s report demonstrate the desire of the Epidemiology Division to expand the capacities of our staff while shifting our focus to emerging threats beyond COVID-19. While our efforts in early 2022 were prioritized towards the COVID-19 pandemic response, we have strived to perform outside of these duties as illustrated in this report. It was our great pleasure to be able to work closely with school staff, students, and parents though COVID-19, and other outreach and public health surveillance efforts. Much of our epidemiologic surveillance and disease outbreak investigation work would not be possible without our close relationships with other departments, hospitals, laboratories, and clinics throughout the U.S. Virgin Islands. This year we hosted our first two CSTE Fellows, early career public health professionals, who are playing an important role in moving select projects forward. In addition, a team from our division was selected as one of 27 CSTE Data Science Training Teams, to receive training in data science for epidemiological practice. We also continue to receive support from the Centers for Disease Control and Prevention (CDC) through funding and technical assistance when requested, from various CDC centers. This year we also welcomed our 3<sup>rd</sup> CDC Epidemic Intelligence Service Officer. I am proud of our division’s ability to be the driving force for public health surveillance in the US Virgin Islands as we continue to increase our capacity to identify and respond to public health threats.

**Esther M. Ellis, PhD**



**Justa Encarnacion**  
**Health Commissioner**  
Virgin Islands Department of Health



**Dr. Esther Ellis**  
**Territorial Epidemiologist,**  
**Director,**  
Epidemiology Division  
Virgin Islands Department of Health





Epidemiology staff supporting awareness for domestic violence during the 2022 St. Thomas Take Back the Night event, October 2022.



Ms. Janelle Rossington (back left), Ms. Yamilix Cruz, Ms. Andrea Baptiste, Ms. Jocelyn Simmers, Ms. Corinne Barber, Ms. Brenae Zimmerman, Dr. Esther Ellis, Ms. Monifa Carrillo (front left), Ms. Clorecia Adams, and Ms. Andra Prosper from the St. Croix Epidemiology Division office wearing pink in honor of breast cancer awareness, October 2022.



To access VIDOHI-EPI reports from previous years visit:

<https://bit.ly/epivi-reports>

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### **The Epidemiology Division (VIDOHI-EPI)**

The Virgin Islands Department of Health, Epidemiology Division (VIDOHI-EPI) conducts surveillance of nationally notifiable diseases (NNDs) needed for disease monitoring, analysis, and timely reporting of findings to guide public health policy and decision-making. The VIDOHI-EPI and the Public Health Laboratory (PHL) are funded through the Epidemiology and Laboratory Capacity for Infectious Diseases Cooperative Agreement from the U.S. Centers for Disease Control and Prevention (CDC).

### **Forms and Resources**

- Epidemiology Division's [website](#).
- General surveillance forms at [VIDOHI-EPI general surveillance forms](#).
- Vaccine preventable diseases investigation forms at [VPD surveillance forms](#).
- Job aids for clinicians on collecting the correct specimens for enhanced surveillance of vaccine preventable diseases at [specimen guidance](#).

# Sociodemographic Characteristics of the U.S. Virgin Islands (USVI)

The U.S. Virgin Islands is a U.S. territory located between the Atlantic Ocean and the Caribbean Sea, consisting of four major islands: Saint Croix (STX), Saint Thomas (STT), Saint John (STJ), and Water Island (WI). The USVI covers approximately 133 square miles of combined land area (approximately twice the area of the District of Columbia). USVI is located 40-50 miles east of Puerto Rico and extends from west to east ~60 miles at the top of the arc of the other Caribbean Islands. Compared to the U.S. Census Bureau 2010 Decennial Census of Island Areas (DECIA) for USVI\*, the 2020 DECIA indicated that the population of the USVI decreased by 19,259 (-18.1%) residents for a remaining total of 87,146 residents. This decrease differed by island. STX reported a decrease of 9,957 (-19%) residents, STT reported a decrease of 9,373 residents (-18.2%), and STJ reported a decrease of 289 (-6.9%) residents.

## Race and Ethnicity

In 2020, the racial distribution of USVI included 67,769 (77.8%) residents identifying as Black or African American, 11,584 (13.3%) residents as White, 910 (1.0%) residents as Asian, 371 (0.4%) residents as American Indian and Alaskan Native, 51 (0.1%) residents as Native Hawaiian or Other Pacific Islander, 5,478 (6.3%) residents as some other race, and 6,569 (7.5%) residents as two or more races. A total of 16,075 (18.4%) residents identified as having Hispanic ethnicity. Approximately 1/3 of the population is foreign-born with familial and cultural ties elsewhere, primarily in the Caribbean.

## Current Sex

In the 2020 DECIA, approximately 49% of the USVI population were reported as male sex and 51% were reported as female sex.

## Insurance

Of the 84,630 persons reported by households in the 2020 DECIA, the number of individuals without insurance was 20,825 (24.6%). Of the 63,805 (75.4%) insured individuals, 46.6% had private health insurance and 37.2% had medical assistance. The proportion of uninsured persons in the USVI in 2020 (24.6%) was almost three times the national estimate for uninsured persons (8.6%) in 2020.

## Educational Attainment

In 2020, 38.8% of residents ≥ 25 years had at least a high school diploma, while only 22.3% had a bachelor's degree or higher.

## Language

According to the 2020 DECIA, 69.8% of USVI residents ≥ 5 years spoke only English at home. Of the 30.2% who reported speaking another language at home, 56.9% spoke Spanish, 29.3% spoke French Creole, and 13.8% spoke a language other than Spanish or French Creole.

## Household Income

In 2019, the median household income in the USVI was \$40,408 (in 2019 inflation-adjusted dollars), which is considerably lower than the U.S. median household income of \$67,521, and lower than the USVI household median income in 2009 of \$44,499. A greater portion of USVI households have a household income of < \$25,000 per year compared to the overall U.S. (32.9% vs 18.1%). In 2020, the unemployment rate for USVI was 9.7%.

## Country of Birth

In 2020, 47% (39,916) of the USVI population were born in USVI, 18.1% (15,396) of residents were born in the U.S. or other U.S. island area or Puerto Rico, and 34.8% (29,579) of residents were born elsewhere (predominantly in Latin American or the Caribbean).

## Children

In 2020, there were 17,086 children in the U.S. Virgin Islands, comprising approximately 20% of the total population. For more information specific to children in the U.S. Virgin Islands, please access the St. Croix Foundation's 2022 KIDS COUNT Data Book entitled *From Silos to Systems: Pathways to Child Well-being in the USVI*<sup>†</sup>

<https://www.flipsnack.com/5A76ADFF8D6/2022-kidscount-usvi/full-view.html>.

\* Reference: U.S. Census Bureau (2022). 2020 Island Areas Censuses: U.S. Virgin Islands.

† Reference: St. Croix Foundation for Community Development (2022). 2022 KIDS COUNT Data Book, *From Silos to Systems: Pathways to Child Well-being in the USVI*.



# SNAPSHOTS 2022

## VIDOH-EPI



VIDOH-EPI conducted an online survey to describe the dynamics and changes within the USVI community during the COVID-19 pandemic. This online survey provided a forum for 370 community members to provide insight and feedback about their experiences during the pandemic. While not a scientific study from which results could be generalized to reflect the views of the entire population, the input enabled VIDOH to guide programmatic activities based on the issues shared by community members. Highlights of survey findings include a higher percentage of participants whose employment and income decreased, rather than increased, and one-third of participants responded “No, No need” when asked if they had utilized behavioral health services during the pandemic. Despite the self-reported lack of need for mental health services, one-third of participants reported difficulty sleeping, and one-fourth reported agitated behavior (23.5%). Thus, it may be necessary to take the steps to educate the community on the importance of mental health, the mental health services available, and how mental health services can be utilized in response to sudden financial and other life changes during public health emergencies.



Nearly 1,400 students from 15 USVI schools took part in Dengue Day with VIDOH-EPI, a health education program in which students played the role of "disease detectives" for the day. Parents were also given the opportunity to provide permission for their child to be tested for past dengue infection. Based on the results of the nearly 400 children that received dengue antibody testing, it is estimated that half of USVI children have previously contracted dengue virus.



Findings from VIDOH-EPI initiative to evaluate the quality of cistern water of ~400 households throughout USVI were published in *ACS ES&T Water*. The study identified 80% of cistern water (taken directly from the cistern hatch) tested positive for *E. coli* contamination while 58% of tap water (taken from kitchen tap) sourced from cisterns tested positive for *E. coli* contamination. The information gathered will help us develop guidelines specific to the USVI on the maintenance and treatment of cisterns and cistern water to protect USVI residents and travelers from waterborne biologic pathogens.



During 2022, VIDOH epidemiologists continued to utilize multi-pronged approaches to community outreach including a variety of informational announcements regarding COVID-19 vaccinations and testing, how to access Mpox vaccinations, along with live radio shows with COVID-19 weekly updates across USVI-based radio stations.



## USVI Notifiable Conditions

### Category A

Acute Flaccid Myelitis  
Anthrax  
Botulism  
Brucellosis  
Cholera  
Coronavirus (novel, including SARS)  
CP-CRE  
Diphtheria  
E.coli (O 157)  
Encephalitis  
Enterovirus D-68  
Foodborne Outbreak  
*Haemophilus influenzae*  
Influenza (novel and seasonal)  
Legionellosis  
Measles  
Meningitis  
Pertussis  
Plague  
Poliomyelitis  
Rabies  
Rubella  
Q Fever  
Smallpox  
Tuberculosis  
Tularemia  
Typhoid  
Typhus  
Viral Hemorrhagic Fever (including Ebola)  
Waterborne Outbreak  
West Nile  
Yellow Fever

### Category B

Anaplasmosis  
Chancroid  
Chlamydia  
Ciguatera  
Ehrlichiosis  
Gonorrhea  
Hansen's Disease  
Hanta Virus Pulmonary Syndrome  
Hemolytic Uremia Syndrome  
Hepatitis A  
Hepatitis B  
Hepatitis C  
HIV/AIDS  
Malaria  
Psittacosis  
Staph aureus (drug resistant)  
Streptococcus pneumoniae  
Syphilis  
Trichinosis  
Vancomycin Resistant *Enterococcus* (VRE)  
Staph. Aureus (VRSA)

### Category C

Babesiosis  
Campylobacter  
Chickenpox (Varicella)  
Coccidiomycosis  
Cryptosporidiosis  
Cyclosporiasis  
Giardia  
Listeriosis  
Lyme Disease  
Mumps  
Salmonellosis  
Shigellosis  
Spotted Fever  
Tetanus  
Toxic Shock Syndrome  
Vibriosis

## Disease Reporting in the USVI

### Overview

The reporting of Nationally Notifiable Diseases (NNDs) to VIDOH by healthcare providers is required by law in the USVI. The current list of USVI Notifiable Conditions can be accessed [here](#) (left panel).

Diseases are reported using two primary forms, the [Notification of Infectious Diseases Form \(EPI-1\)](#) and the [Dengue, Chikungunya, Zika, and Febrile Illness Reporting Form \(EPI-2\)](#). The EPI-1 form is included on the next page for immediate referral. Additionally, VIDOH-EPI uses disease-specific surveillance and investigation forms for case-based investigation requirements of all NNDs.

### What

**In addition to NNDs, any outbreaks, exotic diseases, and unusual group expression of disease must be reported.** All diseases require the reporting of patient information, including name, age, sex, race/ethnicity, date of birth, address and estate, telephone number, disease, date of onset, and symptomology. Other required information includes the method of diagnosis, laboratory result (if applicable), date of diagnosis, as well as the name, address, and telephone number of the reporting health care provider.

### When

Cases or suspected cases of illness considered to be public health emergencies, outbreaks, exotic diseases, and unusual group expressions of disease must be reported to the VIDOH immediately (**Category A**). Other diseases for which there must be a quick public health response must be reported within two working days (**Category B**). All other conditions must be reported within four working days (**Category C**).

### How

Reporting forms can be downloaded from the VIDOH [website](#) and are regularly updated. **In case of emergency (Category A, select Category B conditions or major outbreak/incident), reports can be made by telephone to the Territorial Epidemiologist at (340) 626-1654 as indicated in the EPI-1 form instructions.**

### Summary

- Disease reporting of notifiable diseases to VIDOH is required by law in the USVI.
- Unusual diseases or outbreaks of any kind should be reported immediately.
- Report diseases by following the instructions in the EPI-1 or EPI-2 forms. These and all investigation forms can be downloaded [here](#).

The reporting of nationally notifiable diseases to VIDOH by healthcare providers is required by law in the U.S. Virgin Islands.



# Notification of Infectious Disease Form

Emergency Phone: (340) 626-1654, **Territorial Epidemiology Fax: 1-888-400-8620**

\*\*\*Fax HIV/STD reports to the Communicable Diseases Division Fax: 1-612-712-7878\*\*\*



This form may be used to *report suspected cases and cases of notifiable conditions* in the US Virgin Islands (USVI), listed with their reporting time frames on the current USVI Notifiable Conditions List 2020. In addition, any outbreak, exotic disease, or unusual group expression of disease that may be of public health concern should be reported by the most expeditious means available. A Health Department epidemiologist will contact you if further investigation is required.

<b>Source of Information:</b> <input type="checkbox"/> Private Physician <input type="checkbox"/> Private Laboratory <input type="checkbox"/> Hospital <input type="checkbox"/> Clinic <input type="checkbox"/> School		<b>Date of Report:</b> _____ <small>(mm/dd/yyyy)</small>		<b>Island:</b> <input type="checkbox"/> St. Croix <input type="checkbox"/> St. John <input type="checkbox"/> St. Thomas <input type="checkbox"/> Water Island	
<b>Name of Physician or Person Reporting</b> _____		<b>Physician/Reporter Address</b> _____		<b>Physician/Reporter Phone</b> _____ (____) _____ - _____ extension _____	
<b>Admitted to Hospital?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes Date Admitted: _____ Date Discharged: _____		<b>Disease Fatal?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes Date of Death: _____		<b>Parent/Guardian:</b> _____ <small>(if applicable)</small>	
<b>Patient Name (Last)</b> _____		<b>(First)</b> _____		<b>(MI)</b> _____	
<b>Address</b> _____ <small>(indicate ESTATE)</small>		<b>City</b> _____		<b>State</b> _____	
<b>Date of Birth</b> _____ <small>(mm/dd/yyyy)</small>		<b>Age</b> _____		<b>Gender:</b> <input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> Other	
<b>Ethnicity:</b> <input type="checkbox"/> Hispanic <input type="checkbox"/> Not Hispanic		<b>Race:</b> <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/> Asian <input type="checkbox"/> Unknown <input type="checkbox"/> Other:		<b>Telephone:</b> (____) _____ - _____ <b>Other:</b> _____	
Notes, comments, or additional information such as <u>pregnancy status (EDD), occupation (food handler), school name/grade, daycare facility, travel history</u>					

## Category A -- Report IMMEDIATELY to the USVI Department of Health

SERIOUS PUBLIC HEALTH RISK. Make an IMMEDIATE telephone report to the USVI Department of Health at 626-1654 then send the completed form IMMEDIATELY (within 24 hrs) by fax to 1-888-400-8620. If an immediate report is required after regular working hours, please call 626-1654.

- |   |  |  |  |   |  |
|---|--|--|--|---|--|
| <input type="checkbox"/> Acute Flaccid Myelitis             | <input type="checkbox"/> CP-CRE                | <input type="checkbox"/> <i>Haemophilus influenzae</i> | <input type="checkbox"/> Pertussis     | <input type="checkbox"/> Smallpox                                 | <input type="checkbox"/> Waterborne Outbreak |
| <input type="checkbox"/> Anthrax                            | <input type="checkbox"/> Diphtheria            | <input type="checkbox"/> Influenza, novel and seasonal | <input type="checkbox"/> Plague        | <input type="checkbox"/> Tuberculosis                             | <input type="checkbox"/> West Nile           |
| <input type="checkbox"/> Botulism                           | <input type="checkbox"/> <i>E. coli</i> (O157) | <input type="checkbox"/> Legionellosis                 | <input type="checkbox"/> Poliomyelitis | <input type="checkbox"/> Tularemia                                | <input type="checkbox"/> Yellow Fever        |
| <input type="checkbox"/> Brucellosis                        | <input type="checkbox"/> Encephalitis          | <input type="checkbox"/> Measles                       | <input type="checkbox"/> Rabies        | <input type="checkbox"/> Typhoid                                  |  |
| <input type="checkbox"/> Cholera                            | <input type="checkbox"/> Enterovirus D-68      | <input type="checkbox"/> Meningitis                    | <input type="checkbox"/> Rubella       | <input type="checkbox"/> Typhus                                   |  |
| <input type="checkbox"/> Coronavirus, novel, including SARS | <input type="checkbox"/> Foodborne Outbreak    |  | <input type="checkbox"/> Q Fever       | <input type="checkbox"/> Viral Hemorrhagic Fever, including Ebola |  |

## Category B -- Report WITHIN 48 HOURS to the USVI Department of Health

SIGNIFICANT PUBLIC HEALTH RISK. These should be reported within 48 hours to the USVI Department of Health. A completed copy of the form must be faxed to 1-888-400-8620. A telephone report to 626-1654 is only required for those diseases indicated by the (\*).

- |                                       |  |   |  |
|---------------------------------------|--|---|--|
| <input type="checkbox"/> Anaplasmosis | <input type="checkbox"/> Hansen's Disease*               | <input type="checkbox"/> HIV/AIDS                       | <input type="checkbox"/> Trichinosis           |
| <input type="checkbox"/> Chancroid    | <input type="checkbox"/> Hanta Virus Pulmonary Syndrome* | <input type="checkbox"/> Malaria                        | <input type="checkbox"/> Vancomycin Resistant: |
| <input type="checkbox"/> Chlamydia    | <input type="checkbox"/> Hemolytic Uremic Syndrome       | <input type="checkbox"/> Psittacosis                    | <input type="checkbox"/> <i>Enterococcus</i>   |
| <input type="checkbox"/> Ciguatera    | <input type="checkbox"/> Hepatitis A*                    | <input type="checkbox"/> Staph. aureus (drug resistant) | <input type="checkbox"/> Staph                 |
| <input type="checkbox"/> Ehrlichiosis | <input type="checkbox"/> Hepatitis B                     | <input type="checkbox"/> Streptococcus pneumoniae       |  |
| <input type="checkbox"/> Gonorrhea    | <input type="checkbox"/> Hepatitis C                     | <input type="checkbox"/> Syphilis*                      |  |

## Category C -- Report PROMPTLY WITHIN 96 HOURS to the USVI Department of Health

Should be reported promptly to the USVI Department of Health. A completed form must be faxed to 1-888-400-8620.

- |   |   |                                       |  |   |                                    |
|---|---|---------------------------------------|--|---|------------------------------------|
| <input type="checkbox"/> Babesiosis             | <input type="checkbox"/> Coccidioidomycosis | <input type="checkbox"/> Giardiasis   | <input type="checkbox"/> Mumps         | <input type="checkbox"/> Spotted Fever        | <input type="checkbox"/> Vibriosis |
| <input type="checkbox"/> Campylobacter          | <input type="checkbox"/> Cryptosporidiosis  | <input type="checkbox"/> Listeriosis  | <input type="checkbox"/> Salmonellosis | <input type="checkbox"/> Tetanus              |                                    |
| <input type="checkbox"/> Chickenpox (varicella) | <input type="checkbox"/> Cyclosporiasis     | <input type="checkbox"/> Lyme Disease | <input type="checkbox"/> Shigellosis   | <input type="checkbox"/> Toxic Shock Syndrome |                                    |

☐ Other disease, please specify: \_\_\_\_\_

<b>Diagnosis Status</b> <input type="checkbox"/> Suspect Case <input type="checkbox"/> Confirmed Case		<b>Clinical Information</b> Treatment Provided? <input type="checkbox"/> No <input type="checkbox"/> Yes Specify Treatment: _____	
<b>Diagnostic Criteria:</b> <input type="checkbox"/> Symptoms <input type="checkbox"/> Laboratory		<b>Earliest Symptom Onset Date:</b> _____ <small>(mm/dd/yyyy)</small>	<b>Clinical Symptoms:</b> _____

## Laboratory Results:

Date 1 (mm/dd/yyyy)	Test Name 1	Result 1
Date 2 (mm/dd/yyyy)	Test Name 2	Result 2
Date 3 (mm/dd/yyyy)	Test Name 3	Result 3

Information collected is confidential pursuant to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and reports will be maintained by the US Virgin Islands Department of Health. All reports other than HIV should be faxed to Dr. Esther Ellis at 718-1508 (Charles Harwood Complex, 3500 Estate Richmond, Christiansted, St. Croix, VI 00820). **HIV/STD reports should be forwarded to the HIV/STD Program at secure fax 1-612-712-7878.** PLEASE NOTE: THE REPORTING OF NOTIFIABLE DISEASES TO THE DEPARTMENT OF HEALTH IS REQUIRED BY LAW IN THE US VIRGIN ISLANDS. Fulfilling this requirement will by no means negate your responsibility to report similar information to other agencies or programs with which you have collaborative agreements.



## Disease Surveillance and Trends in the USVI

### NEDDS Utilization and Data Quality

VIDOH-EPI continues to work towards onboarding critical healthcare providers and laboratories in the territory to report notifiable conditions via electronic lab reports (ELR) to ensure timely reporting of National Notifiable Diseases to the National Notifiable Disease Surveillance System (NNDSS). Accurate enumeration of notifiable disease cases is important for informing effective public health prevention and control measures, especially critical during public health emergencies.

For 2022, temporal trends in epidemiologic quality indicators for VIDOH disease-reporting and surveillance were analyzed via four metrics: 1) USVI-NEDSS general usage, 2) the number of onboarded direct electronic laboratory reporting partners, 3) the number of onboarded adjunct electronic laboratory reporting system users, and 4) timeliness of laboratory reporting to VIDOH-EPI. Steady increases in USVI-NEDSS utilization have been observed since 2014, when the VIDOH-EPI was established. Between 2021 and 2022, there was a 149% increase in the rate of disease case reporting. Between January 2022 and December 2022, there is a 23% (n=3) increase in the number of private laboratories or local hospitals onboarded to direct electronic laboratory reporting. Of those onboarded during 2022, one new reporting partner successfully validated electronic laboratory reporting for all reportable conditions; the remaining two operate solely for COVID-19 laboratory reporting. During 2022, continued availability for adjunct electronic laboratory reporting was provided to 75 local providers for COVID-19 laboratory reporting. In 2022, for cases requiring investigation, the median time for reporting of a laboratory result to VIDOH was 1 day (IQR: .96), while the median investigation creation time was 0 days (IQR: 0).

### VIDOH-EPI Report Specifics

This report provides an overview of the 2022 USVI reported cases by program area. This report excludes cases under the jurisdiction of the Communicable Diseases Division: sexually transmitted infections, human immunodeficiency virus, and tuberculosis.

### Influenza Surveillance

VIDOH-EPI reports weekly to the U.S. Outpatient Influenza-like-Illness Surveillance Network (ILINet) which is used to produce a national weekly influenza surveillance report called FluView. For ILINet, Influenza-like-Illness (ILI) is defined as a fever (temperature of 100°F [37.8°C] or greater) and a cough or sore throat without a known cause other than influenza. ILINet providers are key to the success of the Influenza Surveillance System. An ILINet provider conducts surveillance for ILI in collaboration with VIDOH-EPI and the Centers for Disease Control and Prevention (CDC).



Ms. Hannah Cranford at the Council of State and Territorial Epidemiologists (CSTE) Annual Conference in Louisville, KY, June 2022.



CDC Laboratory Leadership Service Fellow, Dr. Jessica Van Loben Sels (left), Dr. Valerie Mac (middle), and EIS officer, Dr. Katie Labgold (right) delivering testing supplies to Giffit Hill School in St. John in preparation for the launch of the Influenza-like illness surveillance pilot program, December 2022.





EIS Officer Dr. Katie Labgold (middle) presented on Mpox at the St. Croix Teacher's Association Conference with VIDOH Communicable Disease Division staff members Mr. Adrian Edwards (left) and Mr. Bobby Thompson (right), October 2022.



Territorial Epidemiologist, Dr. Esther Ellis, receiving her first dose of the Mpox vaccination from Nurse Lake in the St. Thomas Community Health Clinic, September 2022.

Data reported by providers, in combination with other influenza surveillance data, provides a national picture of influenza virus and ILI activity in the territory and the U.S. In 2022, VIDOH-EPI received 89 positive laboratory reports for influenza out of a total of 1494 influenza laboratory test reports and 396 influenza-like-illness out of 43,594 total patients seen for any reason. For questions regarding the Influenza Surveillance Program, please call (340) 514-8586 or email [joy.joseph@doh.vi.gov](mailto:joy.joseph@doh.vi.gov).

## Special Epidemiologic Investigations

### Mpox

Mpox (formerly known as Monkeypox) is a viral disease spread predominately through close skin-to-skin contact with the rash, scabs or body fluids of another person infected with the Mpox virus. People with Mpox often get a rash and may experience other flu-like symptoms such as fever, cough, or fatigue. The U.S. has identified over 30,000 Mpox cases since May 2022. VIDOH mobilized their response in August 2022 with the goal of preventing the spread of Mpox disease in the territory. The VIDOH-EPI Mpox response included weekly coordination meetings, training providers in Mpox identification, testing, and treatment, community outreach on Mpox signs and symptoms, and building local laboratory testing capacity. Since August 2022, VIDOH-EPI identified 21 possible cases of Mpox, all of which were confirmed negative through laboratory testing. At the time of this report, no confirmed cases of Mpox have been identified in USVI. Additionally, VIDOH-EPI supported the outreach and administration of 187 Mpox vaccine doses. Mpox vaccination is an effective tool in preventing disease spread. VIDOH-EPI continues to encourage individuals at higher risk of Mpox exposure to consider getting vaccinated.

### Anthrax (Cutaneous)

Human anthrax infection is rare in the U.S. with <5 cases annually but can be deadly without treatment. Human infection occurs through cutaneous exposure, injection, ingestion, or inhalation of *Bacillus anthracis* (BA) spores. Typically, this occurs from natural reservoirs (e.g., soil or animals). Areas without effective livestock vaccination programs, including parts of the Caribbean, report higher incidences of human anthrax infection. VIDOH-EPI investigated one case of fatal cutaneous BA, with the support of the Florida Department of Health and the CDC, which was confirmed via PCR testing. Cutaneous anthrax is rarely spread from human-to-human, but rather through direct contact with an object that contains BA spores. Findings from the investigation and whole genome sequencing results indicated that this case of cutaneous anthrax was travel-related and originated from a Caribbean island outside of USVI. No transmission occurred in USVI. Our sincere condolences go out to the family who suffered the loss of a loved one due to cutaneous anthrax.







Ms. Joy Joseph collecting a capillary blood sample from a student during Good Hope Country Day School's Dengue Day alongside EIS Officer Dr. Hannah Rosenblum, St. Croix May 2022.



EIS Officers Dr. Valerie Mac and Dr. Josh Wong, and Ms. Anellie Gumbs preparing the testing station for those students whose parents gave permission for their student to be tested for dengue virus antibodies at the St. Thomas Seventh Day Adventist School's Dengue Day, St. Thomas April 2022.

As other Caribbean islands have had recent impacts due to dengue, it is important to continue all protective measures by eliminating mosquito breeding sites, wearing protective clothing, wearing insect repellent, and maintaining window screens or air conditioning in homes. For questions regarding the Zika Surveillance and the U.S. Zika Pregnancy and Infant Registry (USZPIR) please call (340) 774-7477 ext. 5645 or email [cosme.harrison@doh.vi.gov](mailto:cosme.harrison@doh.vi.gov). For questions regarding ArboNET and arboviral surveillance, please email Andra Prosper [andra.prosper@doh.vi.gov](mailto:andra.prosper@doh.vi.gov).

### U.S. Virgin Islands Dengue EpiAid

In collaboration with the CDC, VIDOHEPI conducted a serosurvey of children in 3<sup>rd</sup>–7<sup>th</sup> grades during April–May 2022 to determine the prevalence of past dengue infection in the age group eligible for dengue vaccination. Fifteen schools across USVI hosted a Dengue Day in which nearly 1,400 children participated, receiving a health education program where they were “disease detectives” for a day. In addition to the health education program, children with parental permission received testing for dengue antibodies using a dengue IgG rapid diagnostic test. Among USVI children aged 9–13, the age group eligible for the dengue vaccine, it was estimated that nearly half have previously been infected with dengue virus.

### Lead

Historically, reports to VIDOHEPI for elevated blood lead levels have been low. In 2022, VIDOHEPI received 3 reports of lead in blood for pediatric patient cases. VIDOHEPI is currently in the process of securing additional tools to help identify sources for lead exposure across the territory. Identifying these exposures within our built environment will allow us to implement additional preventative measures to reduce the number of cases of children with lead in blood.

### Reported Case Count for General Communicable Diseases

Condition	Cases
Hepatitis B, chronic	30 confirmed or probable
Hepatitis C, chronic or resolved	29 confirmed or probable
Legionellosis	3 confirmed, 1 suspected
Lyme Disease	2 travel-associated
Novel Coronavirus (nCoV)	13,675 confirmed
Salmonellosis (excluding <i>S. typhi/paratyphi</i> )	5 confirmed
Varicella (Chickenpox)	5 confirmed, 1 probable
Hand foot and mouth disease	1 confirmed
Ciguatera	2 confirmed
Salmonellosis	5 confirmed
Anthrax (Cutaneous)	1 confirmed (travel-associated)
Tetanus	1 confirmed
Lead in blood (Pediatric)	3 confirmed
Giardiasis	3 confirmed

## The Epidemic Intelligence Service in USVI

In June 2022, Dr. Valerie Mac finished her second year as the VIDOH-EPI Epidemic Intelligence Officer (EISO). In April 2022, Dr. Mac collaborated with the CDC Legionnaires' Disease team, and fellow EISO, Dr. Heidi Moline, to investigate a short-term rental where an out-of-state traveler stayed while visiting USVI. In 2023, she co-lead an EpiAid to USVI with the Dengue Branch EISO, Dr. Joshua Wong, to estimate the age-specific seroprevalence of DENV IgG antibodies among age groups eligible for vaccination. This EpiAid provided key finding to inform public health decision-making regarding a comprehensive dengue virus prevention strategy for USVI, including the consideration of dengue vaccine implementation. In addition, findings from this EpiAid allowed public health leaders to better understand how many children may be at risk for dengue re-infection, for which the 2<sup>nd</sup> dengue infection poses the highest risk of complications such as hemorrhagic dengue.

In August 2022, VIDOH-EPI welcomed their third EISO, Dr. Katie Labgold. In her first five months with VIDOH-EPI, Dr. Labgold completed an evaluation of the COVID-19 surveillance system which highlighted system strengths of flexibility and data quality. It also led to several recommendations to further advance the usefulness of COVID-19 surveillance in USVI.

Dr. Labgold supported additional COVID-19 projects including mentoring the Data Science Training Team in the development of an interactive COVID-19 data dashboard which will become publicly available in 2023. She further completed a project estimating the bias in COVID-19 vaccine coverage estimates due to changing population sizes. This analysis revealed that USVI COVID-19 vaccine coverage was greatly underestimated. This underestimation misrepresented coverage differences within USVI, hindering VIDOH-EPI's ability to validly compare vaccination progress overall and across islands. The analysis of bias in COVID-19 vaccine coverage led to the conclusion that more frequent population estimates are essential for accurately guiding USVI public health decision-making. As such, VIDOH-EPI is exploring opportunities to obtain yearly updates of the population count.

Dr. Labgold further served as the VIDOH-EPI team lead for the Mpox response. This included coordinating testing of potential Mpox cases and updating case investigation procedures. Additionally, Dr. Labgold trained community members and healthcare providers on the symptoms and testing of potential Mpox cases, and vaccination outreach for individuals at higher risk of Mpox exposure.



EIS Officer Dr. Katie Labgold (right) and CSTE Applied Epidemiology Fellow Jade Bernadel (left) supporting the COVID-19 pop-up testing event in St. John, August 2022.



EIS Supervisor Dr. Kristine Bisgard (middle) on a site visit to St. Thomas and St. John, visiting crucial VIDOH partners such as Myra Keating Smith Community Health Center with Territorial Epidemiologist, Dr. Esther Ellis, Dr. Valerie Mac, and EIS officer Dr. Katie Labgold.

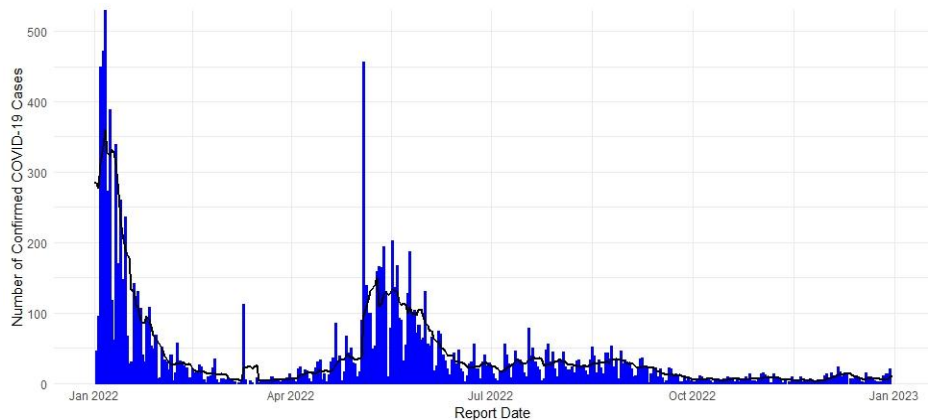


## COVID-19 Pandemic Epidemiological Response

VIDOH-EPI continues to lead the COVID-19 response efforts in USVI for 2022. The COVID-19 hotline remained a crucial component in the COVID-19 response efforts as an accessible resource for those with questions about COVID-19 testing, vaccinations, and access to medical countermeasures. In addition, the COVID-19 hotline fielded calls from residents to support the Mpox response in USVI.

In 2022, VIDOH-EPI detected a total of 13,675 COVID-19 cases and 38 COVID-19-related fatalities during 2022 from a total of 230,702 tests completed territory-wide:

- 5,565 (41%) cases detected in STT and WI, with 23 fatalities.
- 7,528 (55%) cases detected in STX, with 15 fatalities.
- 585 (4%) cases detected in STJ, with no fatalities.



Ms. Winifred Powell (right) training school staff to perform COVID-19 rapid testing for students and staff at St. John Christian School, St. John, January 2022.

### COVID-19 Surveillance in Schools and Congregate Living Settings

VIDOH-EPI expanded access to COVID-19 testing through more than 10 testing events in response to COVID-19 outbreaks in congregate living settings. To support the return of students to in-person classes for the U.S. Virgin Islands Department of Education, VIDOH-EPI led 2 sets of mass testing events for students and staff across both school districts to ensure access to COVID-19 testing to students returning to school, completing 29,261 tests of which 855 tests showed a positive result leading to treatment and isolation of identified cases. In 2022, VIDOH-EPI distributed over 17,000 test kits. COVID-19 home testing kits to families of students and to staff to supplement in-school testing provided by school staff trained by VIDOH-EPI at CLIA-certified school testing sites.

### COVID-19 Vaccine Coverage Estimates

Vaccine coverage, defined as the proportion of individuals completing a vaccination series out of a total population, is an important tool for guiding epidemiologic response activities. VIDOH-EPI previously calculated estimates of COVID-19 primary series vaccine coverage using the 2010 U.S. Census USVI population count. In November 2022, VIDOH-EPI updated the vaccine coverage estimate using the recently released 2020 population counts. This analysis found that given the large population decline over the ten-year period, COVID-19 vaccine coverage using the 2020 population count was 12 percentage points higher than coverage using 2010 denominator, when comparing on an absolute scale. Coverage was estimated at 63%, but was previously estimated to be only 51%.



Ms. Nickee Hernandez, Ms. Zula Battiste, Dr. Lisa Ekpo, Ms. Jade Bernadel, Ms. Annellie Gumbs, and Ms. Briana Lettsome from the St. Thomas Epidemiology Division office wearing pink in honor of breast cancer awareness, October 2022.

# Scientific Publications, Presentations, Accolades

1. Artus, Aileen, Ilana J. Schafer, Caitlin M. Cossaboom, Dana L. Haberling, Renee Galloway, Graham Sutherland, A. Springer Browne, Joseph Roth Jr, Hannah M. Cranford, Kristine J. Kines, Justine Pompe, Brett R. Ellis, Henry Walke, Esther M. Ellis. "Seroprevalence, Distribution, and Risk Factors for Human Leptospirosis in the United States Virgin Islands." *PLoS Neglected Tropical Diseases* 16, no. 11 (November 2022): e0010880. <https://doi.org/10.1371/journal.pntd.0010880>.
2. Browne, A. Springer, David Rickless, Carter Reed Hranac, Andrew Beron, Breanna Hillman, Leah de Wilde, Harris Short, Cosme Harrison, Andra Prosper, E Joy Joseph, Irene Guendel, Lisa L Ekpo, Joseph Roth, Marissa Grossman, Brett R Ellis, Esther M Ellis. "Spatial, Sociodemographic, and Weather Analysis of the Zika Virus Outbreak: U.S. Virgin Islands, January 2016-January 2018." *Vector Borne and Zoonotic Diseases* (Larchmont, N.Y.) 22, no. 12 (December 2022): 600–605. <https://doi.org/10.1089/vbz.2021.0098>.
3. Cranford, Hannah M. "Bats, a Potential Reservoir for *Leptospira* Species—U.S. Virgin Islands, 2019–2020." Oral Presentation (OnDemand) presented at the 2022 CSTE Annual Conference, Louisville, Kentucky, USA, 2022.
4. Cruz, Miguel Angel, Luis O. Rivera-González, Elizabeth Irvin-Barnwell, Jessica Cabrera-Marquez, Esther Ellis, Brett Ellis . . . Joseph Roth, et al. "Public Health Branch Incident Management and Support as Part of the Federal Government Response during the Emergency Phase of Hurricanes Irma and Maria in Puerto Rico and the US Virgin Islands." *Journal of Emergency Management* (Weston, Mass.) 19, no. 8 (Special Issue on Puerto Rico 2022): 63–77. <https://doi.org/10.5055/jem.0631>.
5. Delaney, Augustina, Samantha M. Olson, Nicole M. Roth, Janet D. Cragan, Shana Godfred-Cato, Ashley N. Smoots . . . Leah DeWilde, et al. "Prevalence of Individual Brain and Eye Defects Potentially Related to Zika Virus in Pregnancy in 22 U.S. States and Territories, January 2016 to June 2017." *Birth Defects Research* 114, no. 14 (August 15, 2022): 805–11. <https://doi.org/10.1002/bdr2.2067>.
6. Hamond, Camila, A. Springer Browne, Leah H. de Wilde, Richard L. Hornsby, Karen LeCount, Tammy Anderson, Tod Stuber, Hannah M. Cranford, Stephanie K. Browne, Gerard Blanchard, David Horner, Marissa L. Taylor, Michael Evans, Nicole F. Angeli, Joseph Roth, Kristine M. Bisgard . . . Brett R. Ellis . . . Esther M. Ellis. "Assessing Rodents as Carriers of Pathogenic *Leptospira* Species in the U.S. Virgin Islands and Their Risk to Animal and Public Health." *Scientific Reports* 12, no. 1 (January 21, 2022): 1132. <https://doi.org/10.1038/s41598-022-04846-3>.
7. Mac, Valerie, Marissa Taylor, Irene Guendel, I Harris, Joseph Roth, Kristine Bisgard, Esther M. Ellis. "Falsification of Travel-Required COVID-19 Laboratory Reports— United States Virgin Islands, March—April 2021." Oral Presentation presented at the Council of State and Territorial Epidemiologists 2022 Annual Conference, Louisville, Kentucky, USA, June 19, 2022.
8. Newton, Suzanne M., Emily L. Reeves, Emily O'Malley Olsen, Kate R. Woodworth, Sherry L. Farr, Romeo R. Galang, Megan R. Reynolds . . . Esther M. Ellis, et al. "Preterm Birth among Pregnant Persons with Severe Acute Respiratory Syndrome Coronavirus 2 Infection." *Journal of Perinatology : Official Journal of the California Perinatal Association* 42, no. 10 (October 2022): 1328–37. <https://doi.org/10.1038/s41372-022-01467-6>.
9. Rao, Gouthami, Amy Kahler, Lee E. Voth-Gaeddert, Hannah Cranford, Stephen Libbey, Renee Galloway, Noelle-Angelique Molinari, Esther M. Ellis . . . Brett R. Ellis. "Microbial Characterization, Factors Contributing to Contamination, and Household Use of Cistern Water, U.S. Virgin Islands." *ACS ES&T Water* 2, no. 12 (December 9, 2022): 2634–44. <https://doi.org/10.1021/acsestwater.2c00389>.
10. Roth, Nicole M., Megan R. Reynolds, Elizabeth L. Lewis, Kate R. Woodworth, Shana Godfred-Cato, Augustina Delaney, Amanda Akosa . . . Esther M. Ellis, et al. "Zika-Associated Birth Defects Reported in Pregnancies with Laboratory Evidence of Confirmed or Possible Zika Virus Infection - U.S. Zika Pregnancy and Infant Registry, December 1, 2015-March 31, 2018." *MMWR. Morbidity and Mortality Weekly Report* 71, no. 3 (January 21, 2022): 73–79. <https://doi.org/10.15585/mmwr.mm7103a1>.
11. Roth, Nicole M., Kate R. Woodworth, Shana Godfred-Cato, Augustina M. Delaney, Samantha M. Olson, John F. 3rd Nahabedian, Megan R. Reynolds . . . Esther M. Ellis, et al. "Identifying Possible Inaccuracy in Reported Birth Head Circumference Measurements among Infants in the US Zika Pregnancy and Infant Registry." *Birth Defects Research* 114, no. 8 (May 2022): 314–18. <https://doi.org/10.1002/bdr2.1997>.
12. Seger, Krystal R., Corey A. Day, Lee Gaeddert, Gouthami Rao, Amy Kahler, Esther M. Ellis, Brett R. Ellis, Brian D. Byrd. "A Cross-Sectional Household Survey in the US Virgin Islands (2019) Reveals Cisterns as Challenging Peridomestic *Aedes Aegypti* Habitats." *Journal of the American Mosquito Control Association* 38, no. 2 (June 1, 2022): 113–17. <https://doi.org/10.2987/21-7022>.
13. Simmers, Jocelyn, Briana Lettsome, Jade Bernadel, Valerie Mac, Katie Labgold, John Orr, Esther M. Ellis. "Building Our Capacity at the USVI Department of Health Division of Epidemiology." Presented at the Oral presentation at: Council of State and Territorial Epidemiologists (CSTE) Data Science Team Training (DSTT) Showcase, Virtual Format, December 2022.

## CSTE Data Science Training Team

During 2020, a team from VIDOH was selected by the Council of State and Territorial Epidemiologists (CSTE) as a CSTE 2022 Data Science Training Team and received a training stipend be used by the team to further develop data science capacity for public health in USVI. The teams training culminated in the production of an infectious disease dashboard, focusing on COVID-19 as the first dashboard disease feature, which will launch in 2023.



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## Acknowledgement of CDC Foundation Staff

During the last 3 years of the COVID-19 Pandemic, an amazing group of public health practitioners stepped up to serve the US Virgin Islands community and travelers during a time of unprecedented need. While the public health emergency is ending, and our staffing is changing accordingly, we want the entire US Virgin Islands community to know that the contributions of the CDC Foundation VIDOH-EPI hotline staff, communications staff, and COVID-19 surge staff members, through countless hours served on the frontlines of the COVID-19 pandemic, had an immeasurable impact, saved lives, and changed the course of history for the US Virgin Islands.

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