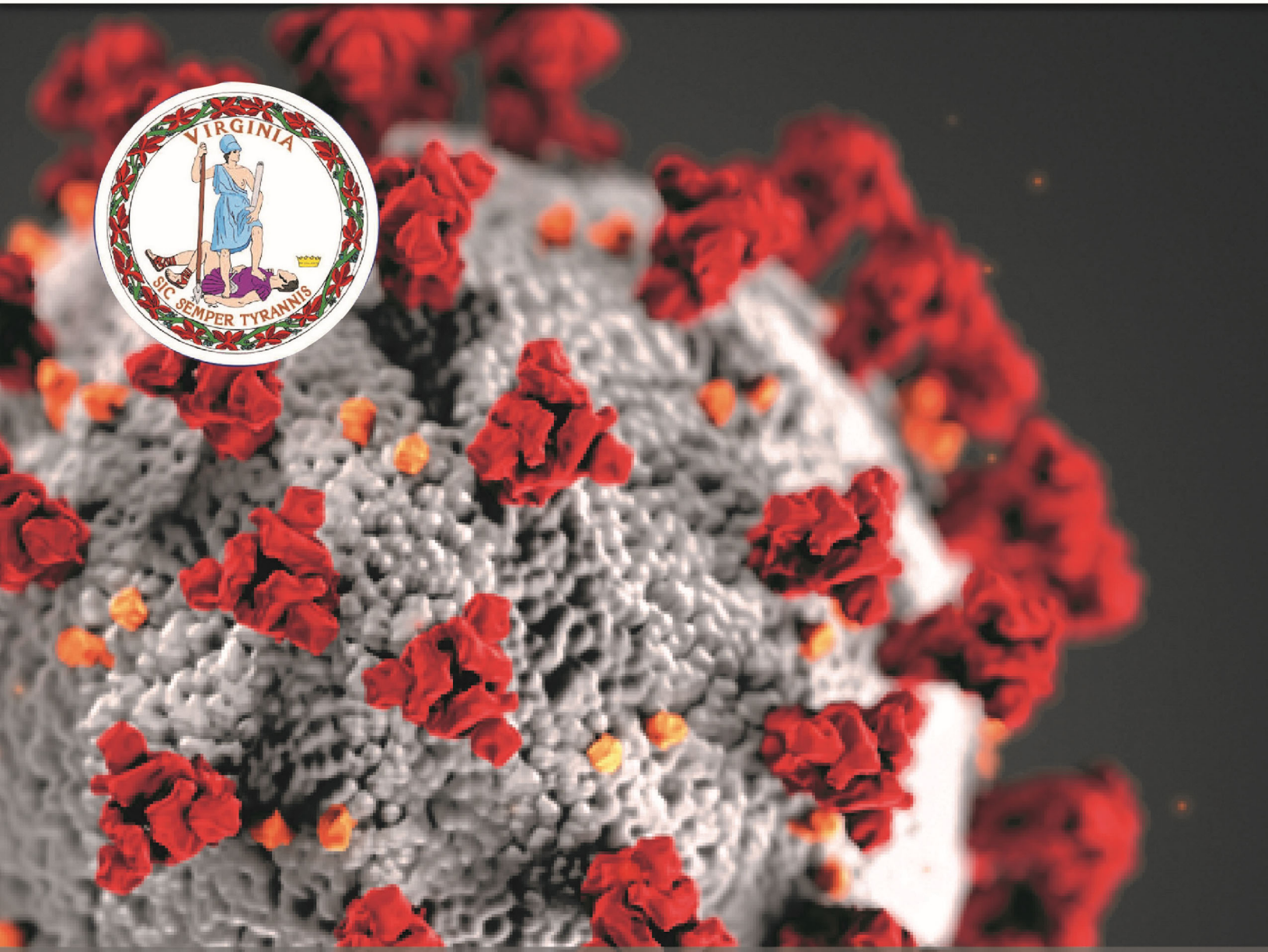

COVID-19 Pandemic History and After Action Report
Volume I: 2020

December 2021

Virginia Department of Emergency Management

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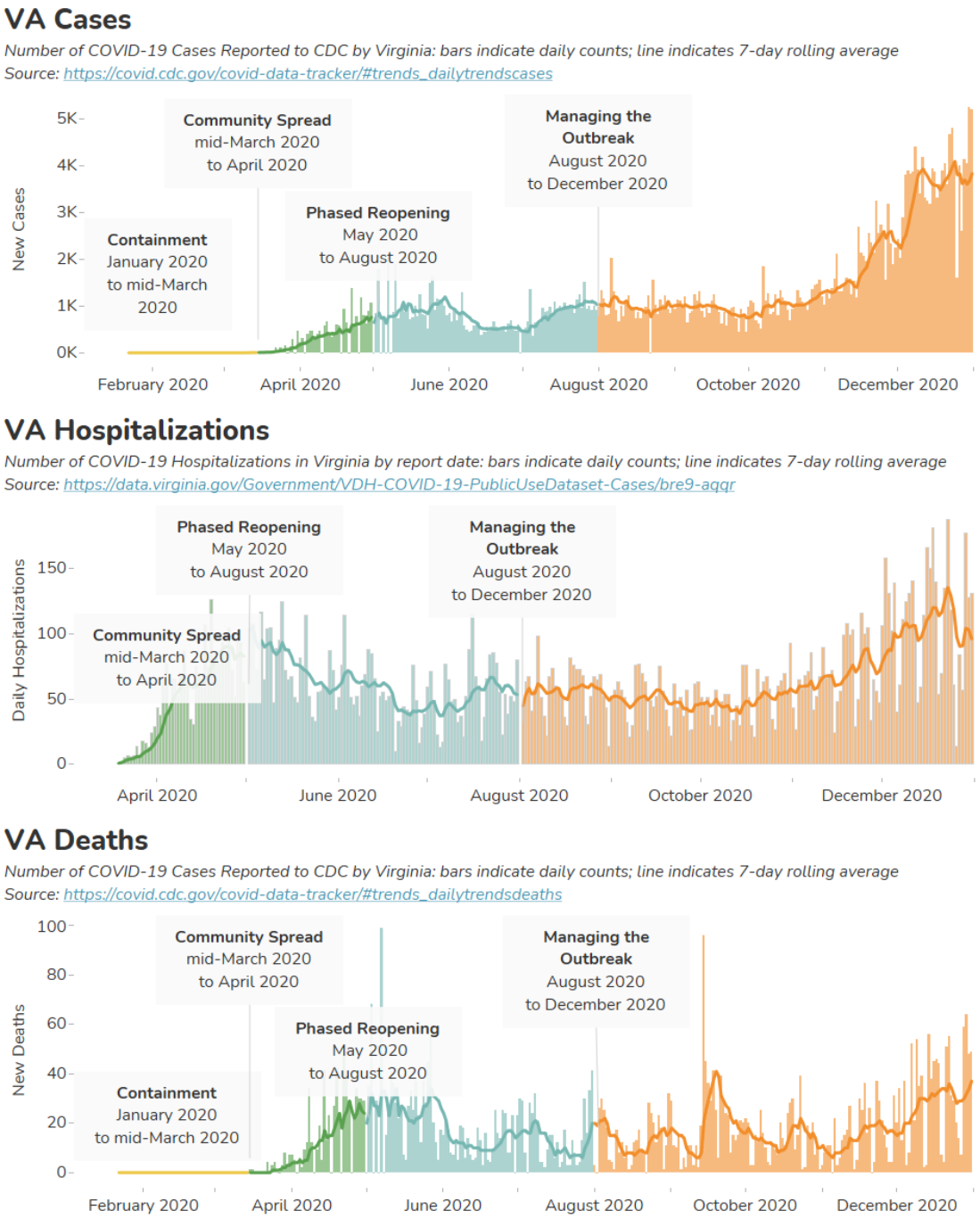
Contents

Introduction

On March 7, 2020, the first case of a novel coronavirus, classified as SARS-CoV-2 and known as COVID-19, was diagnosed in Virginia. By the end of 2020, more than 300,000 cases were diagnosed in the commonwealth, among almost 20 million cases in the US. By the end of 2020, more than 15,000 Virginians had been hospitalized after contracting the virus, and almost 5,000 people had died, while across the US there were more than 350,000 deaths. Figure 1 shows the average daily case counts, hospitalizations, and deaths for 2020.

Governor Ralph Northam declared a state of emergency on March 16, 2020, which is still in place as of December 31, 2020, and COVID-19 remains a global pandemic. In 2020, dozens of personnel from numerous state agencies, including several with no prior experience in emergency management, came together under the auspices of the COVID-19 Unified Command (UC) to support the state's response to the pandemic. A snapshot of the extensive range of activities undertaken by the UC during 2020 includes acquiring and distributing personal protective equipment (PPE), engaging with the private sector, developing testing and community mitigation strategies, establishing health equity outreach programs, and providing information to the public. At the beginning of 2021, the UC is continuing many of these activities, while preparing for an extensive public vaccination campaign expected to occur in 2021.

Figure 1. Average daily cases, hospitalizations, and deaths in Virginia from COVID-19 in 2020



Scope of the report

The Virginia Department of Emergency Management (VDEM) asked CNA to develop a historical review and after-action report (AAR) for the COVID-19 pandemic.[1] This report provides a historical accounting of the pandemic in 2020, broken down into four phases:

- Containment: January to mid-March 2020
- Community Spread: mid-March–April 2020
- Phased Reopening: May–August 2020
- Managing the Outbreak: August–December 2020

The report then discusses in more detail several key issues and themes that developed over the course of 2020, including the following:

- Operational coordination
- PPE
- Modeling
- Testing
- Private sector engagement
- Joint Information Center (JIC)
- Health equity
- Support for at-risk populations
- Virtual operations
- Finance/Recovery

Report methodology

To develop this AAR, CNA examined a wide variety of input from VDEM, the Virginia Department of Health (VDH), and other state agencies. Our approach included the following techniques:

- Collected oral histories from UC staff and leadership during the first few months of the pandemic, including from the following state agencies:
  - VDEM
  - VDH
  - Virginia Department of Social Services (VDSS)

[1] Based in Virginia, CNA is a not-for-profit organization with more than 70 years of experience leading after-action reviews for military, federal, state, and local government entities. CNA has organizational expertise in emergency management and is familiar with VDEM policy, operations, and leadership.

  - Virginia Department of Human Resource Management (DHRM)
  - Virginia Department for the Deaf and Hard of Hearing (VDDHH)
  - Virginia Department of Military Affairs (DMA)
  - Office of Secretary of Public Safety and Homeland Security
- Conducted small group discussions with VEST personnel, including:
  - Planning Section
  - Operations Section, including Emergency Services Branch, Infrastructure Branch, and Human Services Branch
  - Commonwealth of Virginia Incident Management Team
  - Logistics, Finance, and Recovery Sections
  - JIC
  - VDEM Chief Regional Coordinators (CRCs) and regional staff
  - Training and Exercise Division (TEED)
- Facilitated a small group discussion with the Health Equity Leadership Task Force, which consisted of leadership from VDEM, the VDH Office of Health Equity, and the Office of Diversity, Equity, and Inclusion, as well as follow-on discussions with each agency independently.

Historical review

The following section provides a historical accounting of the COVID-19 pandemic in 2020 during four phases:

- Containment: January to mid-March 2020
- Community Spread: mid-March to April 2020
- Phased Reopening: May to August 2020
- Managing the Outbreak: August to December 2020

Containment: January to early March 2020

In late December 2019, rumors of a mysterious virus began circulating on social media within the People's Republic of China (PRC). On December 31, 2019, PRC officials notified the World Health Organization (WHO) about a cluster of pneumonia cases of unknown etiology that had been identified in Wuhan, a city of 11 million people in Hubei Province in central China.[2] As 2020 began, the WHO sought additional details about the outbreak to assess its potential risk, informed Global Outbreak Alert and Response Network (GOARN) partners about the cluster of pneumonia cases, and activated its Incident Management Support Team.[3] Preliminary information provided by a PRC investigative team indicated there was "no evidence of significant human-to-human transmission."[4] By the end of that first week, the US Centers for Disease Control and Prevention (CDC) had activated its Incident Management Team (IMT) to monitor the rapidly evolving situation in China.[5]

On January 10, 2020—10 days after the initial report to the WHO—PRC officials announced that the cluster of cases was caused by a novel coronavirus.[6] Early reports traced the virus to an open-air seafood market in the city of Wuhan, though the origin of the coronavirus would

[2] World Health Organization, "Pneumonia of Unknown Cause – China," Jan. 5, 2020, accessed Sept. 24, 2020, https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/.

[3] World Health Organization, "Timeline: WHO's COVID-19 Response," accessed Jan. 20, 2021, https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline#!.

[4] "Pneumonia of Unknown Cause – China," Jan. 5, 2020.

[5] *PanCAP Adapted USG COVID-19 Response Plan*, Mar. 13, 2020.

[6] PRC scientists published the full genome of the virus on January 12, 2020, which allowed the global scientific community to immediately begin developing diagnostic tests and researching potential therapeutics and vaccine targets.

later be called into question. Because the virus had never been observed before in humans, little was known about its transmissibility, pathogenicity, or clinical etiology. However, the finding that a novel virus was behind the outbreak of a respiratory illness, which by that time had reportedly affected over 40,000 people, raised alarms about the threat the virus could pose within the region and globally. On January 17, 2020, US Customs and Border Patrol (CBP), with support from the CDC, implemented enhanced passenger screening at select airports (including San Francisco International Airport (SFO), John F. Kennedy International Airport (JFK), and Los Angeles International Airport (LAX)) in an effort to detect ill travelers coming into the US from Wuhan. A few days later, on January 21, CDC officials confirmed the first case of the novel coronavirus in the US in a man in Washington State who had recently returned from Wuhan. That same day, the WHO released its first situation report (SitRep) on the incident, reporting a total of 282 confirmed cases in four countries (China, Thailand, Japan, and the Republic of Korea). All cases outside of China were linked to Wuhan (i.e., through recent travel to Wuhan or known close contact with someone who had recently traveled to Wuhan), as were the six reported deaths.

On January 22, 2020, the WHO confirmed human-to-human transmission of the virus. The next day, the PRC government locked down the city of Wuhan and enacted movement restrictions in the region. The CDC issued a Level 3 Travel Health Notice advising against all non-essential travel to China.[7] As the situation in Wuhan grew dire, the US Department of State, in collaboration with the CDC and US Department of Health and Human Services (HHS), began repatriating 210 US citizens from Wuhan to the US. New information from Wuhan indicated that persons affected by the virus were presenting to health care facilities with a wide range of symptoms. Though the majority (80 percent) had relatively mild symptoms, such as fever, fatigue, muscle aches, and a cough, roughly 20 percent progressed to severe disease, including respiratory failure, pneumonia, and, in some cases, death.

President Donald Trump announced the formation of a Coronavirus Task Force on January 29, 2020. The Secretary of the HHS, Alex Azar, was placed in charge of the task force, which was responsible for leading the US response to the novel coronavirus. At the time, the White House indicated that the risk to Americans remained low.[8] The next day, the WHO convened its Emergency Committee, and the WHO Director-General declared that the novel coronavirus constituted a Public Health Emergency of International Concern (PHEIC) under the International Health Regulations. Despite nearly 8,000 confirmed cases of the disease in 19 countries (99 percent of the cases were confined to China), the WHO recommended against

[7] https://www.cdc.gov/media/releases/2020/s0128-travelers-avoid-china.html

[8] https://www.whitehouse.gov/briefings-statements/statement-press-secretary-regarding-presidents-coronavirus-task-force/

countries implementing any measures that would unnecessarily interfere with international travel and trade.

On January 30, 2020, the CDC confirmed person-to-person transmission of the virus in the US, from a person with no travel history to China but who was a household contact of an infected individual.[9] The next day, Secretary Azar declared a Public Health Emergency in the US.[10] However, HHS leadership, including the Director of the CDC Dr. Robert Redfield, continued to characterize the risk to the American public as low.[11] Nevertheless, President Trump issued a presidential proclamation temporarily suspending entry into the US of foreign nationals (other than immediate family of US citizens and permanent residents) who had traveled to China within the last 14 days.[12] By the end of January, just under 10,000 confirmed cases of the virus and more than 200 deaths were reported worldwide.

During the first week of February, the US implemented additional protective measures. On February 2, 2020, a mandatory 14-day quarantine was ordered for any US citizen returning to the US who had been in Hubei Province in the previous 14 days. All incoming flights from China would now be funneled through seven airports: JFK, SFO, LAX, Chicago's O'Hare International Airport (ORD), Seattle-Tacoma International Airport (SEA), Atlanta's Hartsfield-Jackson International Airport (ATL), and Honolulu International Airport (HNL). Confirmed cases and deaths had more than doubled worldwide, and a clear picture of human-to-human transmission was emerging.

On February 5, 2020, the CDC began shipping COVID-19 diagnostic test kits to states and select international labs.[13] The CDC developed these diagnostic kits internally after the agency rejected diagnostic tests that had been developed by the WHO and other foreign nations, such as Germany. The Virginia Division of Consolidated Laboratory Services (DCLS) was one of the first labs in the country to receive the test kits and immediately began the process of validating the test. However, several state lab directors, including DCLS, soon reported erroneous or inconclusive results from the validation tests due to a problem with one of the targets used in the kit, leading the CDC to recall the kits. This put the US further behind on testing, and the

[9] https://www.cdc.gov/media/releases/2020/p0130-coronavirus-spread.html

[10] https://www.hhs.gov/about/news/2020/01/31/secretary-azar-declares-public-health-emergency-us-2019-novel-coronavirus.html

[11] https://www.whitehouse.gov/briefings-statements/press-briefing-members-presidents-coronavirus-task-force/

[12] https://www.whitehouse.gov/presidential-actions/proclamation-suspension-entry-immigrants-nonimmigrants-persons-pose-risk-transmitting-2019-novel-coronavirus/

[13] https://www.cdc.gov/media/releases/2020/p0206-coronavirus-diagnostic-test-kits.html

subsequent three-week delay to resolve the problem with the diagnostic tests crippled the nation's ability to identify and rapidly isolate cases to limit disease spread.

On February 7, 2020, the State Commissioner of Health in Virginia declared the novel coronavirus a public health threat for the commonwealth. The VDH Office of Epidemiology had been actively monitoring the rapidly changing situation since establishing an incident command during the third week in January. A few days later, on February 11, 2020, the WHO officially named the disease caused by the novel virus "coronavirus disease 2019," or COVID-19. The WHO also issued new guidance that medical masks (e.g., surgical masks, N-95 respirators) were not recommended in community settings for people not exhibiting symptoms of COVID-19.[14] This recommendation would be repeated over the course of the month by US health officials, who continued to state that the risk to the general US population was low, that good evidence about mask effectiveness in preventing coronavirus infection in community settings was lacking, and that masks should be reserved for health care providers and those who are sick.

> As mask purchases surge domestically, Dr. Jerome Adams, US Surgeon General, tweets, *"They [masks] are NOT effective in preventing general public from catching coronavirus, but if healthcare providers can't get them to care for sick patients, it puts them and our communities at risk!"*
>
> - February 29, 2020

Between February 17 and 18, 2020, the global number of COVID-19 cases jumped precipitously—from approximately 51,000 to 71,000—as the WHO began reporting both laboratory confirmed and clinically diagnosed cases.[15] By the end of February, the CDC reported the first cases of COVID-19 in the US that were not related to travel or could not be attributed to exposure to another known COVID-19 patient. This brought the total number of confirmed cases in the US to 15 and suggested that some level of community spread was now occurring in the US. As concerns about a large-scale domestic outbreak grew, the Food and Drug Administration (FDA) issued an update on the status of the medical supply chain, stating that there were no known widespread shortages of PPE; however, the FDA did note an increase in orders for PPE.[16]

By the end of February, it became increasingly clear that containing the coronavirus was not an effective strategy and that other community mitigation efforts were needed. The COVID-19

[14] https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200208-sitrep-19-ncov.pdf?sfvrsn=6e091ce6_4

[15] https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200217-sitrep-28-covid-19.pdf?sfvrsn=a19cf2ad_2

[16] https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-supply-chain-update

Task Force was stood up in Virginia on February 26, 2020 to manage the rapidly expanding statewide response; it was led by VDH and included VDEM and representatives from other state agencies and Governor Ralph Northam's office. On February 29, 2020, the DCLS within Virginia's Department of General Services began testing for COVID-19. Because DCLS received only a small number of test kits from the CDC, testing capacity within the commonwealth was very limited at this time. DCLS was the only lab in the commonwealth with the capability and approval to test for COVID-19. DCLS coordinated closely with VDH, which was responsible for determining who should be prioritized for testing.[17] On March 2, 2020, the Governor's Cabinet met with the VDEM State Coordinator and the VDH Health Commissioner to discuss the rapidly unfolding situation, including trigger points for the Commonwealth of Virginia Emergency Operations Plan (COVEOP). Two days later, on March 4, 2020, Governor Northam held his first COVID-19 press conference to discuss state preparations for the novel virus. At the press conference, the Governor noted, "The Commonwealth is taking this public health issue seriously, and we have a plan in place to respond to COVID-19." Concurrently, the VEST Bureau brought all the state agencies from the COVID-19 Task Force together on the meetings that occurred on March 4, 2020, and again on March 11, 2020.

On March 7, 2020, the first case of COVID-19 was diagnosed in Virginia in a US marine stationed at Fort Belvoir.[18] The next day, a member of VDEM's staff was diagnosed with COVID-19, which prompted a number of employees to go into quarantine because they were close contacts. This event forced VDEM to immediately implement protocols, such as teleworking, to protect agency staff, including those who would normally support operations in the Virginia Emergency Operations Center (VEOC). Further, VDEM quickly reconfigured the VEOC to support a limited number of essential personnel, including temperature checks, anti-viral fogging twice a week, high-movement HEPA filter machines, and hand-washing stations in the EOC and headquarters.

> "At the very beginning, the analogy was like trying to hug a ghost. Not like hurricanes or wildfires where you know what you're dealing with, where it is, the zone of impact is defined. It hit everything, schools, businesses, etc."

On March 12, 2020, Governor Northam issued Executive Order (EO)-51, "Declaration of a State of Emergency Due to Novel Coronavirus (COVID-19)." With this action, the Governor implemented the COVEOP and activated the Virginia National Guard to active duty. He also authorized up to $10 million in state sum sufficient funds for state and local government mission assignments and state response and recovery operations to be coordinated through VDEM. In response, the Virginia Emergency Support Team (VEST)

[17]Interview with Dr. Denis Toney, Director of the DCLS (Aug. 12, 2020).

[18]https://www.vdh.virginia.gov/news/2021-news-releases/first-virginia-case-of-covid-19-confirmed-at-fort-belvoir/

elevated its status to Orange (partial activation). The next day, March 13, 2020, Governor Northam suspended all kindergarten through 12th grade (K–12) schools for a minimum of two weeks, beginning the following Monday (March 16, 2020). In addition, President Trump declared COVID-19 a National Emergency on March 13, 2020, and enacted a travel ban on non-Americans who had visited Europe within 14 days of coming to the US (people traveling from the United Kingdom and the Republic of Ireland were exempt from the ban). The first death from COVID-19 in Virginia, a hospitalized man in his 70s, was confirmed on March 14, 2020, in the Peninsula Health District.[19]

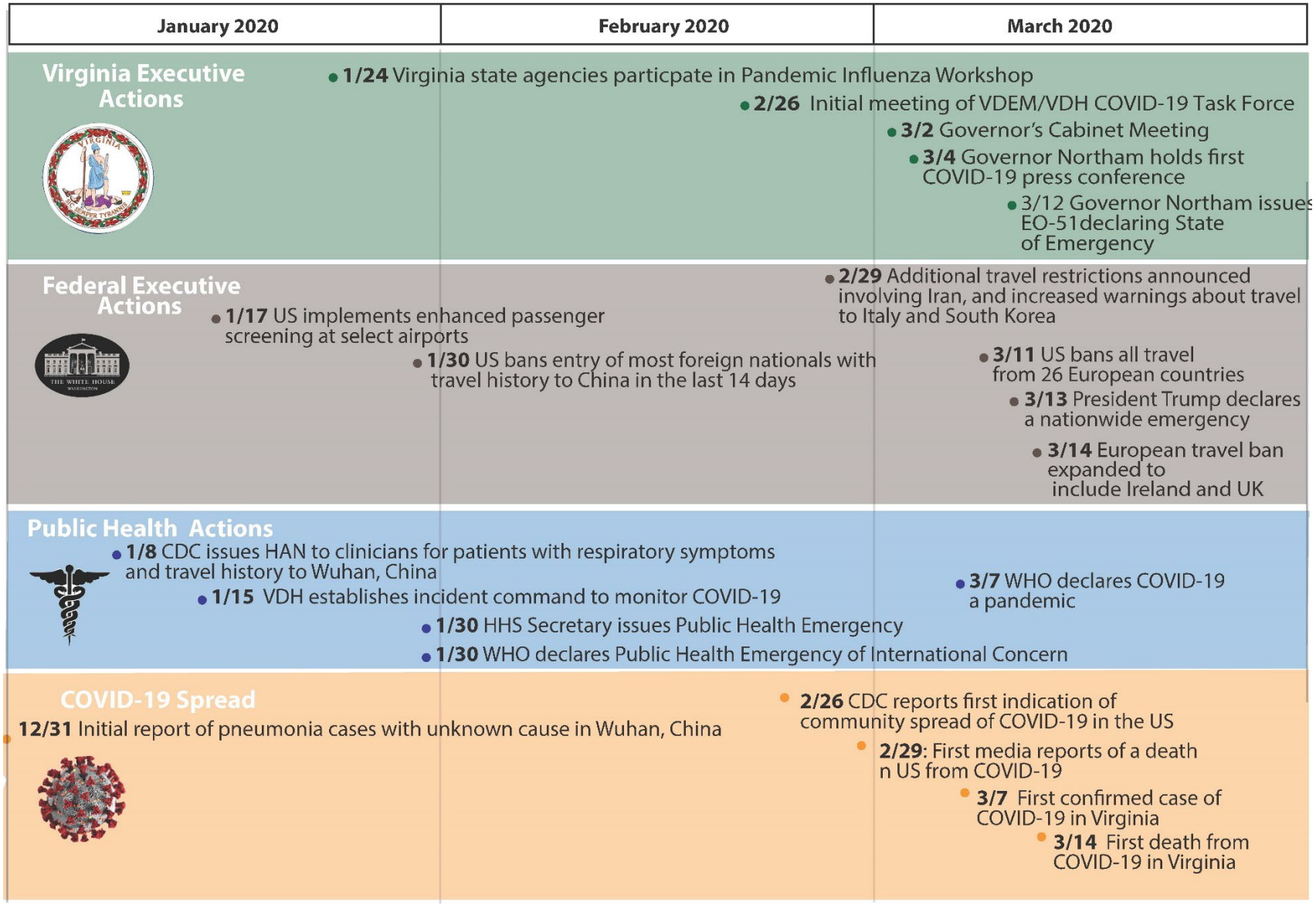
> "At the beginning, I was really worried that I'd get COVID and never hug my kids again."

As the commonwealth prepared for more cases and expanded the COVID-19 Task Force into a unified command structure, Virginia established a Health Equity Working Group (HEWG)—the commonwealth's first-ever coalition during an emergency response—to ensure that equity concerns were factored into decisions made and actions taken in response to the evolving pandemic. Members included social services groups, community organizations, nonprofit organizations, and other stakeholders across the commonwealth involved in diversity and inclusion efforts. The HEWG was led by the COVID-19 Equity Leadership Task Force, which included the VDEM Chief Deputy State Coordinator, VDH Director (acting) of the Office of Health Equity, and the Virginia Chief Diversity, Equity, and Inclusion Officer.

Figure 2 shows a timeline of key events and actions during the Containment phase at the state and federal levels.

[19]https://www.vdh.virginia.gov/news/2021-news-releases/commonwealth-of-virginia-reports-first-covid-19-death-in-the-peninsula-health-district/

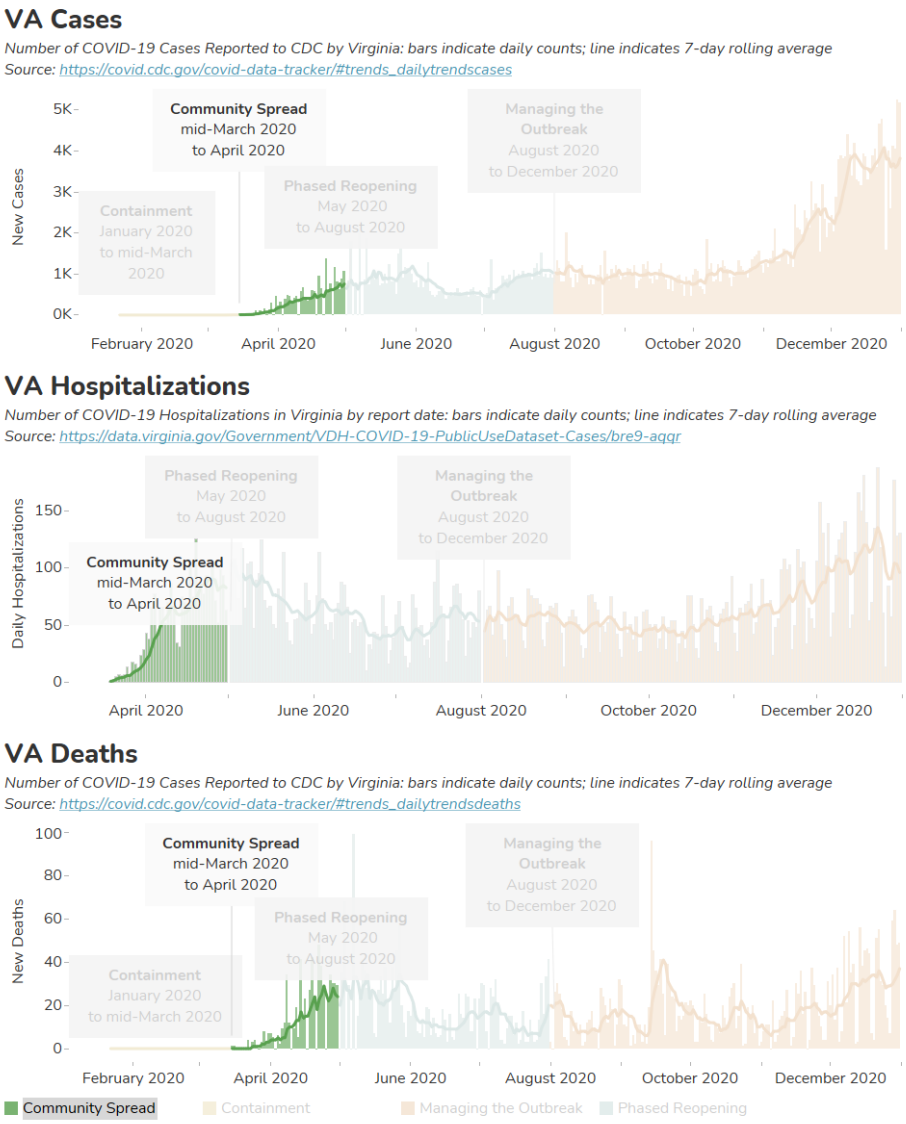
Figure 2. Containment phase timeline



Community spread (mid-March – April 2020)

This section describes the mitigation action taken at the state and federal level as the COVID-19 began to spread rapidly throughout communities (figure 3).

Figure 3. Average daily cases, hospitalizations, and deaths in Virginia from COVID-29 during the Community Spread phase

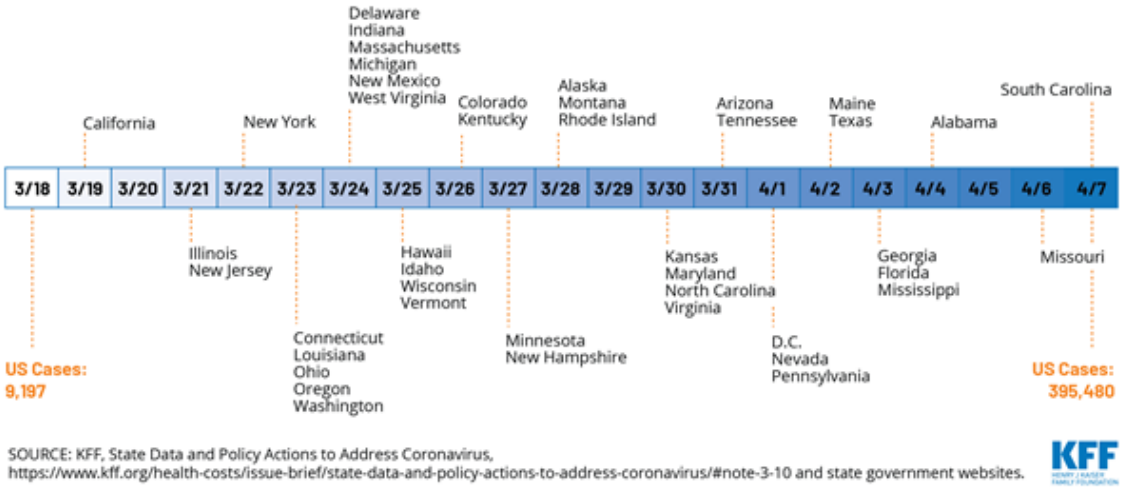


As concern about the spread of the virus in the US increased, states and the federal government began taking increasingly drastic steps. The CDC released new guidelines on March 14, 2020, recommending the postponement or cancellation of in-person events with 50 or more people. The next day, however, the White House Coronavirus Task Force advised all Americans to avoid gatherings of 10 or more people, to avoid going to bars and restaurants, and to halt discretionary travel for 15 days. Governor Northam, along with the State Health Commissioner, issued a Declaration of Public Health Emergency on March 17 and limited the number of people in restaurants, fitness centers, and theaters to no more than 10 per establishment.

On March 19, 2020, California was the first state to issue a stay-at-home order, mandating all residents to stay at home except to go to an essential job or shop for essential needs. Virginia was one of the latter states (along with Maryland and North Carolina, as well as the District of Columbia) to issue a stay-at-home order, doing so on March 30 through EO-55 (see Figure 4). Under the order, all individuals in Virginia were to remain at their place of residence with few exceptions, such as getting food, seeking medical attention, and engaging in outdoor activities. Prior to issuing the stay-at-home order, Governor Northam took action to increase bed capacity in hospitals and long-term care facilities (LTCFs) (EO-52). He also prohibited all public and private in-person gatherings of 10 or more individuals, halted all in-person K–12 school activities for the remainder of the school year, closed public recreational and entertainment businesses, and closed dining in restaurants, bars, food courts, and farmers markets (EO-53). On March 25, Governor Northam and the State Health Commissioner issued Order of Public Health Emergency 2, which suspended elective health care procedures and surgeries to conserve critical PPE supplies. The VEST raised its activation status to red—full activation—and the UC initiated planning for possible alternate care facilities (ACFs) based on external modeling projections that indicated the potential for a major surge on health care systems across the country.

> "You starting to see secondary effects of the virus and just not really knowing everything is what I struggled with. I go to the grocery I wear a mask, but you don't see it and you can't touch it like other disasters; there is nothing than what you hear and the numbers and graphs in the news, and that is a small piece of what we understand. This is stressful because you think you are making the right decisions but there is a part, a black hole of things, we don't really understand yet."

Figure 4. Timeline showing when US state-issued stay-at-home orders went into effect



At the federal level, on March 19, 2020 the US State Department raised the global travel advisory to Level 4: Do Not Travel, warning Americans against traveling internationally, and warning those abroad to consider returning immediately. The CDC also recommended against non-essential travel. On March 27, 2020, President Trump signed the Coronavirus Aid, Relief, and Economic Security (CARES) Act into law, providing $2 trillion in aid to hospitals, small businesses, and state and local governments, as well as direct payments to qualifying Americans and expansions in unemployment insurance. In early April, the global number of COVID-19 cases surpassed one million. Major disaster declarations were approved for all 50 states, the District of Columbia, and US territories—the first time in US history this has occurred. To address rising concerns about critical equipment and supply shortages, President Trump authorized the use of the Defense Production Act for the production of ventilators and PPE. On April 4, 2020, the CDC reversed course and recommended the public wear cloth face coverings in settings where other social distancing measures are difficult to maintain. On April 16, the White House released a phased approach and associated criteria for reopening America.

As planning for ACFs continued, VDEM announced the potential sites would be the Dulles Expo Center, Richmond Convention Center, and Hampton Roads Convention Center. Governor Northam issued EO-56 to delay for two weeks the primary elections that were scheduled for June 9, 2020, and EO-57 to allow health care practitioners licensed in another state and in good standing to provide health care services in the commonwealth. In addition, EO-57 also granted fourth-year medical students permission to practice in a hospital, clinic, or ACF operated by a hospital without the direct supervision of a licensed physician member of the staff. Negative

media reports that Virginia ranked 49th in the country in daily average testing prompted Governor Northam to establish a statewide Testing Task Force on April 20 to identify and remedy roadblocks with the goal of increasing the average daily testing numbers to 10,000 per day.

Mid-April also provided a reminder that VDEM's mission is broader than the COVID-19 response when a storm with strong winds and heavy rain hit the southwestern part of Virginia and required the VEST to coordinate state support to localities responding to downed trees, power outages, and flooded roadways.

Towards the end of April, due to concerns about the threat posed by the virus to those living in congregate settings, the Virginia General Assembly approved a proposal allowing for limited inmate releases to cut down the population of people in jails and prisons. Around that same time, Governor Northam requested federal assistance to help identify the source of the outbreak of COVID-19 among poultry plant workers in Accomack County and to establish mitigation measures to slow the spread of the virus. On April 27, 2020, a team from the CDC arrived in Accomack County to help contain the outbreaks at two large poultry processing plants. The next day, President Trump authorized the Defense Production Act to keep beef, pork, and poultry processing plants open throughout the country.

> "That has been unique for me to try to balance the immediacy especially on the front end of this, the immediacy and the uniqueness of this event…at the same time help my kids to adjust to reality for them. Balance conference calls that happen perpetually to helping kids do algebra by YouTube and the other [kid] log into a system she never used before…balance that then type emails and figure out things we had never done before. A lot of this the last few weeks is incredibly overwhelming…"

During his April 24, 2020, press conference, more than five weeks after the initial executive actions to limit public gatherings, Governor Northam laid out the "Forward Virginia" blueprint, which provided a phased reopening plan for Virginia businesses. Governor Northam also outlined the following metrics for entering Phase One:

- Downward trend in percentage of positive tests over 14 days
- Downward trend in hospitalizations over 14 days
- Increased testing and tracing, with a target of 10,000 tests per day
- Enough hospital beds and intensive care capacity
- Increasing and sustainable supply of PPE

Concurrently, the COVID-19 Business Task Force was established to provide advice and guidance to the Cabinet on a safe, responsible strategy for easing restrictions on businesses and individuals.

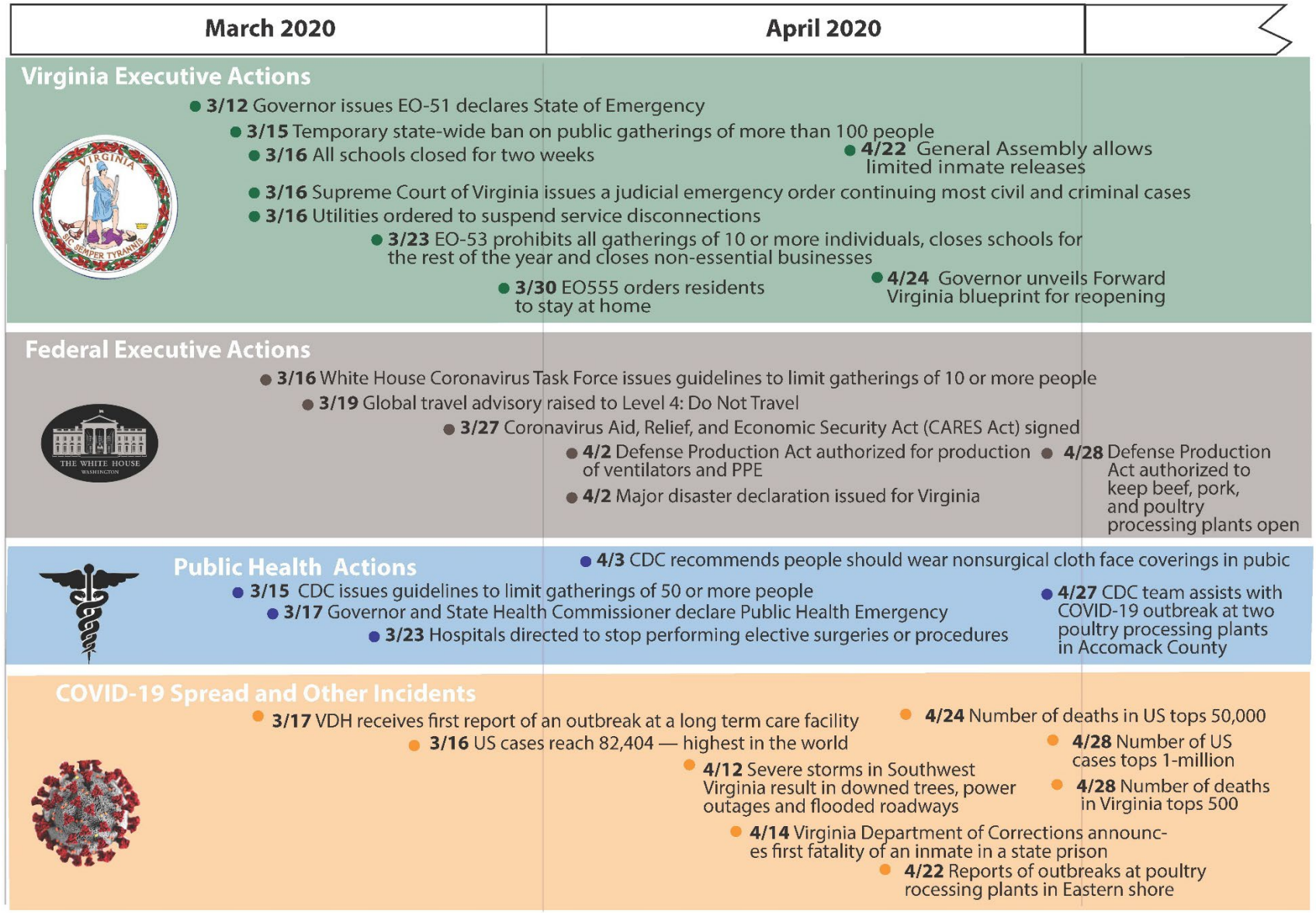
A complete list of the executive actions issued during the Community Spread phase is listed in Table 1, and Figure 5 provides a timeline of key events and actions at the state and federal levels.

Table 1. COVID-19 related Governor Executive Orders during the Community Spread phase

Executive Action	Date	
EO-51	March 12, 2020	Declaration of a state of emergency
Judicial emergency order	March 16, 2020	Supreme Court of Virginia issued continuances to April 6 for most civil and criminal cases
State Corporation Commission emergency order	March 16, 2020	Utilities suspend service disconnections for 60 days
Order of Public Health Emergency 1	March 17, 2020	Declaration of Public Health Emergency; the number of patrons in restaurants, fitness centers, and theaters is limited to no more than 10 per establishment
EO-52	March 20, 2020	Certain provisions of the Code of Virginia waived to permit hospitals and nursing homes to increase bed spaces without the need to seek further approval
EO-53	March 23, 2020	All public and private in-person gatherings of 10 or more individuals are prohibited; schools are to remain closed for the rest of the school year, and non-essential businesses are closed (amended on April 15, 2020, to extend the prohibitions to May 8, 2020)
Order of Public Health Emergency 2	March 23, 2020	All hospitals are directed to stop performing elective surgeries or procedures to help conserve supplies of PPE

Executive Action	Date	
EO-54	March 28, 2020	Authority is delegated to the Commissioner of the Virginia Employment Commission for executing agreements with the US Department of Labor related to the CARES Act
EO-55	March 30, 2020	A stay-at-home order is issued, to be effective until June 10 unless amended or rescinded by a further executive order
EO-56	April 13, 2020	Primary elections scheduled for June 9, 2020, are postponed to June 23, 2020
EO-57	April 17, 2020	Licensing restrictions and oversight requirements for medical professionals and students are relaxed; the use of telemedicine is expanded
EO-58	April 23, 2020	Access to critical medical care for Medicaid recipients is eased
EO-59	April 24, 2020	The general and special elections scheduled for May 5, 2020, are postponed by two weeks
EO-60	April 28, 2020	The limitations on liability for health care providers are clarified

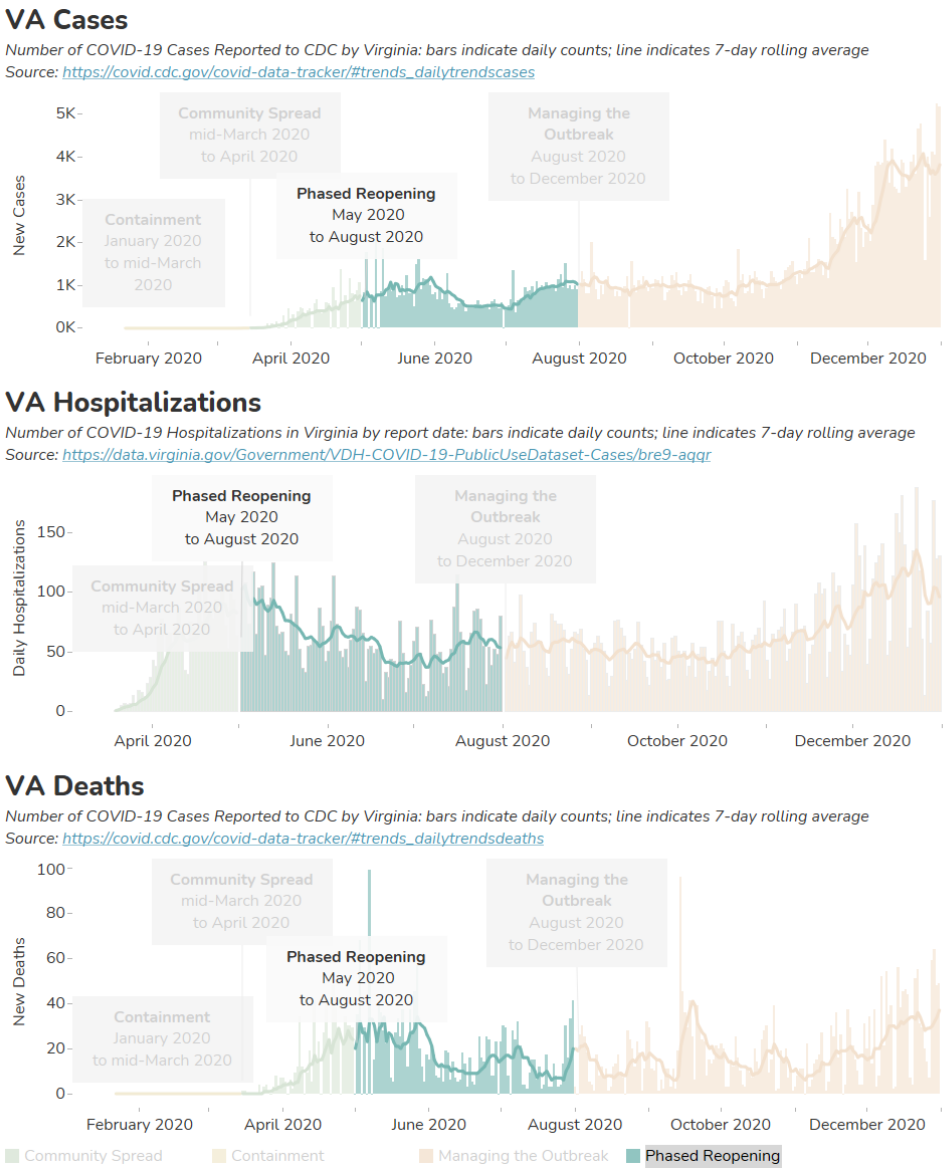
Figure 5. Community Spread phase timeline



Phased Reopening: May–August 2020

This section describes Virginia's reopening from the initial COVID-19 shutdown amidst a changing epidemiological curve during the summer months (figure 6).

Figure 6. Average daily cases, hospitalizations, and deaths in Virginia from COVID-19 during the Reopening phase



On May 8, 2020, Governor Northam issued EO-61, which announced that Virginia would move into Phase One of the Forward Virginia reopening plan on May 15, 2020 (see Table 2). At the time, Governor Northam indicated that the entire commonwealth would transition into Phase One together. However, several jurisdictions with higher case counts and percent positivity rates expressed concern about moving into Phase One, including Northern Virginia, the City of Richmond, and Accomack County (which was still managing a significant outbreak at poultry farms). Consequently, Governor Northam issued and subsequently amended EO-62 to allow localities in Northern Virginia, the City of Richmond, and Accomack County to delay implementation of Phase One. On May 29, 2020, EO-62 was rescinded, and those localities joined the rest of the commonwealth in Phase One of reopening.

Under Phase One, the stay-at-home order remained in place, but with modified guidance to remain safer at home, especially for the most vulnerable populations, and to continue teleworking when possible. Social gatherings remained limited to a maximum of 10 individuals with continued social distancing. Additionally, the City of Virginia Beach opened its beaches to swimming and sunbathing, with social distancing restrictions. Initially under EO-61, the public was advised to wear face coverings when in public settings. However, as research and data began to coalesce around the conclusion that wearing a mask can keep asymptomatic and pre-symptomatic people from spreading the virus, Governor Northam issued EO-63 on May 29, 2020, requiring everyone aged 10 and over to cover their mouth and nose with a face covering when inside public buildings.

On June 5, 2020, citing declining case counts and positivity rates, Governor Northam issued EO-65, moving Virginia localities into Phase Two—except for the City of Richmond and Northern Virginia, which delayed their move to Phase Two until June 12, 2020. Under Phase Two guidance, the public was advised to remain safer at home, especially for the most vulnerable populations, and to continue teleworking when possible. Social gatherings were limited to a maximum of 50 individuals with continued social distancing.

All localities moved into Phase Three on July 1, 2020. Under Phase Three guidance outlined in EO-67, the public was advised to remain safer at home, especially for the most vulnerable populations, and to continue teleworking when possible. Social gatherings were limited to a maximum of 250 individuals with continued social distancing. Capacity limits were removed in most establishments. Additionally, the Virginia Department of Labor and Industry released statewide emergency workplace safety standards—the first such agency in the nation to do so.

Table 2. Business limitations under Phases Zero, One, Two, and Three

	Phase 0	Phase 1	Phase 2	Phase 3
Non-essential retail	Open with a 10-person limit	Open with 50% capacity	Open with 50% capacity	No limit on capacity
Restaurant and beverage services	Takeout and delivery	Takeout and delivery; outdoor seating at 50% capacity	Takeout and delivery; outdoor seating at 50% capacity; indoor seating at 50% capacity; bar seating closed	No limit on capacity; bar seating closed (with few exceptions—see EO-68)
Entertainment and amusement	Closed	Closed	Indoor locations closed; outdoor locations at 50% capacity but not more than 50 persons	50% capacity, or 1,000 patrons[20]
Fitness and exercise	Closed	Closed (limited to outdoor fitness)	30% capacity	75% capacity
Beaches	Exercise and fishing only	Exercise and fishing only[21]	50-person limit	250-person limit
Places of worship	Drive-in services; 10-person limit	Drive-in services; 50% indoor capacity	50% capacity	No limit on capacity

[20] EO68 limited capacity to 50 in Hampton Roads.

[21] Virginia Beach was allowed to open beaches on Memorial Day.

	Phase 0	Phase 1	Phase 2	Phase 3
Personal grooming	Closed	Appointment only; strict social distancing; face coverings required	50% capacity	No limit on capacity
Private campgrounds	Closed	Open	Open	Open
State parks	Open to day use only	Day use; overnight in phases	Open	Open
Child care	Open for working families	Open for working families	Open	Open
Overnight summer camps	Closed	Closed	Closed	Closed
Gatherings	10-person limit	10-person limit	50-person limit	250-person limit[22]
Teleworking	Strongly encouraged	Strongly encouraged	Strongly encouraged	Strongly encouraged
Face coverings	Strongly encouraged	Strongly encouraged	Req'd age 10 & up	Req'd IAW EO-72

Concurrently, the VEST also monitored several weather events that occurred in Virginia during late May 2020:

- On May 21, 2020, storms brought significant rainfall in the southwest region that triggered extensive flooding, necessitating some localized evacuations and deployment of swift water rescue teams around the city of Roanoke.
- On May 27, 2020, Tropical Storm Bertha, which made landfall east of Charleston, South Carolina, brought heavy rainfall and localized flooding in western Virginia.

On May 25, 2020, George Floyd, a 46-year-old African American man, died while in police custody in Minneapolis. A video of Mr. Floyd's arrest and death went viral on social media the

[22] EO68 limited capacity to 50 in Hampton Roads.

following day, prompting hundreds of people to protest in Minneapolis. Over subsequent days, protests spread around the country, with large-scale protests occurring in downtown Richmond beginning on May 29, 2020. In response to the continued civil unrest, Governor Northam issued EO-64 on May 31, 2020, declaring a state of emergency, placing the Virginia National Guard on alert, and instituting a curfew in the City of Richmond, which was expanded to include the City of Virginia Beach the following day.

Rallies continued in localities across every region of the commonwealth through July 11, 2020, some of which turned violent, most notably when a man drove a pickup truck through a group of protestors in Henrico County on June 7, 2020.[23] Eighteen localities activated their EOCs (see Table 3), and five jurisdictions enacted curfews (including the City of Richmond). The VEST supported 76 total missions (an additional 15 requests for support were ultimately withdrawn). Additionally, members from the Southwest IMT, Northern Virginia IMT, and Hampton Roads IMT deployed to support the UC at the VEOC in Richmond.

Table 3. Local response during First Amendment rallies

Localities that activated their EOC during the First Amendment rallies, Summer 2020		
City of Virginia Beach*	Craig County	Shenandoah County
City of Richmond*	Frederick County	Winchester City
Fredericksburg City*	Henrico County	Petersburg City
Lynchburg City*	Norfolk City	Manassas Park City
Roanoke City*	Newport News	Culpeper County
	Charlottesville City	Bedford County
	Portsmouth City	

* Localities also enacted a curfew

Figures 7, 8, and 9 show the number and localities of First Amendment rallies that occurred across Virginia during the summer of 2020, as reported in the UC dashboards and situation reports.

[23] The VEST ceased tracking First Amendment rallies on July 11; some additional rallies continued later in the summer.

Figure 7. First Amendment rallies in each VDEM Region

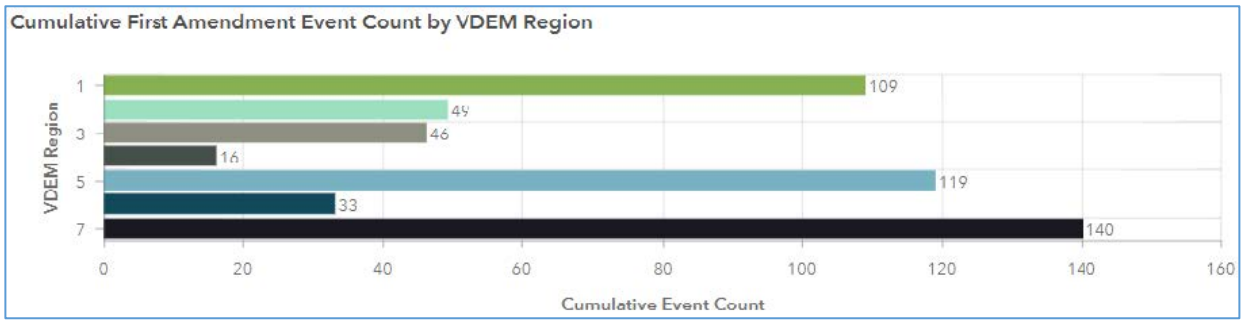


Figure 8. First Amendment rallies per day

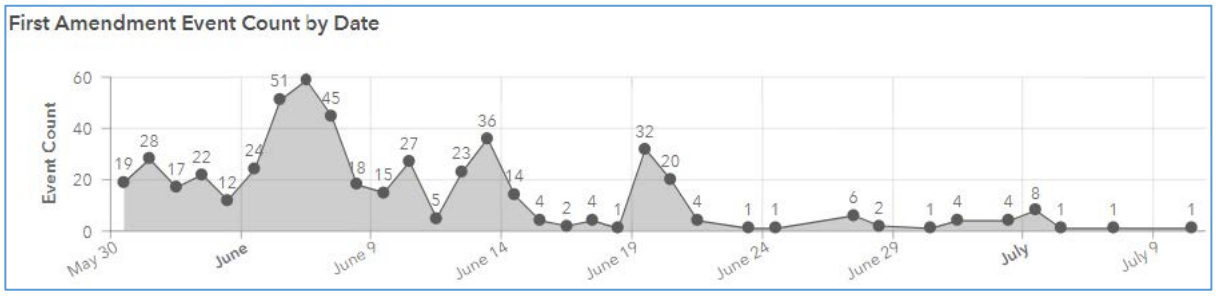
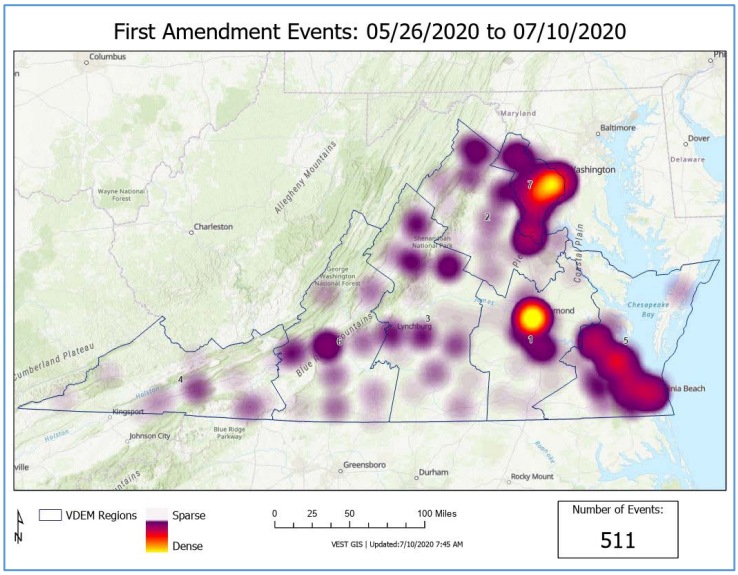


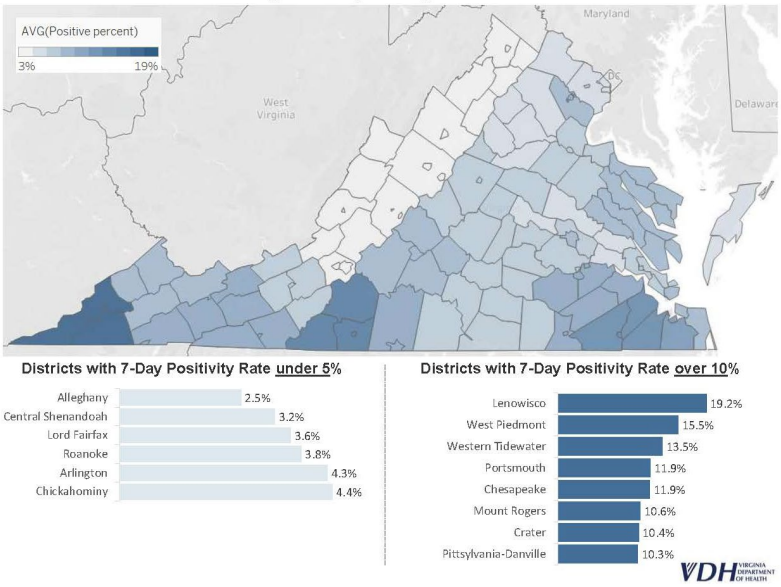
Figure 9. Heat map showing First Amendment rallies from May 26 to July 10



In late July 2020, Virginia was threatened by a dangerous hurricane developing in the Atlantic. Governor Northam issued EO-69 on July 31, 2020, declaring a state of emergency in advance of Hurricane Isaias. Isaias made landfall on August 3 as a Category 1 storm near Ocean Isle Beach, North Carolina. The remnants of the storm traveled north overnight through Virginia causing extensive power outages across the southeastern region of the commonwealth, leaving more than 300,000 people without power. Isaias also prompted numerous tornado warnings, with reports of tornadoes touching down in Gloucester County, Lancaster County, James City County, Southampton County, and the City of Suffolk.

In mid-July, case counts and the percent positivity rate began to climb in the Hampton Roads region (see Figure 10). This mirrored the resurgence of cases observed during the early summer months in the Sun Belt, from Florida to Texas to Arizona. For example, on July 13, 2020, the number of new cases reached record levels in the US. Twenty states and Puerto Rico reported a record high seven-day average of new cases over the previous week, and five states—Arizona, California, Florida, Mississippi, and Texas—reported a record high seven-day average of daily fatalities. As a result, Governor Northam issued EO-68, which reinstated several limitations on bars and restaurants in the Hampton Roads region. The EO prohibited the sale and consumption of alcohol after 10 p.m., required bars and restaurants to close at midnight, and limited indoor capacity to 50 percent. Additionally, public and private in-person gatherings of over 50 people were prohibited. Those limitations remained in place until September 10, 2020.

Figure 10. Seven-day positivity rate by health district (August 13, 2020)



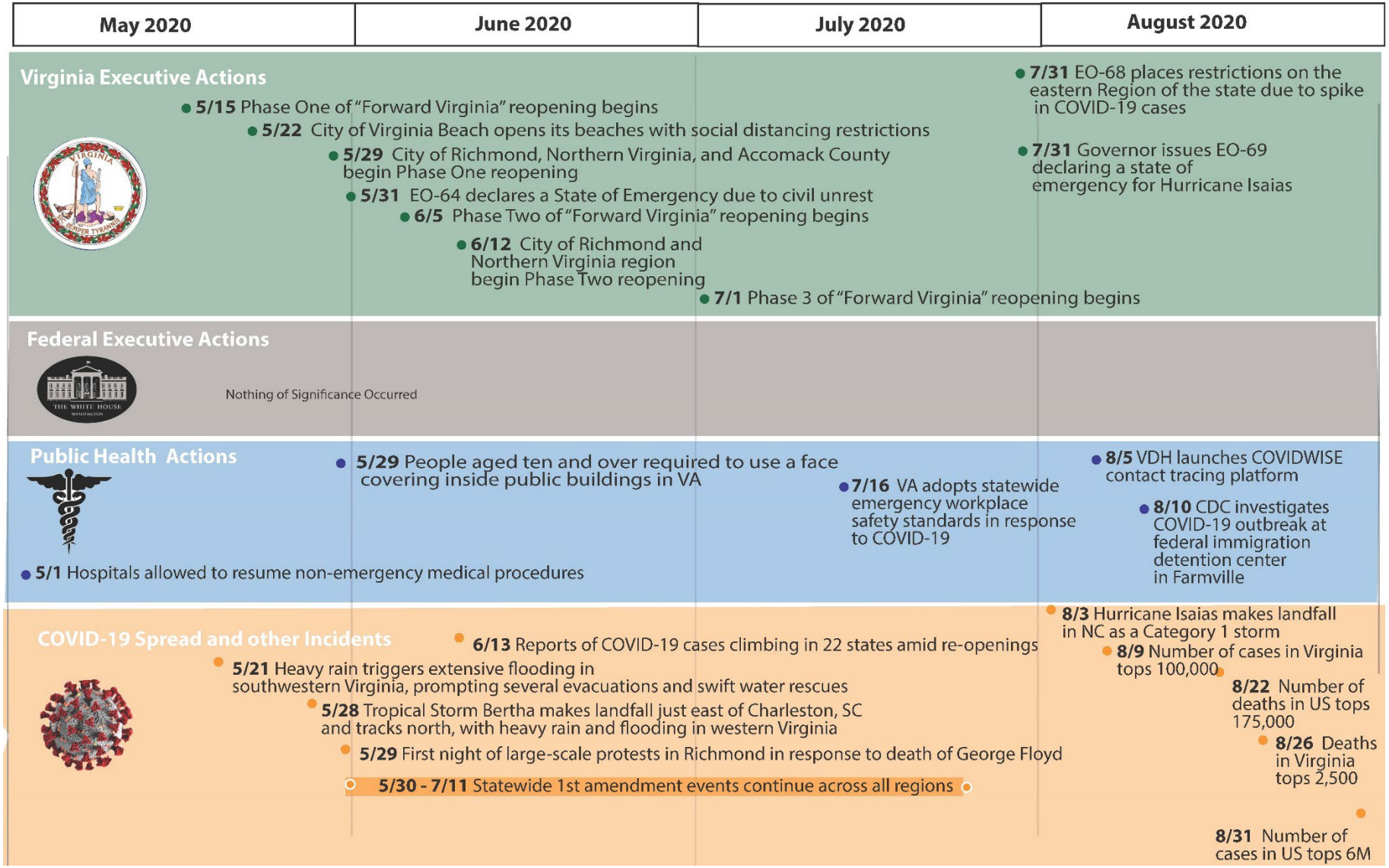
Near the end of the summer, VDH launched COVIDWISE, a mobile application (app) designed to notify users rapidly and securely if they have been in close contact with an individual who has tested positive for COVID-19. Virginia was the first state to launch an app based on this Apple/Google framework, which has over 900,000 downloads as of early December.

Table 4 provides a complete list of executive actions issued during the Reopening phase, and Figure 11 depicts a timeline of key events and actions at the state and federal levels.

Table 4. COVID-19 related Governor Executive Orders during the Reopening phase

Executive Action	Date	
EO-53	May 4, 2020	Extended to the night of May 14
EO-61 and Order of Public Health Emergency 3	May 8, 2020	Phase One easing of selected business restrictions due to COVID-19 to begin at midnight on May 15
EO-62 and Order of Public Health Emergency 4	May 12, 2020	Allows specific localities in Northern Virginia to delay entering Phase One of the Forward Virginia plan
EO-62 and Order of Public Health Emergency 4	May 14, 2020	Amended to allow the City of Richmond and the County of Accomack to delay implementation of Phase One of the Forward Virginia plan
EO-63 and Order of Public Health Emergency 5	May 29, 2020	Requires everyone aged 10 and over to cover their mouth and nose with a face covering when inside public buildings
EO-65 and Order of Public Health Emergency 6	June 2, 2020	Phase Two easing of temporary restrictions, except for the City of Richmond and Northern Virginia, effective June 5
EO-67 and Order of Public Health Emergency 7	June 30, 2020	Phase Three easing of temporary restrictions, effective July 1
EO-68 and Order of Public Health Emergency 7	July 28, 2020	Additional restrictions on the Eastern Region, effective July 31
EO-70	August 17, 2020	Amend processes and procedures and provide guidance to mitigate the spread of COVID-19 in state-operated psychiatric hospitals

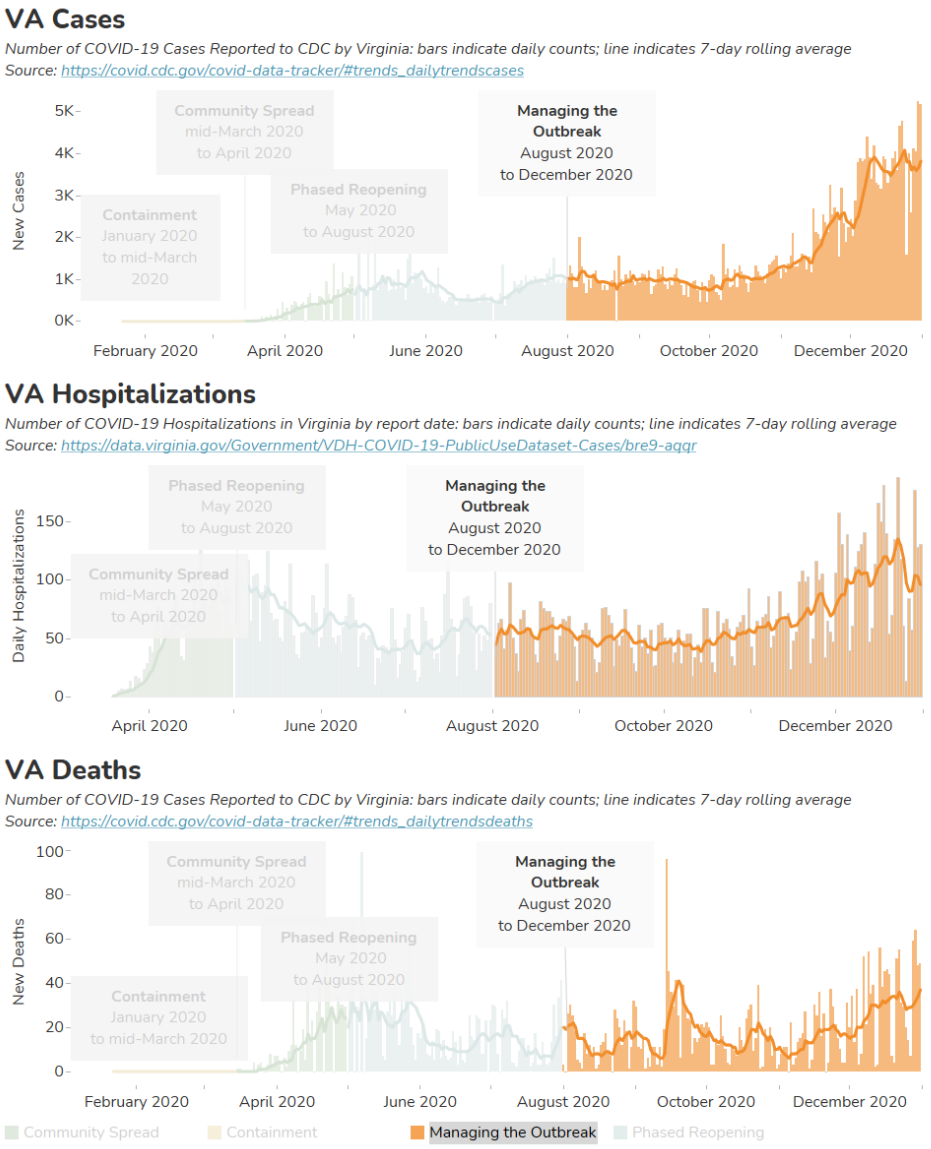
Figure 11. Reopening phase timeline



Managing the outbreak: September-December 2020

This section describes Virginia's efforts to manage the extent of the pandemic, when cases began to rise precipitously during the last couple of months of 2020 (figure 12).

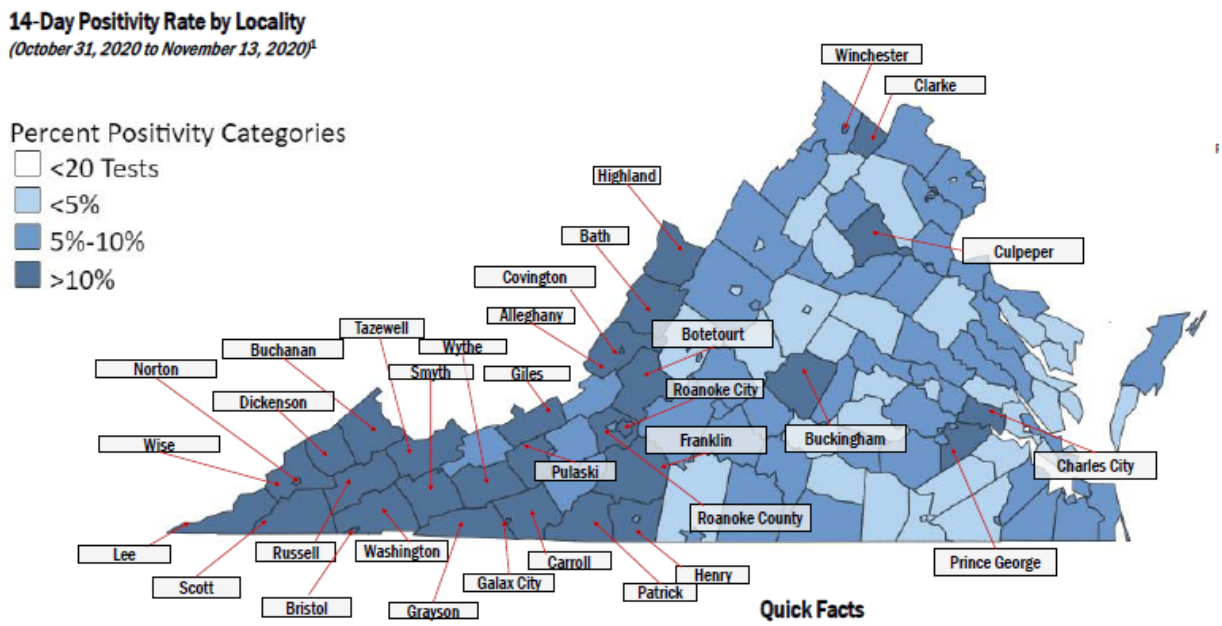
Figure 12. Average daily cases, hospitalizations, and deaths in Virginia from COVID-19 during the Managing the Outbreak phase



Across the US, there was a precipitous rise in COVID-19 cases beginning in the fall. By mid-October, more than 20 states, most notably across the Midwest, reached new highs in their seven-day average of case counts, and for 40 states, cases counts were higher than compared with the previous week. By early November, the number of new cases nationally topped 100,000 per day, and by early December, it had topped 200,000 per day. Additionally, by early December 2020, the number of hospitalizations began to surge across the Midwest and Southwest, with 18 states reporting hospitalizations above 10 percent surge capacity.

In Virginia, COVID-19 case counts and hospitalizations began to rise again in November, mirroring the nationwide trends, most notably in the southwest region of the commonwealth. By the second week in November 2020, the statewide average of new cases topped 1,500 per day, above the previous peak experienced in May 2020. Additionally, the statewide percent test positivity rate (see Figure 13 for a snapshot of the increasing positivity rate) increased by more than two percentage points (from 4.3 percent to 6.5 percent), and hospitalizations increased statewide by more than 35 percent from the previous month. As a result, Governor Northam issued EO-67 on November 12, which reduced the number of individuals for in-person social gatherings from 250 to 25, lowered the age requirement for the mask mandate, imposed a curfew on alcohol sales and consumption, and expanded resources for the enforcement of mitigation measures.

Figure 13. 14-day positivity rate by locality (October 31-November 13, 2020)



By early December 2020, it was becoming evident that Virginia and the US would experience a major spike in COVID-19 cases, fueled in part by Thanksgiving and anticipated December holiday travel. In Virginia, the statewide average of new cases had risen to 4,000 per day, the statewide percent test positivity rate had increased to 11 percent, and hospitalizations had increased statewide by more than 85 percent since early November. Additionally, COVID-19 intensive care unit (ICU) hospitalizations across the commonwealth had been increasing for more than 30 days. In response to the worrisome trends, Governor Northam issued EO-72, which reintroduced mitigation strategies not seen since the initial wave of cases in April: a statewide curfew between midnight and 5 a.m., a universal mask requirement, and a limit of 10 people for social gatherings.

On a more positive note, in mid-December 2020, the FDA approved Emergency Use Authorizations (EUAs) for both the Pfizer-BioNTech and Moderna COVID-19 vaccines. Statewide planning for vaccination operations began in earnest a few months prior, culminating with a draft COVID-19 Vaccination Plan issued by VDH on October 1, 2020. To further prepare for vaccination operations, VDH hosted state agencies for a seminar on October 8, 2020, and a tabletop exercise (TTX) on October 14, 2020, including:

- Department of Behavioral Health and Developmental Services
- Department of Human Resource Management
- Department of Health Professions
- Department of Corrections
- VDEM
- Department of Education
- Department of General Services
- Department of Medical Assistance Services
- Virginia Information Technologies Agency
- Department of Transportation
- Virginia State Police
- Department of Military Affairs
- Governor's Office of Diversity, Equity, and Inclusion
- State Council of Higher Education for Virginia
- Virginia Hospital & Healthcare Association

- Division of Consolidated Laboratory Services
- Department for the Deaf and Hard of Hearing

The TTX examined vaccine dispensing, logistics, and communications and outreach, and participants identified several risks associated with each topic that they anticipate for upcoming large-scale vaccination operations, including:

- Vaccine allocation among the prioritized populations
- Public distrust: Prioritized populations seen as 'guinea pigs'
- Lack of contingency planning for Points of Dispensing (POD)
- Reallocation of supplies (including ancillary supplies) for locations in need
- Failure of cold storage
- Unskilled workforce and lack of training
- Uncoordinated communication providing unclear, potentially contradictory information that drives a lack of trust in the vaccine
- Safety precautions are no adhered to post vaccine approval
- Internet connectivity

Participants then identified several steps they could take to mitigate those risks, as well as additional questions for consideration.

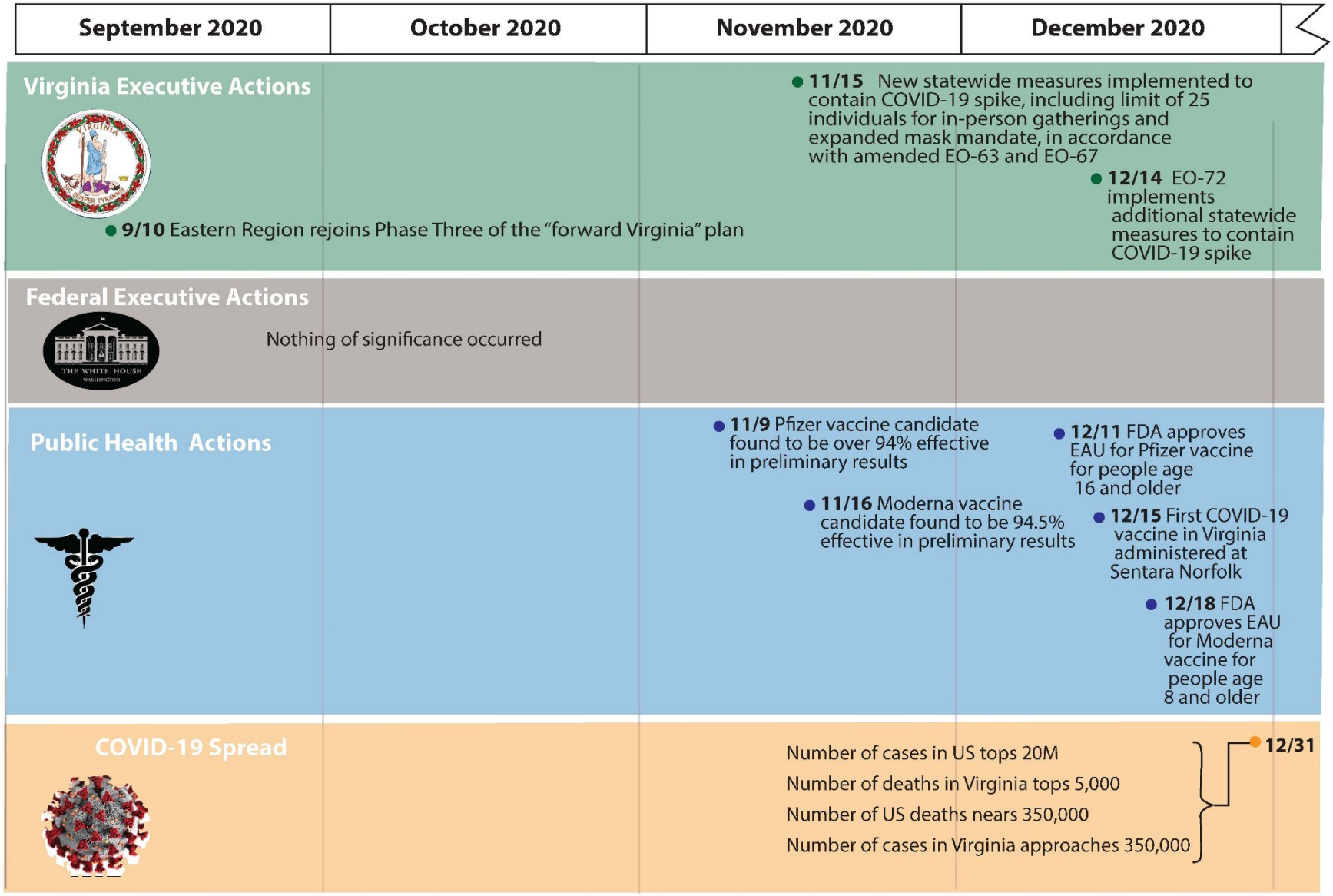
The first Virginians were vaccinated on December 15, 2020, bringing some much-needed hope that the pandemic was entering its final phase. Vaccination will be discussed in detail in Volume 2 of the historical review and AAR.

A complete list of executive actions that were issued during the Managing the Outbreak phase is listed below in Table 5, and Figure 14 follows with a timeline of key events and actions at the state and federal levels.

Table 5. COVID-19 related Governor Executive Orders

Executive Action	Date	
EO-63 and Order of Public Health Emergency 5	November 13, 2020	Amended to add additional requirements to wearing face coverings, effective November 16
EO-67 and Order of Public Health Emergency 7	November 13, 2020	Amended to limit the size of gatherings to 25 people, restrict the sale and consumption of alcoholic beverages after 10 p.m., and close bars and restaurants after midnight, effective November 16
EO-72 and Order of Public Health Emergency 9	December 10, 2020	Imposes a curfew between midnight and 5 a.m., limits the size of gatherings to 10 people, and continues restrictions on the sale and consumption of alcoholic beverages after 10 p.m., effective December 14
EO-74	December 22, 2020	Delegates authority to the Virginia Employment Commission to temporarily relax requirements under the Unemployment Insurance (UI) program to lessen the tax burden on businesses that resulted from record unemployment and the increasing costs of unemployment insurance

Figure 14. Managing the Outbreak timeline



Discussion of Key Themes

The following section provides a detailed examination of the key topics that emerged during the COVID-19 pandemic in 2020:

- Operational coordination
- PPE
- Modeling
- Testing
- Private sector engagement
- Joint Information Center (JIC)
- Health equity
- Support for at-risk populations
- Virtual operations
- Finance/Recovery

For each topic, we provide a discussion of the issue, supported by examples from the oral history interviews and small group discussions, as well as charts and other graphics whenever applicable.

Operational coordination

> "The challenge was we had all of these entities—there are a lot of great effort taking place but couldn't seem to get it off the ground, having difficulty doing it into a coordinated manner. And well—there was cross communications, but it just was not done in coordinated manner."
>
> "We were doing something, and they were doing something and somebody else is doing something, but we're all doing [it at the] exact same time because nobody is talking to each other."

At the onset of the pandemic, before COVID-19 cases were diagnosed in Virginia, VDH leaned forward and implemented an incident management team,[24] led by the Office of Epidemiology, to maintain situational awareness of the novel viral outbreak. VDH closely monitored the situation in China and elsewhere globally and gleaned epidemiological information about the virus. The Office of Epidemiology was quick to bring in

[24] This should not be confused with the Commonwealth of Virginia IMT

subject matter experts (SMEs) to characterize the threat and prepare VDH to respond to potential cases of the novel virus in the commonwealth.

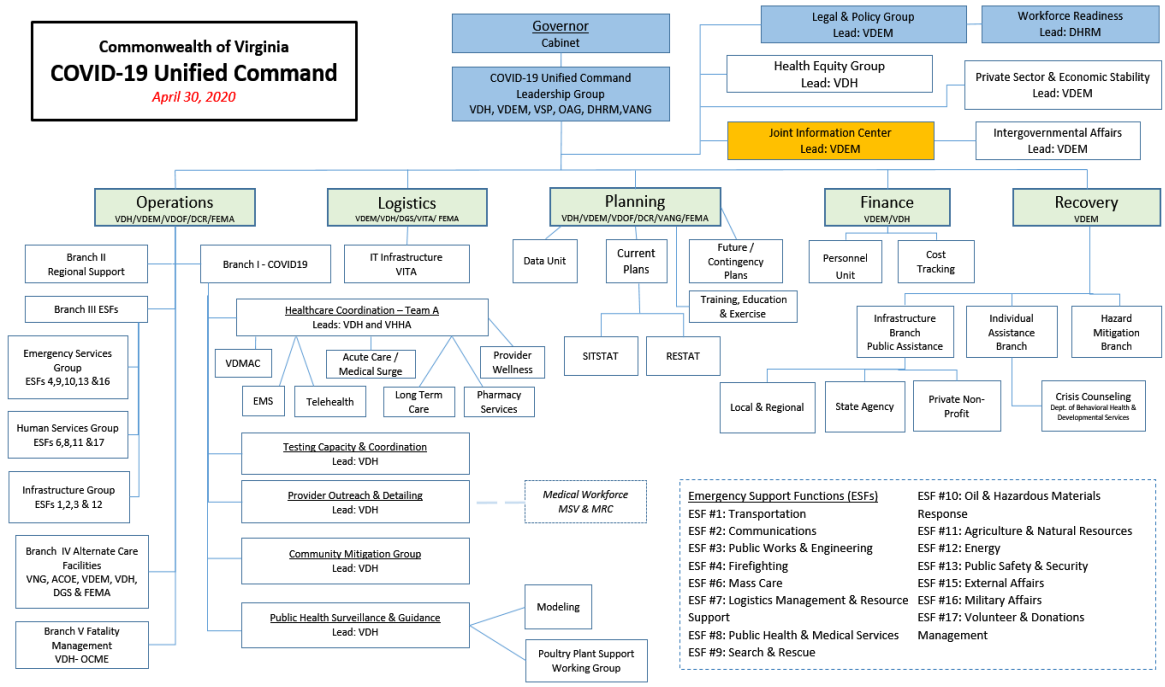
In late February, VDH expanded the incident management team into a COVID-19 Task Force, which included VDEM, other state agencies, and Cabinet offices. The COVID-19 Task Force met regularly over the next two weeks to discuss contingency planning as the virus spread in the US and federal mitigation strategies were implemented. With the detection of the first cases in Virginia and the Governor's declaration of a state of emergency, the COVID-19 Task Force transitioned into a statewide unified command, consisting of VDH, VSP, VDEM, Office of the Attorney General, DHRM, and the Virginia National Guard, per the Commonwealth of Virginia Pandemic Influenza Plan.

However, several officials we interviewed noted that there was no clear indication of which agency was leading the response.

Initially, however, operations within UC were somewhat siloed. When the state transitioned to a UC, VDH functions mainly moved to a branch under the Operations Section, and then were further separated into various committees and working groups (see Figure 15 for the UC organizational chart dated April 30, 2020). However, many people we spoke with did not fully grasp the UC structure as a whole, viewing the UC only through the lens of data calls and information requirements. In addition, there did not appear to be good synchronization of all the work occurring within the working groups and committees, as noted in several interviews that revealed that the same discussions involving the same people were occurring within multiple working groups or committees.

> "Operationally, it's been kind of weird, because there's so many different pathways for requests and things to be coming in now. And so, you've got these working groups—whether they're formal through the unified command or informal working groups that are happening amongst agencies—that are tackling things that they hear, but it's not coming to the task force or the official work group that's dealing with it, to hear and to be able to work together. And it's not going into (WebEOC) as an actual formal request, so you don't have any way of tracking it."

Figure 15. Unified Command organization chart dated April 30, 2020



Compounding the challenges of establishing a UC structure in a virtual environment, many partners within UC did not have a good understanding of how public health and health care services were organized and delivered within the commonwealth. Members of VDEM and the Virginia National Guard, in particular, noted facing a steep learning curve early in the response regarding how VDH was organized internally (with its regions, health care coalitions, and local health districts) to deliver public health services. Additionally, VDEM personnel often referred to a LTC facility and an assisted living facility interchangeably, but one is licensed by social services and the other by public health. The learning curve also applied to understanding the complexity of the health care delivery system and the terminology associated with public health and health care delivery systems. Further complicating matters was the fact that VDH's regional construct differs from VDEM's. These factors caused initial delays as partner agencies determined how best to coordinate support. For example, although the Virginia National Guard is highly experienced in working with VDEM, it did not have the same familiarity with VDH, which led to confusion over whom it should coordinate with when providing support to testing and ACF planning.

Addressing the coordination challenges within the UC

In addition to staffing ESF #8, VDH also deployed liaisons to work directly with their VDEM counterparts in UC leadership, which was viewed as a best practice. The liaisons provided VDEM with much needed information about public health requirements; for example, their assistance was critical to support the procurement of PPE and contracting for testing. They also connected VDH procurement staff with their VDEM counterparts and helped VDEM manage and respond to a barrage of questions from the Federal Emergency Management Agency (FEMA) and other federal agencies, primarily to defend PPE requests.

VDEM also engaged the Commonwealth of Virginia IMT[25] to provide a structure and process for collecting information and maintaining situational awareness across the UC. Prior to the pandemic, the Commonwealth of Virginia IMT existed only on paper as a concept to augment the VEST with personnel from other state agencies experienced in the use of the incident command system and the National Incident Management System. Planning for the Commonwealth of Virginia IMT began in earnest in February 2020, with the intent to advertise and slowly build out the concept during the summer of 2020. VDEM leadership, however, recognized the inefficiencies and the breakdown in coordination as the UC was coming together and authorized the use of the Commonwealth of Virginia IMT concept on March 16, 2020 to address stovepipes and institute reporting procedures that were more strategic, rather than informational. At the time, the Commonwealth of Virginia IMT consisted of nine personnel representing three state agencies; over the next three months, it grew to more than 130 personnel from eight state agencies, from VDEM, VDOF, VDFP, VDH, VDCR, VDACS, and VDF.

The Commonwealth of Virginia IMT instituted new reporting and product development processes to capture activities occurring across the UC with the intent of providing more comprehensive situational awareness, minimizing duplication of efforts, and developing products, including an incident support plan (ISP) to support strategic planning, rather than data capture. Under the direction of the Commonwealth of Virginia IMT from April 1, 2020 to July 31, 2020, the Commonwealth of Virginia IMT Plans Section prepared 63 ISPs and 72 SitReps.

When the Commonwealth of Virginia IMT demobilized on July 31, 2020, leadership identified several accomplishments and best practices, including:

- Pre-identified activation plan, teams, and position with job aids.
- Pre-identified activation process, which could be done virtually as necessary: day 1—team formation; day 2—just-in-time training and outreach to stakeholders; day 3—

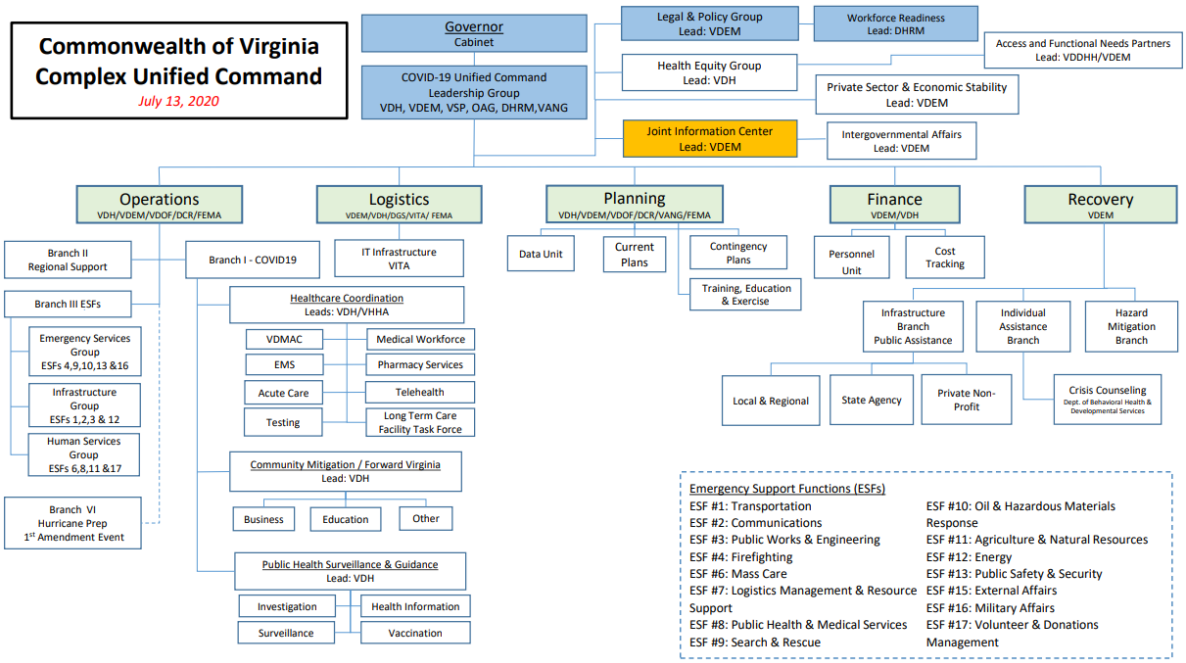
[25] The Commonwealth of Virginia IMT was initially called the "state IMT," but the name was changed to avoid confusion with the Dept of Forestry IMT.

development of a draft ISP with those partnerships and work groups; day 4—implement the ISP.

- Pre-established ISP data collection, reporting, and publication process.
- Pre-established organization chart served as a template for any mission so that the IMT knew which agencies were going to support which positions, and those agencies know which people were going to support those positions.
- Pre-established nine FEMA-based objectives that are adaptable to any mission based on the nine FEMA lifelines. Pre-established five questions in accordance with those objectives.
- In a position to transition to and work in a complex environment. For example, a hurricane preparation workgroup met weekly with multiple state partners during hurricane season.

In the April/May 2020 timeframe, prior to the start of hurricane season, UC leadership recognized the need for the UC to be able to adapt and respond to multiple simultaneous incidents. This resulted in a reorganization of the UC for "complex incidents" (see Figure 16).

Figure 16. Unified Command organization chart for Complex Incidents, dated July 13, 2020



Coordination with executive leadership

> "We have UC and we have the Governor's Office and Cabinet…[which] don't always [feel] connected. I felt I have two bosses and two structures to deal with."

Establishing unity of effort across the whole of government within Virginia was challenging to achieve during the early phases of the pandemic. This is not surprising given the size and scope of this incident. Examples of issues that arose during COVID-19 include the following:

- Despite VDEM and VDH operating as co-lead agencies in UC, they each continued to report to their respective Cabinet secretaries. Under state code, the Governor is the state coordinator during a declared disaster. Typically, the Governor delegates authority to the VDEM State Coordinator, who then acts as the interface with the Cabinet and synchronizes strategic policy issues with tactical emergency functions. However, this process was ambiguous for a statewide public health emergency and caused confusion at the Cabinet level regarding the delegation of authority and lines of communication. This created gaps and, at times, delayed decision-making (e.g., delayed the purchasing of PPE).
- The Governor's Office and Cabinet also established several task forces to address issues also being managed by UC, such as PPE, testing, and LTCFs. In many instances, there was little coordination between the task forces and UC working groups responsible for the respective issues, creating parallel structures and a risk of duplication of effort. For example, the Governor's Office contracted with McKinsey to identify processes to obtain PPE at the same time UC was working on contracts to purchase PPE. One notable exception where there was effective coordination was the Governor's Testing Task Force, which provided strategic direction that was then operationalized and executed by the Testing Working Group within UC.
- Executive leadership became deeply involved with the operational elements of the response. At times, members of the Cabinet were occupied by the tactical components of various response operations rather than maintaining a strategic focus. This also contributed to confusion over who was in charge of the response and who had responsibility for what aspects of the response.

Engagement with VDEM regions

One gap early in the response was effectively engaging with and integrating VDEM regions into the response. UC was very centralized and was driven from the top down, which is counter to the more distributed processes VDEM has implemented with the VEST and the regions over the past few years. This aggravated the situational awareness challenges that the regions experienced during prior incidents. As was experienced in past incidents, the regions perceived that they were being asked to provide information to the UC/VEST, but they were not made aware of all actions occurring within their regions. For example, regional coordinators had very

little insight into the UC working groups. The planning for the ACFs is a good example. Planning began at UC, without engagement with the regions that have relationships with localities. Similarly, regions were not aware of fatality management planning. In both instances, regional staff found out about planning efforts by accident—days or weeks after planning began—and invited themselves to join planning calls.

The need for most activities to be virtual, especially in the early days of the pandemic, certainly contributed to the challenges.[26] For example, VDEM regional directors were told to stay virtual and were not included as part of the small UC staff that remained in the VEOC. Although they could join meetings remotely, they likely missed nuances from any in-person discussions occurring within the VEOC. Also, due to the sheer volume of calls occurring, many at the same time, it was impossible to maintain awareness of all activities.

The regions were also frustrated that they were learning things from press conferences and not through established processes and procedures. However, often VDEM (and at times the entire UC) was learning them at the same time (e.g., through Governor's press conferences). In fact, in interviews with the regions, they often conflated VDEM with the UC. However, given the nature of the pandemic as a public health incident, there were often activities occurring within the UC working groups that VDEM leadership was not aware of either.

One bright spot was the engagement between the regions and the Health Equity Working Group (HEWG).[27] The planning and engagement with localities involved in the HEWG pilot program were coordinated with regional support.

Coordination between VDEM and VDH regions

Coordination between VDEM and VDH at the regional level was initially inconsistent, partly due to structural differences. VDH has 35 local health districts, some of which cut across multiple VDEM regions. VDH also has six regions, each of which has an emergency coordinator, but those regions are not the same as the VDEM regions. Some VDEM regions have better relationships with the VDH health districts and regional counterparts than others. Some VDEM Chief Regional Coordinators (CRCs) talked daily with their regional emergency coordinator or health district

> "I do think having a better working relationship and coordination with the VDH health districts probably would have been beneficial early on. I think some of those relationships have been built as this incident has progressed."
>
> "I have one particular district. I have talked to them I think twice the entire time. And others, I've talked to almost daily…"

[26] Virtual operations are discussed in more detail in a later section.

[27] Health equity is discussed in more detail in a later section.

director, while others did not connect at all. VDH health districts also have a significant level of autonomy, meaning that some health districts within a VDEM region could have been doing different things. Additionally, there are six regional health care coalitions within the commonwealth, consisting of representatives from hospitals, public health, etc. At the onset of the pandemic, some CRCs did not have a good understanding of the coalition's mission and resources.

PPE

To address the failure of the PPE supply chain, the UC Logistics staff worked tirelessly during the initial months of the pandemic to identify, purchase, and distribute PPE including, but not limited to:

- Masks, which included:
    - N95 masks. Technically, "N95" means that the mask meets a US National Institute for Occupational Safety and Health (NIOSH) standard that 95 percent of particles are filtered, which does not necessarily have bearing on infectious disease transmission. A "surgical N95" or "medical respirator" is a mask that meets the NIOSH N95 standard and an FDA standard. A March 18, 2020, Act of Congress relaxed the FDA standard, allowing industrial-use N95 masks to be used for medical purposes.
    - Surgical masks, designed to prevent the transmission of droplets to the wearer.
    - Cloth or fabric masks, designed to prevent transmission of droplets *from* the wearer, although the masks were shown later to have protective effects as well.
- Gloves
- Isolation gowns, such as surgical gowns
- Face shields, which protect the wearer's eyes and nose from droplets

Failure of the existing stockpiles

Neither the COVEOP Appendix 4 – Hazard-Specific Annex: Pandemic Influenza Response nor the VDH Emergency Response Basic Plan Hazard Specific Annex 8: Pandemic Influenza Response Plan account for the possibility that there could be insufficient quantities of PPE available to the commonwealth during a pandemic. Like other states, Virginia's planning for a widespread respiratory infection outbreak included the Strategic National Stockpile (SNS), a national repository of medicine and medical supplies maintained by the Office of the Assistant Secretary for Preparedness and Response (ASPR) of the Department of Health and Human Services. Virginia received its first shipment from the SNS in mid-March, but by early April, the SNS was depleted. Virginia received its third and final shipment on April 10, 2020.

The failure of the SNS was generally unanticipated and left the commonwealth with few backup options for obtaining PPE, which was a critical limiting factor in the health care response.

Virginia had a stockpile of PPE left over from the 2009–2010 H1N1 influenza pandemic response; however, most of these supplies had expired. In some cases, the elastic straps on masks had become brittle and would snap when stretched. Although the stockpile was used and repurposed, it served only as a stopgap. Some individual hospitals and localities maintained their own stockpiles of PPE, but these were also quickly exhausted.

When it became clear that the SNS and state stockpiles from the H1N1 response would not be sufficient to support the response to COVID-19, VDH looked to VDEM to assist with procurement and supply chain management. A public health emergency order on March 25, 2020, directed hospitals to stop elective procedures to ensure that available PPE was preserved for COVID-19. Even as the situation stabilized, with local emergency managers (EMs) saying on a May 5, 2020, call that the "state really stepped up for supply chain of PPE," the supply of PPE remained fragile, with UC reporting "urgent PPE needs to localities" on May 14, 2020. On May 26, 2020, a VDEM official observed: "I don't believe the supply chain has really caught up yet, it still seems very unstable from our point of view. So, PPE to some of our health care providers that would normally get it through private chains, we'll still need to be providing them PPE."

Filling the gap

The demand for these resources was unprecedented, and the PPE shortage in Virginia was mirrored in other states and around the world. Lacking a federal strategy for PPE allocation, there was fierce competition among the states for PPE on the open market. In some cases, Virginia lost out on large contract opportunities because of delays introduced by negotiations and the need for approval from state leadership. VDEM was ultimately able to procure five large shipments of PPE from overseas in early May.

> One VDH official said that the thing they came to appreciate most during the COVID-19 response was "that the VEST and [logistics] have been able to put forward, going from nothing after the collapse with the…Strategic National Stockpile, and the ability of the VEST to establish a supply chain for PPE…"

An important component of the response was a major outreach initiative to engage the private sector to request PPE, validate offers of assistance, and help companies convert existing manufacturing capacity into PPE production (e.g., working with auto parts manufacturers or distillers to develop PPE). The collaboration between VDH, VDEM, and the private sector to fill the gap left by the collapse of the SNS is a major success story from Virginia's response.[28]

[28] Private sector engagement is discussed in more detail in a later section

The UC contracted with the consulting firm McKinsey and partnered with GENEDGE, a manufacturing consulting firm formed as a public-private venture with the Commonwealth of Virginia. Between early April and early May, this group worked through the following process to help private industry in Virginia retool their systems to produce PPE:

1. Developed legal guidance about a company's ability to comply with FDA approval requirements
2. Built a process for Virginia agencies to approve PPE that was not approved by the FDA
3. Made a list of the types of PPE required for the response and their technical specifications
4. Created a guide for companies about how to retool their manufacturing systems to make those types of PPE
5. Connected interested industry partners with resources, including:
    a. Routing incoming offers of assistance
    b. Reaching out to particular companies (e.g., the Governor wrote a letter to 50 CEOs asking that those businesses consider retooling)
    c. Partnering with the Virginia Manufacturers Association

> Private industry was more interested in re-tooling and offering assistance than some VDEM employees anticipated; as one VDEM official observed, "To me, it's phenomenal how [private companies] didn't just say, 'OK, we're shut down, we're not working….' [Instead] they've taken the stance of, 'We have to find a way to be relevant. We want to help our community, but we also want to keep our employees employed and stay in business.'"

As a complement to producing new material, VDEM also helped procure three Battelle Critical Care Decontamination systems,[29] which use gas-phase hydrogen peroxide to degrade SARS-COV-2 on masks and other PPE, that were set up in Blacksburg, Chesterfield, and Newport News.

PPE distribution

The limited supply of PPE affected not just hospitals, but also the rest of the health care sector (e.g., LTCFs and dialysis centers), congregate care facilities (e.g., homeless shelters, group homes, and prisons), and local and state government agencies. Further, some of these agencies and facilities did not have dedicated PPE suppliers, and they were reliant on UC. To accommodate the needs of all stakeholders, UC developed a PPE distribution system in which PPE delivered to the commonwealth was distributed to one of a set of entities, listed below, which would distribute it to end users:

1. The six regional health care coalitions (HCCs), which managed distribution to entities such as hospitals and LTCFs

[29] https://www.battelle.org/inb/battelle-critical-care-decontamination-system-for-covid19

2. The 35 local health districts (LHDs), which managed distribution to entities such as local clinics and emergency care centers
3. The 136 localities (counties and cities), whose local EMs managed distribution to local law enforcement, emergency medical services (EMS), courthouses, correctional facilities, government officials, etc.
4. The 50+ state agencies

Requests from HCCs and LHDs were typically routed through VDH; requests from localities and state agencies were managed by VDEM using the normal VEST resource request procedures. However, sometimes a medical care facility had a closer relationship with their local EM than with their LHD or health care coalition and routed requests through VDEM rather than VDH.

This system left two issues of prioritization unresolved. First, the VEST/UC did not receive guidance from agency leadership or Cabinet secretaries on how to prioritize the distribution of scarce PPE. It was not clear, for example, whether the state would prefer an extra N95 mask be allotted to a state trooper responding to a protest or to a dentist. Thus, the UC had to make its own judgements about prioritization. These judgements were informed by:

- Requests from an entity based on its immediate need.
- "Burn rates" indicating how much of an entity's existing stock of a type of PPE had been used over some period, typically one–two weeks. Entities with high burn rates generally received more material.
- Public, state-level priorities evinced by the presence of task forces. For example, the initiation of the Statewide COVID-19 Testing Workgroup and the Long-Term Care Workgroup indicated that PPE should be prioritized for testing purposes and for LTCFs.
- Defensive responses to media pressure, such as judges demanding PPE to provide to individuals in the courtroom or private EMS organizations demanding PPE from the state via media statements,[30] rather than via their local EM or LHD.

> "Very, very early on, we saw PPE requests for sanitation workers… That makes sense… But nobody has ever really requested anything for their sanitation department before, and of course this evolved to social service workers doing welfare checks on elderly [people] and kids, and then the court systems wanted to reopen. And a judge doesn't want anybody walking into his courtroom without a mask… If I go to court for a traffic ticket, they expect me to wear socks and shoes and a shirt. They're not going to hand me socks and shoes and a shirt when I walk up to the door. But they were working to hand out a mask to everybody that walked up for the door."

[30] https://richmond.com/special-report/coronavirus/we-need-it-now---state-supplies-of-protective-gear-not-reaching-private-ambulance/article_6c886d7d-fb8f-5e41-a6da-7eceb8dbf320.html

The second issue of prioritization left unresolved was how the entities receiving PPE from VDEM or VDH should distribute it to the end users. For example, local EMs were expected to distribute PPE fairly and effectively in their communities. In general, this devolution of responsibility did not meet with significant pushback from local EMs, although VDEM regions did express some frustration with changing guidance and the lack of a definitive prioritization scheme. In some cases, the lack of prioritization created a sense of injustice or unwise distribution. For example, front-line health care workers seeing supplies of scarce PPE being distributed to law enforcement officers felt that their personal safety was being put at risk for little public benefit.

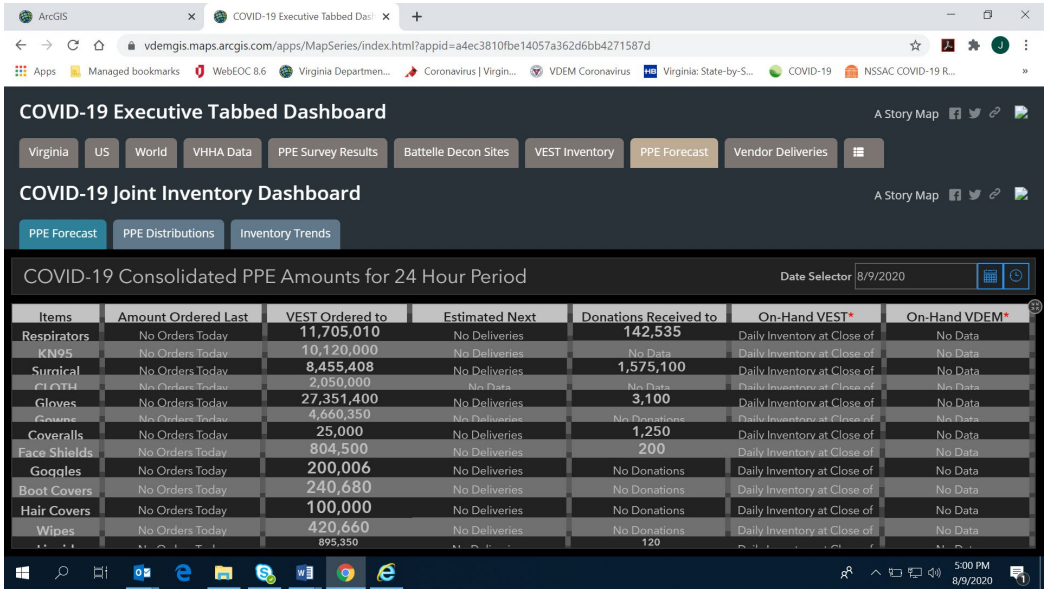
PPE allocation

PPE was allocated based on how much PPE an organization used during the prior week (i.e., its burn rate). VDEM officials reported that the use of burn rates was initially driven by FEMA, which required burn rates as part of states' requests and justification for federal PPE resources. VDEM officials were confused by this requirement because burn rates are typically used as a logistics planning tool before an event occurs, rather than as the basis for allocation while an event is ongoing.

This approach to PPE allocation, however, had several limitations. First, it created a paradox: "An organization can't burn what it doesn't have." Thus, a facility that did not have N95s, or that very carefully stewarded their use, would have a zero or negligible burn rate, regardless of their need for new PPE. Entities that used more PPE, even when used inefficiently, could be rewarded with more PPE. The system also relied on entities to accurately self-report their burn rate, which was considered by many entities to be an onerous process. Computing a burn rate was, in the words of one VDEM official, a "foreign concept" to many reporting entities.

Many organizations requesting PPE felt that burn rate calculations were applied inconsistently or not used at all to inform allocation decisions. Nevertheless, VDEM continued to use the burn rate concept, rather than using unstructured requests, because of a concern that managing requests from approximately 800 entities would have been overwhelming. The burn rate was used to quasi-automate the allocation process, with urgent requests being handled separately. VDEM GIS staff created a survey and dashboard for entering new data and computing burn rates based on previous usage data. For example, the burn rate might be calculated by averaging the entity's reported burn rate over some weeks; if the entity was within 30 days of running out of stock, an additional 20 percent (and later 50 percent) would be added on top.

Figure 17. Screenshot from PPE dashboard



COVID-19 Modeling

During the COVID-19 pandemic, epidemiological models of disease spread were used to:

1. Frame worst-case scenarios.
2. Inform decisions about ACFs. More plainly, the models were consulted to project whether hospital capacity would be overwhelmed.
3. Inform decisions about mandates and policies, including the timing for instituting and relaxing physical distancing and evaluating the utility of mask wearing.
4. Confirm that instituted policies were working. Deviations from model projections were taken as signs that the response was not proceeding as planned.

Early modeling support

In early April 2020, VDEM and VDH began using disease outbreak models to directly inform Virginia's response to COVID-19. At least four models were used to varying degrees:

1. The model used by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington
2. The COVID-19 Hospital Impact Model for Epidemics (CHIME) from the University of Pennsylvania
3. The Imperial College London model
4. The University of Virginia Biocomplexity Institute model, which was designed specifically for Virginia and is still in active use

In contrast to weather forecasting, projections on infectious disease dynamics are much more uncertain, and different models produce drastically different projections. For example, the IHME model is a "statistical" model, meaning that it uses the shapes of the curves of cases and hospitalizations from earlier outbreaks (e.g., China and Italy) to predict curves in the US. The model was not "mechanistic," meaning it did not account for the dynamics of disease transmission. Thus, the model would be accurate only insofar as the US followed the same pattern of disease as in other countries.[31]

In contrast, the UVA model is mechanistic (Susceptible, Exposed, Infected, Recovered (SEIR)), meaning that it explicitly models the effect of infections and transmissions in a simulated population. The model also explicitly included mobility data and considered the role of transmission within and between 133 geographical "patches" representing Virginia's counties and independent cities. Thus, the model was able to make predictions about the course of the epidemic for specific localities. The model also estimated the effect of altered physical distancing policies.

The CHIME model was also mechanistic (Susceptible, Infected, Recovered (SIR)), but was markedly simpler in design than the UVA model. Although it also accounted for disease transmission mechanics, it was designed for short-term, pre-peak forecasting to guide individual hospitals and public health officials for hospital capacity planning.

Differences between the model projections

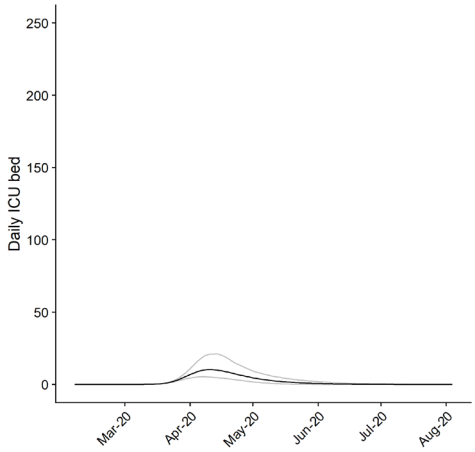
Because the models had different structures and made different assumptions about the effect of changing policies, they made different projections about the future (Figure 18a) and about the effects of re-opening (Figure 18b). For example, the IHME model was much more optimistic about the future than the Imperial College model, which predicted that hospitals would be massively overwhelmed if strict measures were not put in place (Figure 18a). The dire predictions from the Imperial College model—that demand for ICU beds would greatly outpace supply—may have contributed to the drive for setting up ACFs.

These differences created ambiguity for decision-makers. The ambiguity was amplified by the fact that the models' projections changed rapidly as the epidemiological situation evolved. Additionally, in some cases, different models were preferred by different members of Virginia's state response because they were more familiar with a certain model or a model was being used by one of those member's partner organizations. For example, the Virginia National Guard preferred the model developed by the Defense Threat Reduction Agency (DTRA).

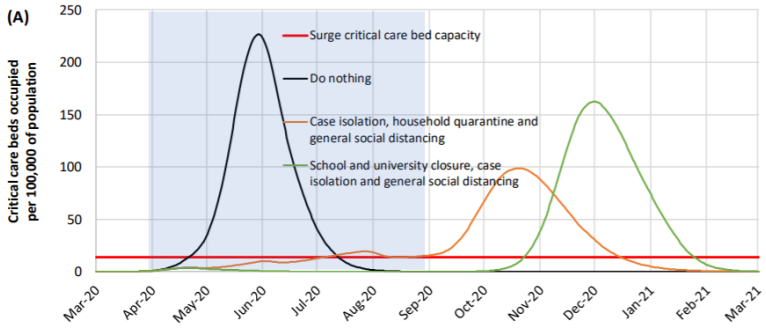
[31] In later revisions, the IHME model took a "hybrid" approach, combining statistical and mechanistic elements, and modeled the effect of different "scenarios," such as increased mask wearing and decreased mobility.

Figure 18. The IHME and Imperial College models made markedly different predictions

(a) IHME model predictions about ICU bed requirements in the United States, as of March 25, 2020



(b) Imperial College model predictions about ICU bed requirements in the United States, as of March 16, 2020[32]



To help alleviate this confusion, VDEM engaged an SME from the RAND Corporation, who gave an initial briefing to UC about the three different models on April 21. 2020. The briefing noted that the IHME model's suggestion for a June 8, 2020, reopening was "preliminary" and should be "more robustly explore[d]" using other models.

In contrast, the UVA modelers produced a technical report on April 13, 2020 that estimated the effects of relaxing social distancing on two different dates (April 30, 2020, and June 10, 2020).

[32] *Source: Imperial College COVID-19 Response Team. Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand. 16 March 2020. (https://www.imperial.ac.uk/media/imperial-college/medicine/mrc-gida/2020-03-16-COVID19-Report-9.pdf)*

That report projected that Virginia would have "sufficient medical resources for at least the next couple months" but that lifting physical distancing restrictions "can lead quickly to a second wave" (Figure 19).

After considering multiple models, VDH mostly relied on the UVA model. The UVA model was advantageous for various reasons: it was "home grown" (meaning that the modelers were accessible to policymakers), it made projections about specific Virginia localities, and it estimated the effects of different policies and mandates.

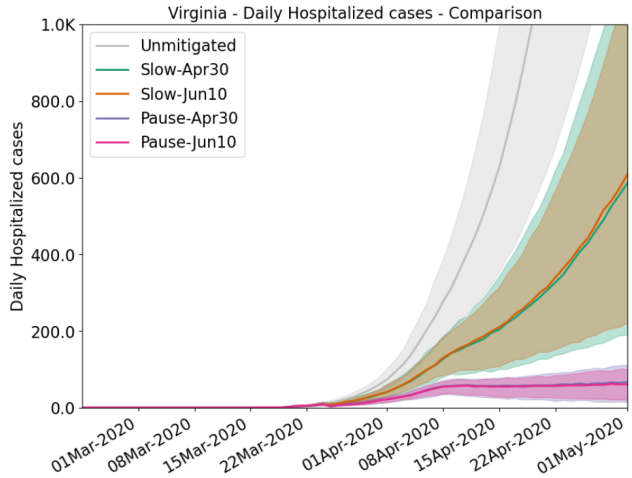
Testing

Testing is a critical component in public health pandemic response, and public health officials implemented several tests during the COVID-19 pandemic:

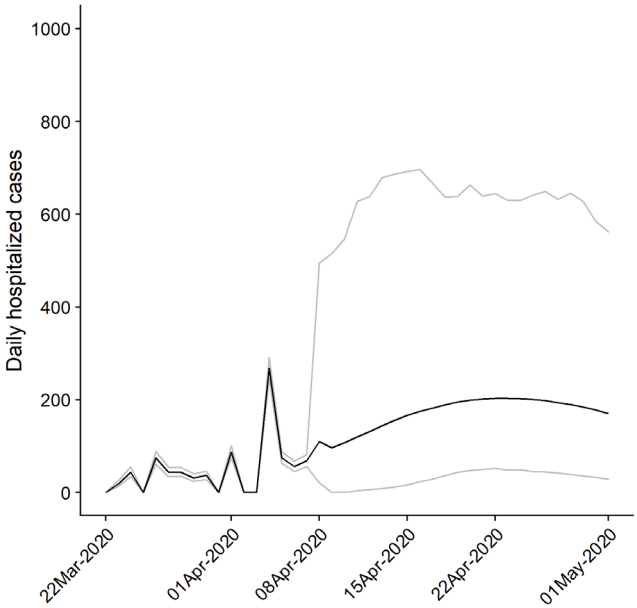
- **Polymerase chain reaction (PCR) tests** are used to detect the presence of viral nucleic acids (e.g., a specific marker in the in the COVID-19 RNA) collected from patients with nasopharyngeal swabs. PCR tests were used to diagnose the presence of the SARS-CoV-2 virus in an individual, and they were also used in point prevalence surveys (PPS), which is a technique to determine the prevalence of the virus in a particular area at a specific point in time. This technique was used mostly in LTCFs or other congregate settings.
- **Antibody, or "serology," tests**, which detect the presence of antibodies against SARS-CoV-2 in blood. They can determine whether a person was previously infected with the virus or is in the late stages of recovery. They have limited utility for diagnosing disease.
- **Rapid, point-of-care (POC) PCR tests**, like the Abbott ID NOW system. These tests function on the same basic principle as the tests described above, but the samples are processed immediately after they are collected, and results are returned while the patient waits.
- **Antigen tests** detect the presence of the virus, but they detect part of the virus's physical structure, rather than its RNA. Antigen tests are less sensitive than PCR tests (i.e., false negatives are more likely), and the first approval for an antigen POC test occurred in early May.

Figure 19. Different models made different predictions

(a) UVA predictions for daily hospitalizations as presented in a technical report by UVA modelers on April 13, 2020[33]



(b) IHME predictions for Virginia daily hospitalizations on April 13, 2020[34]



[33] *Source: Biocomplexity Institute Technical Report TR-2020-048.*

[34] *Source: http://www.healthdata.org/covid/data-downloads*

The PCR test itself consists of three main components: the swab used to collect the sample, the viral transport medium that stabilizes and preserves the sample, and the specialized chemicals (reagents) used to determine the presence of viral RNA in the sample. Extraction kits, which are used to purify the collected sample into viral RNA, were the reagents most affected by supply chain shortages.

However, in order for the test itself to be useful, the individual to be tested needs to have access to a trained sample collector, the collector must have appropriate PPE, the sample must be delivered to a lab capable of processing it, and the results from the lab need to be returned to the tested individual.

Early, national-level challenges with PCR testing

Testing for SARS-CoV-2 in the US was delayed because of three early, critical bottlenecks. First, the US decided to develop its own SARS-CoV-2 test. Shortly after the CDC distributed its first test kits to state and local labs in early February, state lab directors reported erroneous results during validation testing, which were later attributed to poor manufacturing practices at the CDC. The CDC and FDA later developed workarounds for the faulty test, and the FDA allowed non-government labs to develop their own tests starting in late February. However, this early misstep severely hampered the ability of public health agencies to track the spread of the virus and implement effective mitigation strategies.

Second, the CDC's guidance restricted tests to those individuals with a known travel history to Wuhan, or contact with someone with recent travel history. Although individual states and localities could set their own policies, many followed the CDC's guidance. Thus, even if it was important to a patient's care to be able to verify a SARS-CoV-2 infection, that patient's physician could not order a test. The CDC changed its guidance on March 4, allowing individual clinicians to use their judgement in ordering tests.

Third, even after guidelines allowed for more extensive testing and private labs were permitted to develop their own tests, the disruption of the global supply chain limited test availability. Notably, the specialized swabs required to collect patient samples were mostly supplied by only two companies—one based in Maine and the other in northern Italy, where a surge of COVID-19 cases was complicating the company's ability to ramp up its production to meet the exploding global demand.

Testing as a state-level priority

Challenges with COVID-19 testing in Virginia came to a head in mid-April 2020 when expectations for the re-opening of the commonwealth collided with the reality of the number of tests being performed, which was severely insufficient for safe re-opening. Specifically, news reports showed that Virginia was lagging in terms of testing capacity. Journalists at the *Atlantic*

had previously collected data and published about the number of tests performed in each state as part of the COVID Tracking Project.[35] Other dashboards, including the Johns Hopkins Coronavirus Resource Center[36] and the Kaiser Family Foundation's State Health Facts about COVID-19 testing,[37] began showing the number of tests divided by population for each state. In terms of total tests performed divided by population size, Virginia ranked 49th among US states on April 5, 2020, and ranked between 48th and 50th on all days between April 13 and April 30, 2020.

The low testing rate in Virginia was attributed to several factors:

1. DCLS was the only lab in the state authorized to conduct COVID testing.
2. Even when tests developed by hospitals and private labs became available, Virginia did not have substantial private in-state testing capacity. By contrast, neighboring North Carolina is home to LabCorp, one of the two major testing companies in the US.
3. Funding to enable National Guard deployments and to utilize "turn-key" labs was delayed by policy or logistics barriers.
4. Virginia was less successful than other states in obtaining scarce testing supplies.[38]

On April 20, 2020, the Governor established a state-level Testing Task Force to "make sure all of Virginia's private and public testing efforts are coordinated and pulling in the same direction." The group had three goals:

1. Expand test sites and testing criteria;
2. Increase testing volume and timeliness; and
3. Address the factors that limit testing, such as acquiring testing supplies including swabs, specimen collection supplies, and containers to safely transport viral specimens.

Thus, starting in mid-April 2020, Virginia's testing effort expanded to include the entire health care system and all parts of testing, including supplying testing kits, processing tests, and delivering the results to patients. In the short term, this meant raising Virginia's testing rates from 3,500 to 10,000 per day. The Testing Task Force leadership presented the Governor and his Cabinet with 10 recommendations about how to improve testing. The Testing Task Force received an unofficial mandate to execute on those recommendations, which included training and deploying Virginia National Guard personnel to do point prevalence testing in congregate

[35] https://covidtracking.com/

[36] https://coronavirus.jhu.edu/testing/states-comparison

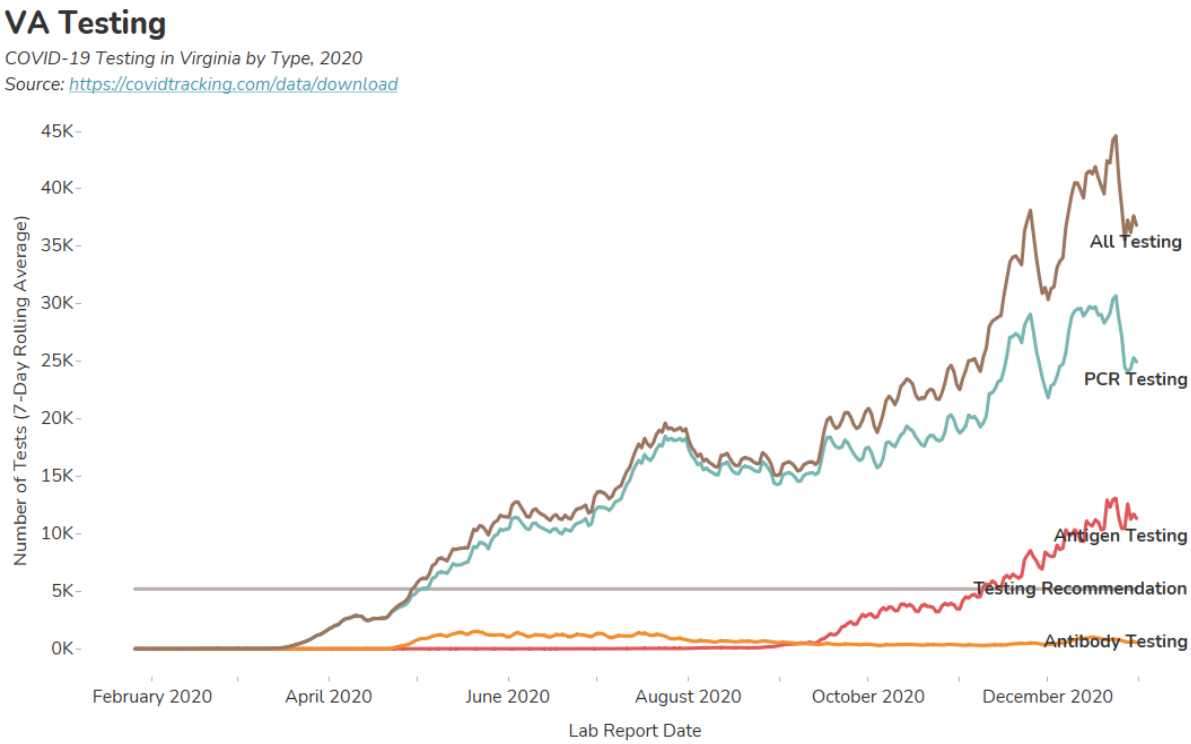
[37] https://www.kff.org/other/state-indicator/covid-19-testing

[38] Interviewees also indicated that distribution of scarce testing supplies was prioritized for states with larger outbreaks, such as New York and Washington, but the authors could not confirm this assessment.

settings. Engaging the Virginia National Guard was seen as one of the key drivers in Virginia's improved testing rates.

The success of the Testing Task Force was attributed in part to their coordination with the UC. The Testing Task Force set the strategic direction for statewide testing, and the Testing Capacity & Coordination Group within UC helped coordinate a whole-of-government response. In addition, when DCLS had trouble getting swabs or viral transport media, they coordinated with VEST/UC logistics and planning staff to help locate the resources that DCLS needed. This coordination worked well, and the UC also handled the contracts, the logistics, and the transport of supplies to DCLS.

Figure 20. Seven-day rolling average COVID-19 tests run in Virginia in 2020, by type



Virginia National Guard support

As noted above, the Virginia National Guard provided valuable surge capacity to help achieve the state's testing goals and meet urgent testing needs in congregate settings. Virginia National Guard personnel supported point prevalence testing in LTCFs, drive-through testing at congregate and community events, and N95 mask fit testing.

Early in the response, there were multiple challenges regarding the Virginia National Guard's deployment beyond the lack of testing kits and lab capacity, which hindered all testing efforts. First, as noted above, there were problems determining how to engage and fund Virginia National Guard personnel to support the testing mission.

Second, decision-makers may have been reticent to engage the Virginia National Guard due to a perception that the Guard would "roll up in 5-ton vehicles" wearing "chemical suits like from the movie *Outbreak*." Although Guard members do wear uniforms, they used white vehicles and wore PPE like typical health care workers. Guard members were careful to manage their appearance to the local community, assuring community members that that their role was to support local civil authorities.

Third, the Virginia National Guard faced a learning curve in planning, scheduling, and coordinating with VDH's local health districts. Although the Virginia National Guard was very familiar with working with VDEM CRCs and regional staff during emergencies, they were unfamiliar with the roles and responsibilities of the VDH HCCs and local health districts. They only had a passive role for a portion of the 2019 VDH-led pandemic influenza exercise, which was likely a missed opportunity for the Guard and VDH to learn to coordinate more productively. Of note, the Virginia National Guard liaison officers, who regularly engage with VDEM regions during emergencies, also played a pivotal role in coordinating with VDH Regional Emergency Coordinators and local health districts.

Public-Private Sector Engagement

Early in the pandemic, as COVID-19 cases increased across the commonwealth and requests for resources (e.g., tangible materials and strategic guidance) flooded the UC, the commonwealth found itself facing a truly resource-constrained environment for the first time. Compromises to the integrity of supply chains challenged the continuity of critical infrastructure systems and government services during the initial pandemic response. Limitations on medical supplies and equipment were compounded by the inability to ramp up production of PPE, such as N95 respirators, surgical masks, and latex gloves, as well as testing supplies such as cotton swabs. Beyond medical supplies and PPE shortage concerns, there was a shortage in PCR reagent to meet the high demand for COVID-19 testing. The UC quickly turned to private sector partners for assistance to stabilize escalating urgent needs across the commonwealth.

By leveraging existing relationships with private sector partners and building new partnerships with non-traditional private partners, the UC made great strides in addressing COVID-19 pandemic response needs, specifically the supply chain shortages. Public-private sector engagement spearheaded innovation, agility, and adaptability to the resource strained

government response efforts. This progress is demonstrated through the collaborative efforts to expand testing capability and capacity, the stabilization of the PPE and medical supply chain, and the establishment of guidance on how the private sector could support the response.

Private sector support to fill gaps

When the SNS failed, the open market supply chain was not able to meet the demand, as Virginia competed with other states, private entities, federal partners, and other nations for scarce resources. The commonwealth looked to the private sector to support resource acquisitions as well as assist with retooling factories in-state. Specific efforts to support PPE acquisition and manufacturing are discussed previously; here we focus on engagement with the private sector and how it affected other aspects of the response.

In 2016, prior to Hurricane Matthew, VDEM developed a portal for private sector entities to register to receive information from VDEM during emergencies. That effort grew from 225 businesses registered at the beginning of March 2020 to 1,327 businesses in late May 2020. UC leveraged this registry to provide information to the private sector so they could make informed health and safety decisions for their employees and customers. Regular communications with the private sector included a daily situation brief and a weekly conference call that included representatives from VDH, VDEM, the Virginia Department of Agriculture and Consumer Services (VDACS), the Virginia Fusion Center, the Economic Crisis Strike Force, the Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA), and FEMA. UC expanded the registry to include access to a private webpage with a one-stop repository of information and links from all state agencies.

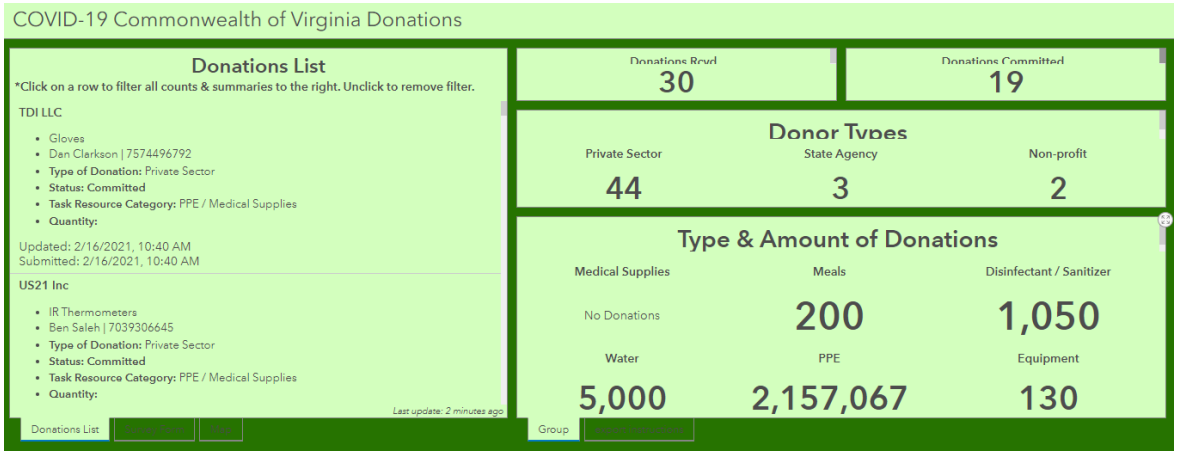
How did industry partners help?

- Walmart, CVS, and Rite Aid supported testing capability by making testing available at convenient retailer locations
- Uber and Lyft implemented strategies through the Testing Taskforce to provide testing services transportation for individuals unable to travel or who do not have transportation means
- Hotels, timeshares, and Airbnbs collaborated with Future Plans to determine the availability and capacity of properties for non-congregate sheltering
- Industry partners assisted with contact tracing capabilities in coordination with the Public Health Surveillance & Guidance

Additionally, UC leveraged the registry and website to distribute an "offers of assistance" survey to private companies to gauge their ability to source PPE (and later testing resources) and then connect companies with VDEM Procurement to fast-track the process. Later, the survey expanded to cover other services as well, including a hotel survey as part of the contingency planning during hurricane season to identify facilities willing to provide spaces

for congregate sheltering. The webpage also provided the UC with a mechanism to accept donations, including meals, water, PPE, other equipment, hand sanitizer, and disinfectant.

Figure 21. Screenshot from donations dashboard



The following are examples of key private sector engagement activities conducted by the VEST Private Sector Team, VDEM, and other state agencies that helped stabilize the critical deficiencies of Virginia's COVID-19 response:

- Established processes for businesses that wished to retool or pivot their production lines to produce and assemble PPE that met federal manufacturing regulations through collaboration with the FDA and the Virginia Economic Development Partnership (using the GENEDGE platform,[39] several businesses pivoted their production capabilities or opened new production facilities in Virginia to produce N95 respirators and surgical masks);
- Developed a PPE Acquisition and Planning Playbook with inputs from private sector partners that included the tracking of private sector offers for assistance extrapolated from offers of procurement;
- Modified the Department of General Services procurement and vetting processes in order to expedite engagements with vendors;
- Developed the PPE Exchange Pilot Program for industry and government users seeking to purchase PPE supplies that leveraged an "Uber-like" process to quickly match PPE buyers and suppliers within minutes instead of days;
- Procured donated PPE, such as face masks and hand sanitizers, from private sector partners to distribute to communities at elevated risk for COVID-19 infection and complications;

[39] GENEDGE is a manufacturing consulting firm formed as a public-private venture with the Commonwealth of Virginia to help companies trying to start businesses in Virginia.

- Collaborated with the Virginia Manufacturers Association to solicit innovations and new methodologies to expand sanitizer capability (e.g., brewers and distilleries pivoted production facilities to make hand sanitizer);
- Adapted existing mobile technology through collaboration with software developers to build a response data collection tool utilized within contact tracing;

> "It's phenomenal how people didn't just say, 'OK. We're shut down. We're not working. We've got to find a way.' They've taken the stance of, 'We have to find a way to be relevant. We want to help our community, but we also want to keep our employees employed and stay in business'…a lot of them have found a way to do that."
>
> "So, it's not just the private sector coming out and saying, 'Hey, we have PPE, or we can get it for you,' but they're actually pivoting their production lines to be able to make PPE….A good example is one of the auto parts industry. They make cabin filters for the inside of the vehicle. And it happens to be the same fiber that's used to make in N95 respirators. So, they have decided to add a new line to their production. And they're going to start making in N95s here in the State of Virginia."

- Coordinated with task forces, work groups, and committees to amplify messaging and guidance dissemination, as well as capture concerns and needs emerging within the private sector (e.g., Pharmacy Service Sub-committee Workgroup, Provider Wellness Workgroup, Poultry Workgroup, etc.); and
- Collaborated with the Virginia Economic Development Partnership and Economic Crisis Strike Force[40] to identify and support potential vendors with offers of assistance.

There were two noteworthy challenges at the beginning of the pandemic:

- The private sector "team" initially consisted of only one person, who was responsible for responding to and managing the daily flood of emails with questions, offers of assistance, and donations. The private sector team was slowly able to build capacity to respond to offers of assistance with contractors and support from state agencies that were not normally engaged with the response to emergencies.
- Support for the private sector spanned the whole of government, including across the Governor's Office, state agencies, and economic and business associations. The UC Private Sector and Economic Stability Branch was challenged to both understand and also corral all of that support, which was compounded by a lack of awareness of what the VEST does with non-traditional VEST state agencies. Through the COVID-19 executive tab dashboard, the private sector portal was provided to all state agencies, EM coordinators, and VEST liaison officers, as well as all agency heads. This provided

[40] The Economic Crisis Strike Force is established within Virginia Code (§ 2.2-205.1) to "support Virginia communities following economic disasters by (i) immediately providing a single point of contact for citizens in affected communities to assist with accessing available government and private sector services and resources, (ii) assisting localities in developing short-term and long-term strategies for addressing the economic crisis, and (iii) identifying opportunities for workforce retraining, job creation, and new investment."

all state agencies with some level of awareness of private sector engagement on a daily basis. Initially, the private sector lead was able to be a liaison in the economic crisis strike force, but that engagement proved to be challenging to maintain once the strike force broke into smaller work groups.

Joint Information Center

Coordinating, developing, and disseminating accurate, consistent, and timely messages during an emergency is of critical importance. However, this expectation was especially hard to fulfill during the initial phases of the COVID-19 response due to a number of factors, including staffing, agency coordination, technology/software, and socialization of collaboration requirements among key interagency partners.

> "…the Joint Information Center is not made up of doctors or subject matter [experts]. We are writers. We are public relations specialists. And so, I don't think that we were prepared to handle [an event] that required so much subject matter expertise…that was only available through a very small amount of people..."

- Communications leads at both VDH and VDEM were new to their roles at the start of the pandemic. This led to confusion about the delineation of responsibilities and likely contributed to coordination challenges between the JIC, VDH, and Governor's Office. Further, this lack of experience also likely contributed to some lapses in providing information in appropriate formats for access and functional needs (AFN) communities. For example, early in the response, VDEM and VDH were not aware of translation services that are available to better disseminate public messaging and government guidance to a variety of populations. Thus, press conferences lacked sign language interpreters, and translations of materials related to COVID-19 into frequently used languages within the commonwealth were not provided to the general public. As a result, Virginia 2-1-1 and the JIC received extensive complaints criticizing this gap in public information communication.[41]

> "The media has hit us really hard with this event in terms of the questions. They're very technical. And they're giving us very short turnaround times. And when I say very short, it's not anything for me to get an email at 10:00 a.m. in the morning asking for a Zoom interview at 11:00 a.m. for a 12 o'clock spot."

- Information sharing and coordination between the UC JIC, VDH Office of Communications, and Governor's Office were strained. The VDH Office of Communications had set up what they termed a JIC in the early days of the pandemic,

[41] Reported in JIC Trend Analysis Report. April 26, 2020.

but when the VDH-led task force transitioned into a UC, VDEM and VDH essentially operated JICs in parallel at separate locations, rather than operating collaboratively in one statewide JIC. As a result, the Governor's Office in particular struggled to figure out who they should be communicating with. Adding to the confusion, the Governor's Office often made announcements in press conferences that had not been coordinated with either VDEM or VDH (e.g., that VDH would enforce the mask mandate in public buildings). Furthermore, media outlets knew there were three separate public information entities, so all three would get the same media request. In multiple instances, one entity would provide a general response, while another would give a detailed one—leading to at times conflicting information going to the public.

- Responding to media inquiries was extremely time-consuming and resource intensive, especially for SMEs. The media's response to the COVID-19 pandemic was unprecedented, which is not surprising given the unprecedented nature of this event. The media's response was unique because of the highly technical nature of most media inquiries, the unrelenting pace of inquiries over several months, and the demand for quick responses. The UC JIC did not have pre-scripted messages like they do for other disasters and media questions, and they were not prepared or qualified to address specific questions on epidemiology, surveillance, and testing, for example. Rather, responses to media requests often necessitated input from SMEs in infectious disease epidemiology and other technical disciplines. The small number of these SMEs within VDH were already fully engaged in activities to track the virus, understand the epidemiology, and mount an appropriate public health response.
- VDEM and VDH were using different incident management software tools. About a year prior to the pandemic, VDH had onboarded the VEOCI platform, while VDEM was using WebEOC. VDEM leadership recognized that the VEOCI platform was much more dynamic and adaptable to support the media and public information requirements of the pandemic and adjusted the process to enable the use of the VEOCI platform.

Stabilization of UC JIC functions

Although coordination challenges between the UC JIC, VDH Office of Communications, and Governor's Office persisted through 2020, UC JIC operations began to stabilize by mid-April. By this time, the UC JIC developed standard operating procedures (SOPs) and standard operating guidelines (SOGs) for the pandemic, which integrated component operations into VEOCI to support virtual operations. Through enabling better collaboration with the AFN officer (AFNO), the SOPs and SOGs also ensured products and services accounted for the needs of AFN communities. The UC JIC also began to publish a weekly internal media trend report—called the JIC Trend Analysis Report—that was distributed to all UC JIC components and partners including the Governor's Office. The JIC Trend Analysis Report, which was noted as a best practice to continue for future activations, identified the most frequent topics of questions and concerns brought up in calls to the VDH call centers and 2-1-1, as well as social media trends and media queries. Some examples of common issues/questions include:

- Testing (e.g., requirements, locations, time to receive results, and insurance coverage)
- Guidance regarding potential exposure
- Guidance regarding traveling and allowable activities
- Rent/mortgage relief
- Obtaining PPE
- Complaints and reports about violations of business compliance and workplace safety (e.g., lack of PPE, insufficient social distancing)

Some topics were more prevalent at different points during the pandemic:

- Obtaining PPE (April and May)
- Face covering requirements, enforcement, penalties, and waivers (June and July)
- Clarifications of the new restrictions (November)
- Vaccine availability (December)

Additionally, the JIC Trend Analysis Report captured notable concerns and unresolved issues from the HEWG and the AFNO.

Ironically, the virtual operations necessitated by the pandemic likely improved state agency participation in the UC JIC. This was the first disaster in which the VEST requested public information officers from other state agencies under the authorities proscribed by EO-41. Under the SOPs and SOGs developed for the pandemic, each JIC member was assigned a subject matter area, which allowed them to work at their own pace and continue doing some work at their own agency.

Figure 22. Snapshot of JIC activity (from December 17, 2021, UC Situation Report)

COVID-19 Joint Information Center

Source	Total Calls for December	Total Calls Since Activation
2-1-1 Public Inquiry Line	8,980	131,720 (includes phone, email and chat)
VDH Call Centers	7,058	112,787
Total	**16,038**	**244,507**

Source	Total Inquiries since 3/17/2020
JIC Mailbox	4050+

Health Equity

"We're all in this together" was a popular refrain during the pandemic, but it contradicts the harsh reality that racial and ethnic minority groups bore far more of the disaster burden than other communities (see Figure 23). This was due, in part, to deeply rooted inequities in society, which influence and are influenced by the practice of emergency management and public health preparedness and response.

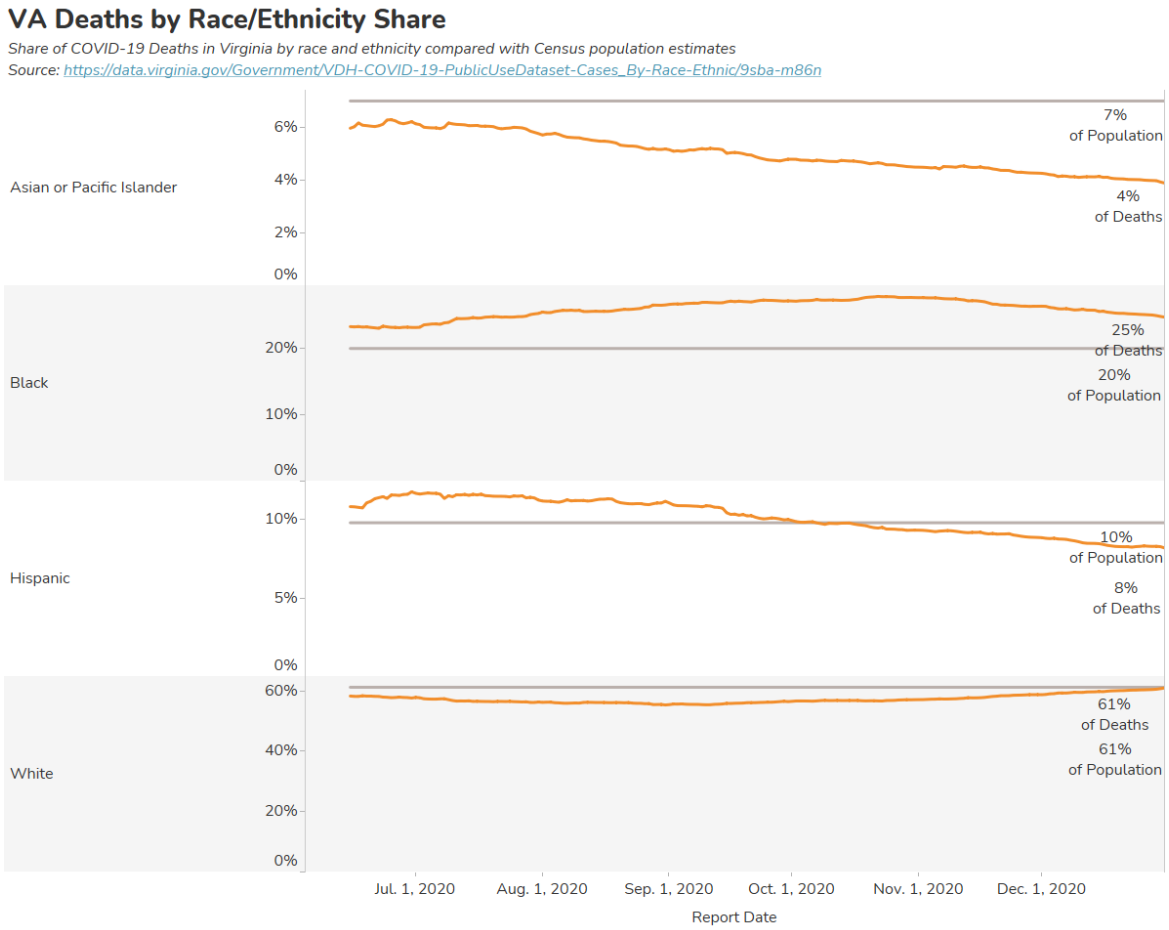
> "I…have input on what we spent the CARES Act money on, and I said, an overwhelming problem is that some of the issues that we're going up against are actually systemic preexisting barriers and issues. And so, in order to make it better during COVID, we have to try and tackle some of these big-ticket items that were not addressed adequately before."

In recognition of these inequities and to mitigate them, UC established the HEWG to serve as the commonwealth's first-ever coalition during an emergency response. The mission of the HEWG was to ensure a health equity lens was applied to UC decision-making during Virginia's COVID-19 response, and to advocate for social justice and equity in UC activities and decisions through command-level engagement. Its target was to cultivate trust among UC entities to ensure better engagement and to raise awareness of gaps within the response that centered on social injustice and inequity. Membership of the HEWG consisted of social services groups, community organizations, nonprofit organizations, and other stakeholders involved in diversity and inclusion efforts. The primary triggers or driving factors for creating the HEWG included:

- Emerging public health concern around COVID-19.
- The desire of key stakeholders to ensure a health equity lens was applied to this specific crisis (as it had not been for other crises).
- The known value of adding a health equity lens to crisis management.

The HEWG was led by the COVID-19 Equity Leadership Task Force (Task Force), which included the VDEM Chief Deputy State Coordinator, VDH Director (acting) of the Office of Health Equity, and the Virginia Chief Diversity, Equity, and Inclusion Officer. During the height of the pandemic, the Task Force met twice every day, and the HEWG met weekly to review policies, provide real-time learning opportunities, review communications campaigns, and ensure small-, women-, and minority-owned businesses were leveraged in the response and recovery.

Figure 23. Percentage of VA deaths from COVID-19 by race/ethnicity compared to percent population[42]



[42] People who identify as "other race" or "two or more races" are not shown; collectively they represent 4% of the population and 2% of deaths from COVID-19.

The HEWG contributed to some of the successes within the COVID-19 pandemic response. Key activities conducted by the HEWG include:

> Excerpts from JIC Trend Analysis Report:
>
> "Expanded testing strategies and plans…are missing an equity lens. If implemented without equity considerations, this plan will further exacerbate existing detrimental impacts on African American, LatinX, immigrant, and rural communities."
>
> "Messaging and messengers utilized to present public health information (town halls, press conferences, public messaging, all media formats) still lack diversity. Communities of color have an inherent distrust in receiving information when most of those presenting to the public are white faces."

- Collaborated with the Private Sector Team to secure resources, such as PPE, for community engagement events;
- Provided inputs to the JIC Trend Analysis Report to highlight current activities, areas for improvements, and public concerns regarding inequities associated with issues such as PPE distribution, communications, and testing access;
- Developed the COVID-19 Testing and Contact Tracing Health Equity Guidebook, which provided guidance on implementing culturally appropriate community testing and contact tracing services in a manner that was inclusive of elevated-risk individuals and communities through collaboration with VDH and the Virginia Office of Diversity, Equity, and Inclusion;
- Conducted an evidence-based pilot program using community data provided by the Deloitte Health 360 Initiative to support localities by providing PPE, testing, and other resources to historically underserved and disadvantaged communities, as well as training materials for emergency managers and local government; and
- Collaborated with numerous committees and working groups within the UC to promote the provision of culturally and linguistically appropriate services to communities in need.

Health Equity Pilot Program

> "…how do you fix this systemic institutional racism that has impacted our ability to give life-saving advantages to people of color, like how do you—how do you even start to fix that?"

Using the Deloitte Health 360 Initiative social vulnerability tool, the HEWG identified and reached out to 71 priority localities. Of those 71 localities, 65 committed to implementing the program, and 49 have held community engagement events to distribute resources (as of November 2020). Under the pilot program, the HEWG provided 800,400 masks and 690,000 bottles of hand sanitizer, as of November 2020.

In December 2020, VDEM implemented Phase Two of the pilot program using funding received from the FEMA emergency management performance grant supplemental (EMPGS). With

these funds, VDEM helped support 37 local governments with COVID-19 mitigation efforts.[43] Though the localities receiving funds had discretion in how to use them, VDEM encouraged using the funding for the following activities:

- Integrate ongoing public health and emergency management COVID-19 efforts
- Build a resilience/mitigation plan
- Conduct an equity/social vulnerability analysis
- Develop partnerships with nonprofit and faith-based organizations

The HEWG held technical assistance sessions with local emergency managers to share ideas with one another. The goal was to spur more creative and innovative ideas than just purchasing PPE to help slow the spread of COVID-19 in the hardest hit areas.

Support for at-Risk Populations

The COVID-19 response not only facilitated the development of the HEWG but also elevated the need for support of all at-risk populations.

> "I think we're going to be focusing more on making sure that testing is done in an accessible way, and not just for people with disabilities, but also, people with limited English proficiency, people who are extremely economically disadvantaged, people who are homeless…trying to draft guidance for equity in selection of testing site locations, and how to conduct testing in an accessible manner. That work will be difficult. Because people who are not used to working with populations with Access and Functional Needs, they often don't—they don't ask those questions. And so, getting that in on a planning stage is very important. So, it's baked in and not an add-on later. So that will be difficult and important."

Access and functional needs

The AFNO position was elevated into a new command-level position within the UC structure. The AFNO provided information and best practices to interagency partners, the Governor's Office, and the JIC on accessibility needs as requested. The AFNO also provided subject matter expertise to other work groups, such as the Pharmacy Service Sub-committee Workgroup and the HEWG. By being elevated within the UC structure, the AFNO was more heavily engaged in UC discussions and was able to provide subject matter expertise and prompt considerations on various access needs that are often siloed within ESF #6. In addition, the AFNO provided inputs to the JIC

[43] All local governments receiving funding were part of the pilot program. They used a vulnerability index developed by Deloitte to tier the localities and provided funding to the top 37. Large jurisdictions received $75K, medium-sized jurisdictions received $50K, and small jurisdictions received $25K. The 37 localities represent more than half the cases, hospitalizations, and deaths across the state.

Trend Analysis Report for testing accessibly (i.e., transportation to and accommodations at testing sites), mental health services, and alternative care provision to ensure continuity of care.

State Feeding Taskforce

ESF #6 established a State Feeding Taskforce (SFT) early in the pandemic to address the needs of those experiencing food insecurity and to mitigate an increase in food insecurity due to loss of income and the closing of schools, childcare facilities, and adult day care centers that provide meals to qualifying individuals. Through collaborations with UC entities, interagency partners, community partners, and other key stakeholders, the SFT developed the COVID-19 Food Security Framework to address its objectives. Originally a relatively small taskforce, the SFT expanded in size rapidly. As it expanded, efficient operations coordination and communication became a major challenge. The SFT operated within the VEST structure, but multiple groups within the UC structure were addressing similar objectives as the taskforce, highlighting the lack of communication between operating groups.

Virtual Operations

Aside from its longevity, the most unique aspect of the pandemic response was the need to manage it in a virtual environment. VDEM leadership recognized the potential workforce challenges prior to the Governor's declaration of a state of emergency. In early March, a VDEM employee tested positive for the COVID-19 virus, which prompted a number of additional employees to go into quarantine as close contacts. At the time, the VDEM State Coordinator was also in isolation following a trip to Europe.

> "I have a greater appreciation for technology even though it has its challenges. I don't know what we would have done if this would have happened even like 10 years ago. With all of the tools that are out there, just makes it really easy to communicate."

Fortunately, VDEM had recent experience with remote operations. VDEM moved into a new headquarters (HQ) building in the fall of 2019. Between five or six weeks elapsed between vacating the old HQ and moving into the new building. VDEM had invested in the IT infrastructure to support remote operations so that staff could work from home during this time.

VDEM also acted quickly to reconfigure the EOC to support a limited number of essential personnel. They implemented temperature checks, anti-viral fogging twice a week, high movement HEPA filter machines, and hand-washing stations in the EOC and HQ.

> "I think one of the other most frustrating parts is we really didn't have a platform to share data or documents or information with, for example, the National Guard."
>
> "Extremely challenging not being able to read body language."
>
> "When we obviously are in a situation where we can all work at the VEOC…there's the ability to just take like 10–20 steps and be able to talk to somebody that you need to get information from."

However, even though the technology was in place to enable synchronous discussions with partners and team members, VDEM initially lacked processes and procedures for managing information flow, coordination, and communication within a virtual environment. This hindered collaboration early on and increased the time necessary for information to flow through various channels. Further, technology could not compensate for the subtle information cues that are not exchanged when staff are unable to meet face-to-face in the EOC. Many staff noted the absence of an intangible quality to the communications because staff had to correspond in a virtual environment.

Mental health implications

Operating in a virtual environment had a profound effect on the mental and emotional wellbeing of staff. Staff found it very hard to disengage from work, which led to longer workdays. For example, commute times are built in to a normal workday, but in the virtual COVID-19 response environment, staff spent this time working. This propelled a constant need to be vigilant for incoming information and to process and distribute the information to relevant entities. The virtual work environment also elongated the time needed to transition teams as well as prompted a hectic learning curve for those assuming the roles for the first time.

> "In this virtual environment…I work even longer hours, because you get going and you're already at home; so you don't have to stop to drive home. So, you end up working more hours, because it just doesn't stop."
>
> "This has been, basically, learning a new job, a completely new full-time job, with only remote support."

Finance/Recovery

The Coronavirus Aid, Relief, and Economic Security Act (CARES Act) provided over $2 trillion in stimulus funding to mitigate the profound economic impact of the pandemic. It included $150 billion in funding for state and local governments, $3.3 billion of which was distributed to Virginia. Some examples of programs implemented in Virginia include:

- The Virginia Rent and Mortgage Relief Program (RMRP), which provides rent and mortgage payments to residents who are facing eviction or foreclosure
- The Rebuild VA Economic Recovery Fund, which supports small businesses and nonprofits affected by COVID-19
- Relief funding to local governments
- Relief funding to support LTCFs in their implementation of new guidelines and testing requirements due to COVID-19
- Distribution of COVID-19 vaccines, upon approval
- Increasing access to child care and increasing financial support for child care providers to address additional operating costs from implementing COVID-19 related health and safety requirements
- Supporting K–12 public schools in implementing preparedness and response measures, including testing and cleaning supplies, PPE, and distance learning technology
- Unite Virginia, which is a statewide technology platform designed to connect vulnerable Virginians to health and social services
- Funding for adult day programs that provide support services for adults with developmental disabilities
- Supporting for public and private universities and medical centers in Virginia to implement preparedness and response measures, including testing, sanitization and cleaning, PPE, and infrastructure for telework and distance learning
- Support for financial relief for municipal utilities
- Support for Virginia food banks
- Re-Employing Virginians (REV) initiative to provide scholarships for workforce training or community college programs in five essential industries: health care, information technology, skilled trades, public safety, and early childhood education
- Relief support for members of the Virginia Association of Free and Charitable Clinics (VAFCC), including PPE, cleaning and sanitation, increased staffing, and telehealth technologies
- Relief support for home health care providers serving high-risk populations

Additionally, the commonwealth received over $2.4 billion in FEMA post-disaster hazard mitigation grants.

Lack of statewide coordination

Political leadership was deeply involved in dictating funding decisions through the budgeting process and directing disaster funding—something that has not happened in previous disasters. For example, when the Governor declared a state of emergency due to the pandemic on March 12, the Office of Planning and Budget (OPB) reduced the sum sufficient outlined in the VA Code from $12M to $10M. Once the CARES Act funding became available, Virginia moved all obligations to the CARES Act. However, the CARES Act had very specific guardrails

in terms of allowable expenses. Concurrently, FEMA disaster funding also became available following the national disaster declaration, which had significantly more flexibility in terms of allowable expenses. However, OPB was reluctant to access the FEMA disaster funding available to support the response,[44] since it initially required (a) states to match 25 percent of the funding and (b) states/localities to pay the money up front and then get reimbursed by FEMA.

This lack of a coordinated approach on the best way to use the various funding sources led to operational issues given the challenges in procuring supplies of PPE and other scarce resources. For example, at the height of the supply chain failure, the commonwealth had very limited time to respond to a quote before a vendor would move on to other states or other countries. This left senior executives with no time to weigh options, negotiate deals, and make decisions. Additionally, Virginia's early decision to use CARES Act funding for resources such as PPE and testing, which were allowable expenses under the FEMA grant, meant that less funding was available for intangible items such as equity and direct funding for localities. The FEMA funding also authorized $70M for VDEM to cover administrative costs during the recovery.

Furthermore, in previous emergencies, the VDEM State Coordinator typically had significant leeway in releasing funds to implement strategies to achieve incident objectives. However, during COVID-19, the State Coordinator had to get pre-approval from DPB, which was not always granted. For example, when Virginia was ranked 49th among states in terms of testing, other states were drawing down FEMA money to have their National Guard units support testing. However, the UC could not get this mission approved until the Governor's Testing Task Force advocated for it.

The unprecedented involvement of political leadership in funding decisions did not abate as the pandemic progressed. During the General Assembly special session in the fall of 2020, the legislature became heavily engaged in decisions about how remaining CARES Act funds should be allocated, directing the Governor and state agencies in the proposed budget to cover expenses associated with PPE, vaccination, and cleaning and disinfecting, thereby limiting the VEST/UC's flexibility in allocating CARES Act funding to address operational objectives.

[44] Initially, CARES Act funds were not allowed to cover the 25 percent match. Eventually, the Department of the Treasury allowed CARES Act funds to be used for the match, but that decision initially came from a tweet from the President, not in writing. The Department of Planning and Budget was reluctant to move to FEMA grant funding until that decision was made official, which took several weeks.

Recovery funding alignment was inconsistent across state agencies

Virginia would have benefited early on by setting up a Joint Recovery Committee to look at all funding sources across state agencies. Within the UC, the Recovery Section was only focused on FEMA programs. In addition to CARES Act and FEMA grant funds, other federal funding was made available to agencies, such as the VDACS and Housing and Community Development, to support COVID-19 recovery programs. Finally, the Economic Crisis Strike Force under the direction of the Secretary of Commerce and Trade was tasked with developing a strategy for reopening the economy with private sector input.

Recordkeeping

By all accounts, the logistics and procurement teams performed exceptionally, primarily due to lessons learned and changes made following Hurricane Florence. In mid-summer, logistics and procurement were managing over 1,700 missions and had grown from teams of eight to nine people (logistics) and three people (procurement) to upwards of 100 personnel.

The volume of missions exposed a gap in financial record keeping. The Logistics and Finance sections tried to add ad hoc functionality to WebEOC, which is the system of record for missions but is not a finance system. Another workaround implemented by the Logistics and Finance sections was to maintain records in Sheets or Google Docs so that everyone could access them. But given the pace and volume of missions, Logistics did not have the time or personnel to stay current.[45]

Another challenge was understanding VDH's needs and executing them within contracts. Logistics and Procurement had to translate complex technical language into something executable as a scope of work. This required significant coordination with VDH SMEs, which was complicated by the need to coordinate virtually due to physical distancing requirements.

[45] Staff noted that the expected implementation of Microsoft Teams may address some of these challenges.

Appendix A: Acronyms

AFN	access and functional needs
AFNO	AFN officer
AAR	after-action report
ACFs	alternate care facilities
ASPR	Assistant Secretary for Preparedness and Response
ATL	Atlanta's Hartsfield-Jackson International Airport
CDC	Centers for Disease Control and Prevention
CRCs	Chief Regional Coordinators
COVEOP	Commonwealth of Virginia Emergency Response Plan
CARES	Coronavirus Aid, Relief, and Economic Security
CHIME	COVID-19 Hospital Impact Model for Epidemics
CBP	Customs and Border Patrol
DTRA	Defense Threat Reduction Agency
DCLS	Division of Consolidated Laboratory Services
EMPGS	emergency management performance grant supplemental
EM	emergency manager
EMS	emergency medical services
EOP	Emergency Operations Plan
ESFs	Emergency Support Functions
EUAs	Emergency Use Authorizations
EO	Executive Order
FEMA	Federal Emergency Management Agency
FDA	Food and Drug Administration
GIS	geographic information system
GOARN	Global Outbreak Alert and Response Network

HQ	headquarters
HHS	Health and Human Services
HCCs	health care coalitions
HEWG	Health Equity Working Group
IHME	Health Metrics and Evaluation
HNL	Honolulu International Airport
IMT	Incident Management Team
ISP	incident support plan
ICU	intensive care unit
JFK	John F. Kennedy International Airport
LHD	local health district
LAX	Los Angeles International Airport
LTCF	long-term care facility
NIOSH	National Institute for Occupational Safety and Health
OPB	Office of Planning and Budget
ORD	O'Hare International Airport
PPE	personal protective equipment
POC	point-of-care
PPS	point prevalence surveys
PCR	polymerase chain reaction
PHEIC	Public Health Emergency of International Concern
REV	Re-Employing Virginians
RMRP	Rent and Mortgage Relief Program
RNA	Ribonucleic Acid
SFO	San Francisco International Airport
SEA	Seattle-Tacoma International Airport
SitRep	Situation report
SOPs	standard operating procedures

SFT	State Feeding Taskforce
SNS	Strategic National Stockpile
SME	subject matter expert
TTX	tabletop exercise
UI	unemployment insurance
UC	Unified Command
VAFCC	Virginia Association of Free and Charitable Clinics
VDEM	Virginia Department of Emergency Management
VDH	Virginia Department of Health
VDSS	Virginia Department of Social Services
VEOC	Virginia Emergency Operations Center
VEST	Virginia Emergency Support Team
WHO	World Health Organization

Appendix B: Timeline

The following table lists all key actions/decisions from the start of the pandemic.

Date	Event
12/31/2019	Initial report of pneumonia cases with unknown cause in Wuhan, China
1/8/2020	CDC issues HAN to clinicians to look out for patients with respiratory symptoms and travel history to Wuhan, China
1/10/2020	WHO issues first guidance on the novel coronavirus
1/12/2020	China makes genome sequencing of novel coronavirus publicly available
1/13/2020	First case of novel coronavirus outside of China (Thailand).
1/17/2020	U.S. implements enhanced passenger screening at select US airports (LAX, SFO, JFK) for flights from Wuhan, China
1/20/2020	First case of novel coronavirus diagnosed in US (Snohomish County, Washington)
1/24/2020	First three cases detected in Europe (France)
1/24/2020	VEST Weekly Training: Pandemic Preparedness & Response
1/30/2020	WHO declares Public Health Emergency of International Concern
1/31/2020	US bans entry for most foreign nationals who had traveled to China within the last 14 days.
1/31/2020	Coronavirus Short & Long-term Planning (VDEM & VDH Leadership)
1/31/2020	HHS Secretary declares a Public Health Emergency (retroactive to January 27)
1/31/2020	VDH & VDEM Partner Call (Local EMs and Health Districts Statewide)
2/7/2020	VDH State Health Commissioner declares COVID-19 a disease of public health threat
2/7/2020	VDH & VDEM Partner Call (Local EMs and Health Districts Statewide)
2/11/2020	Novel coronavirus disease named COVID-19
2/14/2020	First case in Africa (Egypt)

Date	Event
2/14/2020	CDC announces intent to begin surveillance testing in New York, Chicago, Los Angeles, San Francisco, and Seattle.
2/17/2020	First deaths in US attributed to COVID-19 (California)
2/19/2020	First cases in the Middle East (Iran)
2/26/2020	First case in South America (Brazil)
2/26/2020	California announces the first case in the U.S. with no clear source of exposure.
2/26/2020	VDEM/VDH COVID-19 Task Force Initial meeting (VDEM, VDH, & Governor's Office)
2/28/2020	COVID-19 Discussion (VDH plan and proposed task force structure)
2/29/2020	US announces additional travel restrictions involving Iran, and increased warnings about travel to Italy and South Korea
2/29/2020	VDEM COVID-19 Coordination Meeting (VDEM Leadership)
3/2/2020	COVID-19 Cabinet Meeting, including Secretary of Finance (Layne), Secretary of Health and Human Services (Dr. Carey), and Secretary of Public Safety and Homeland Security (Moran)
3/4/2020	COVID-19 Task Force Meeting
3/4/2020	Governor Northam's first COVID-19 press conference
3/5/2020	VDH issues guidance on testing for COVID-19
3/6/2020	VDH & VDEM Partner Call (Local EMs and Health Districts Statewide)
3/6/2020	COVID-19 Coordination Meeting (VDEM/VDH Leadership)
3/7/2020	First confirmed case of COVID-19 in Virginia, a US Marine assigned to Fort Belvoir.
3/8/2020	VDEM staff tests positive for COVID-19
3/9/2020	COVID-19 Brief (VDEM/VDH Leadership)
3/9/2020	COVID-19 Cabinet Meeting
3/10/2020	VDEM COVID-19 Coordination Meeting (VDEM Leadership)
3/11/2020	WHO characterizes COVID-19 as a pandemic
3/11/2020	US bans all travel from 26 European countries

Date	Event
3/11/2020	The University of Virginia announces that classes will be moved online beginning on March 19
3/11/2020	JIC Discussion (VDEM leadership)
3/11/2020	VDEM All Hands Conference Call
3/11/2020	COVID-19 Task Force Meeting
3/11/2020	Health Equity Working Group established
3/12/2020	EO-51 issued: Declaration of a state of emergency.
3/12/2020	VEST elevates status to Orange: Partial Activation
3/13/2020	President Trump declares National Emergency
3/13/2020	Governor Northam announces suspension of all K–12 schools in the state beginning on 3/16 for a minimum of two weeks.
3/14/2020	US extends European travel ban to include Ireland and UK
3/14/2020	First death from COVID-19 in VA
3/15/2020	CDC releases guidelines recommending "that for the next 8 weeks, organizers (whether groups or individuals) cancel or postpone in-person events that consist of 50 people or more throughout the United States."
3/15/2020	Governor Northam announces a temporary state-wide ban on public gatherings of more than 100 people.
3/16/2020	White House Coronavirus Task Force advises all Americans to avoid gatherings of 10 or more people, to avoid going to bars and restaurants and to halt discretionary travel for 15 days.
3/16/2020	All K–12 schools closed statewide
3/16/2020	Supreme Court of Virginia issues a judicial emergency order continuing most civil and criminal cases to April 6
3/16/2020	State Corporation Commission issues an order directing utilities to suspend service disconnections for 60 days
3/17/2020	Public Health Emergency Order 1 issued: Declaration of Public Health Emergency; limiting the number of patrons in restaurants, fitness centers, and theaters to no more than 10 per establishment.
3/17/2020	COVID-19 Task Force begins planning for Alternate Care Facilities

Date	Event
3/18/2020	Canada and the U.S. agree to close its borders to all "non-essential traffic."
3/19/2020	U.S. State Department raises the global travel advisory to Level 4: Do Not Travel, warning Americans against traveling internationally and for those abroad to consider returning immediately.
3/19/2020	Governor Northam increases access to healthcare for Medicaid recipients and low-income households, waiving co-pays and expanding telemedicine access
3/19/2020	Tax deadlines for individuals and corporations pushed back to June 1, 2020
3/20/2020	EO-52 issued: Certain provisions of the Code of Virginia waived to permit hospitals and nursing homes to increase bed spaces without the need to seek further approval
3/23/2020	EO-53 issued: Effective 11:59pm on March 24, all public and private in person gatherings of 10 or more individuals are prohibited; schools will remain closed for the rest of the school year, and non-essential businesses closed.
3/23/2020	Public Health Emergency Order 2 issued: All hospitals directed to stop performing elective surgeries or procedures to help conserve supplies of PPE.
3/25/2020	VEST elevates status to Red: Full Activation
3/26/2020	US reports more than 1,000 deaths
3/27/2020	President Trump signed $2 trillion COVID-19 economic stimulus bill.
3/27/2020	CDC recommends that travelers avoid all nonessential international travel
3/29/2020	President Trump extends administration guidelines on social distancing until April 30.
3/30/2020	EO-55 issued: Stay-at-home order, to be effective until June 10 unless amended or rescinded by a further executive order.
3/31/2020	Roughly 80% of all Americans in 35 states under stay-at-home orders
4/1/2020	Virginia Department of Education waives some requirements for graduating seniors
4/1/2020	Locations for Alternate Care Facilities announced – Dulles Expo Center, Richmond Convention Center, and Hampton Roads Convention Center.

Date	Event
4/2/2020	The number of COVID-19 cases worldwide surpassed 1 million, with more than 51,000 deaths globally
4/2/2020	President Trump authorizes use of Defense Production Act for production of ventilators and PPE
4/2/2020	Major disaster declaration issued for Virginia
4/4/2020	CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g., grocery stores and pharmacies)
4/8/2020	Governor Northam issues an executive directive instructing Alcoholic Beverage Control Authority to defer the collection of license renewal fees for 90 days.
4/10/2020	Governor Northam announces plans to establish a nursing home task force
4/12/2020	Storms with gusty winds and heavy rain in Southwest Virginia results in downed trees, power outages, and flooded roadways.
4/13/2020	EO-56 issued: Primary elections scheduled for June 9, 2020, postponed to June 23, 2020
4/15/2020	Governor Northam extends EO-53 to May 8, 2020
4/15/2020	Governor Northam announces $70 M in funding to expand access to child care
4/17/2020	EO-57 issued: Licensing restrictions and oversight requirements for medical professionals and students relaxed; use of telemedicine expanded
4/20/2020	Statewide testing task force announced
4/22/2020	General Assembly approves a proposal from the governor to allow limited inmate releases to cut down the population of people in jails vulnerable to COVID-19
4/23/2020	EO-58 issued: Eases access to critical medical care for Medicaid recipients
4/23/2020	Governor Northam extends the current ban on elective surgeries by one week, until May 1
4/24/2020	EO-59 issued: Postpones general and special elections scheduled for May 5, 2020, by two weeks

Date	Event
4/24/2020	Governor Northam unveils Forward Virginia blueprint for reopening and announces COVID-19 Business Task Force to provide advice and guidance to the Cabinet on a safe, responsible strategy for easing restrictions on businesses and individuals.
4/27/2020	CDC team arrives in Accomack County to assist with containing COVID-19 outbreaks among workers at two large poultry processing plants
4/27/2020	Governor Northam requests federal assistance in response to Eastern Shore Health District data showing a rising number of COVID-19 cases among Accomack County poultry plant workers
4/28/2020	EO-60 issued: Clarifies the limitations on liability for healthcare providers
4/28/2020	President Trump authorizes use of Defense Production Act to keep beef, pork and poultry processing plants open
4/30/2020	White House Coronavirus Task Force social distancing guidelines expire
5/1/2020	FDA grants emergency use authorization for remdesivir, which has shown promise in early clinical trials to help people with severe COVID-19
5/1/2020	Hospitals allowed to resume non-emergency medical procedures
5/4/2020	Governor Northam extends EO53 to the night of May 14th, but expects to begin some level of reopening afterward
5/8/2020	EO-61 and Order of Public Health Emergency 3 issued: Phase 1 easing of selected business restrictions due to COVID-19 to begin at midnight on May 15
5/12/2020	EO-62 and Order of Public Health Emergency 4 issued: Allows specific localities in Northern Virginia to delay entering Phase One of the “Forward Virginia” plan
5/14/2020	EO-62 and Order of Public Health Emergency 4 amended: Allows City of Richmond and the County of Accomack to delay implementation of Phase One of the “Forward Virginia” plan
5/15/2020	Phase One of "Forward Virginia" plan begins
5/18/2020	VEST transitions to Activation Level Orange (Partial Activation)
5/18/2020	Governor Northam announces that the city of Virginia Beach will be allowed to open its beaches to swimming and sunbathing, with restrictions

Date	Event
5/18/2020	Governor Northam Announces Education Work Group to Help Guide Process for Safe, Equitable Reopening of Schools
5/20/2020	CDC releases resources to assist states to re-open
5/21/2020	Heavy rain triggers extensive flooding in southwestern region of Virginia, prompting several evacuations and rescues by swift water rescue teams in and around the city of Roanoke
5/22/2020	City of Virginia Beach opens its beaches to swimming and sunbathing, with social distancing restrictions
5/25/2020	George Floyd, a 46-year-old African American man, died in Minneapolis in police custody
5/26/2020	Governor Northam announced new facial covering guidance that will go into effect on Friday 5/29 requiring people to wear masks in public
5/26/2020	A video of Mr. Floyd's arrest and death is widely shared on social media. The four police officers involved are fired. Hundreds of people protest in Minneapolis
5/27/2020	U.S. death toll passes 100,000
5/27/2020	Organized protests begin in other cities, including Los Angeles, Memphis, St. Louis
5/27/2020	Tropical Storm Bertha makes landfall just east of Charleston, SC, and tracks north, with heavy rain and some flooding in western Virginia
5/28/2020	The National Guard is mobilized in Minnesota
5/29/2020	Richmond, northern Virginia, and Accomack County join the rest of the state in Phase One of reopening
5/29/2020	EO-63 and Order of Public Health Emergency 5 issued: Requires everyone aged ten and over to cover their mouth and nose with a face covering when inside public buildings
5/29/2020	First night of large-scale protests in downtown Richmond
5/31/2020	EO-64 issued: Declares a State of Emergency due to civil unrest and institution of a curfew in the City of Richmond
5/31/2020	VEST transitions back to 24/7 operations

Date	Event
5/31/2020	Hundreds of thousands of people engaged in largely peaceful protests throughout the country. National Guard units deployed in more than 25 states to assist police departments, and curfews implemented in dozens of cities.
5/31/2020	Gov. Northam placed the Virginia National Guard on alert. Mayor Stoney announced an 8 p.m. to 6 a.m. curfew through June 3 in the city of Richmond.
5/31/2020	Protests outside of VSP headquarters prompted the VEOC to COOP to VDEM HQ.
6/1/2020	Statewide 1st amendment events continued throughout the day and into the evening across all regions. EO-64 was amended to include a curfew for Virginia Beach. Richmond Police deployed tear gas on protesters at the Robert E. Lee Monument prior to the curfew.
6/2/2020	EO-65 and Order of Public Health Emergency 6 issued: Phase 2 easing of temporary restrictions, except for City of Richmond and Northern Virginia, effective June 5
6/2/2020	United Daughters of the Confederacy removed statue in Alexandria commemorating Confederate soldiers.
6/3/2020	Water break at the VEOC delays return from VDEM HQ COOP site.
6/4/2020	Governor Northam announced the removal of the statue of Robert E. Lee from the City of Richmond
6/4/2020	Governor Northam announced plans to remove the Gen. Robert E. Lee statue on Monument Avenue. Mayor Stoney announces intention to remove all confederate statues on Monument Avenue.
6/5/2020	Phase Two of reopening begins at midnight, except for City of Richmond and Northern Virginia
6/7/2020	Hanover County man was arrested police and witnesses say he revved his engine and drove a pickup truck through a group of protesters in Henrico County.
6/8/2020	At Governor's request, Chief Justice suspends all eviction proceedings through June 28
6/8/2020	VEOC site at VSP HQ reopens
6/8/2020	VEST ends 24/7 operations

Date	Event
6/9/2020	Virginia releases guidance for phased approach to reopen K-12 schools
6/10/2020	Confederate memorial in Portsmouth and Jefferson Davis statue on Monument Avenue in Richmond torn down by protestors.
6/11/2020	Governor Northam provides guidance for reopening higher education institutions
6/12/2020	City of Richmond and Northern Virginia move into Phase Two of reopening
6/12/2020	Governor Northam announced support for agriculture- and forestry-based businesses during the COVID-19 emergency through the Governor's Agriculture and Forestry Industries Development (AFID) Fund Planning Grant program.
6/13/2020	Coronavirus Cases Spike Across Sun Belt. Arizona, Texas, and Florida are reporting their highest case numbers yet. As of Saturday, coronavirus cases were climbing in 22 states amid reopenings
6/15/2020	Governor Northam announced nearly $15 million for an Economic Resilience and Recovery Program.
6/18/2020	Governor Northam announced a plan that outlines the third phase of the "Forward Virginia" plan
6/19/2020	Governor Northam announced new guidelines and testing requirements for reopening long-term care facilities
6/23/2020	Governor Northam announced that the Commonwealth will move into Phase 3 on July 1, 2020
6/29/2020	Governor Northam launched the Virginia Rent and Mortgage Relief Program (RMRP) to assist residents who are facing eviction or foreclosure.
6/30/2020	Governor Northam amends the Phase 3 reopening guidelines to limit reopening of bars due to the spike of cases in other states
7/1/2020	Virginia moves into Phase 3 of its Forward Virginia Plan
7/13/2020	New U.S. coronavirus cases reached record levels: 20 states and Puerto Rico reported a record-high average of new infections, and five states — Arizona, California, Florida, Mississippi, and Texas — also broke records for average daily fatalities.
7/16/2020	Governor Northam announced the adoption of statewide emergency workplace safety standards in response to COVID-19.

Date	Event
7/22/2020	Gov. Ralph Northam and Virginia's U.S. senators request a team from the Center for Disease Control and Prevention to the immigration detention center in Farmville, where nearly nine out of every 10 detainees have tested positive for COVID-19.
7/27/2020	Governor Northam Announces $70 Million Rebuild VA Economic Recovery Fund for Small Businesses, Nonprofits Impacted by COVID-19
7/28/2020	Governor Northam announced distribution of $644.6 million in federal COVID-19 relief funding to local governments.
7/28/2020	Executive Order 68 issued: Places additional restrictions on the Eastern Region of the state (Virginia Beach, Chesapeake, Norfolk, Suffolk, Portsmouth, Hampton, Williamsburg, Newport News, Poquoson, James City County and York County), effective 12:00 a.m. on July 31, 2020
7/31/2020	Executive Order 69 issued: State of emergency to prepare and coordinate our response to Hurricane Isaias
8/4/2020	Governor Northam announced an interstate compact with Louisiana, Maryland, Massachusetts, Michigan, and Ohio to each spend $500,000 to purchase FDA approved rapid antigen tests,
8/5/2020	Governor Ralph Northam today announced the launch of COVIDWISE, an exposure notification app that will alert users who have been in close contact with an individual who tested positive for COVID-19
8/7/2020	Virginia Supreme Court Grants Temporary Statewide Eviction Moratorium through September 7
8/10/2020	CDC 10-person team arrived at a federal immigration detention center in Farmville to address coronavirus outbreak. One detainee died last week. According to ICE, 339 total detainees at the facility have tested positive for and 259 are currently under observation or in isolation.
8/11/2020	Governor Northam announced 18 communities will receive $278,000 in Virginia Main Street grants to accelerate economic revitalization.
8/13/2020	Governor Northam announced that Growth and Opportunity for Virginia (GO Virginia) will award over $5.5 million in grants to support projects to address economic and public health challenges created by COVID-19
8/18/2020	Executive Order 70 issued: to help mitigate the spread of COVID-19 in state-operated psychiatric hospitals

Date	Event
8/18/2020	Governor Northam proposed voting protections for the November election in light of COVID-19
9/10/2020	Governor Ralph Northam announced that localities in Hampton Roads will join the rest of the Commonwealth in Phase Three of the "Forward Virginia" plan.
9/25/2020	Governor and First Lady Northam Test Positive for COVID-19
10/7/2020	Governor Northam announced $12 million in additional funding from the CARES Act to Virginia's Rent and Mortgage Relief Program (RMRP).
10/7/2020	Governor Ralph Northam announced allocating $30 million in funding from CARES Act to improve broadband access in underserved localities.
10/8/2020	Governor Northam announced that Premium-PPE will invest $5.3 million to expand its operation in the City of Virginia Beach. Premium-PPE is now focusing solely on the production of PPE, shifting its full production to disposable face and surgical masks.
10/8/2020	Governor Northam announced a new allocation of more than $220 million in CARES Act to help K-12 public schools in Virginia, including testing supplies, personal protective equipment, sanitization, and technology for distance learning.
10/21/2020	Governor Northam announced $65.8 million in new funding to increase access to child care and support child care providers amid the ongoing COVID-19 pandemic.
10/23/2020	Governor Northam announced $22 million in federal CARES Act funding will be used to create a statewide program to distribute COVID-19 vaccines when approved.
10/30/2020	Commonwealth Receives $2,400,072 in Post-Disaster Hazard Mitigation Grants
11/9/2020	PFIZER AND BIONTECH Vaccine candidate was found to be more than 90% effective in preventing COVID-19 in participants in the first interim efficacy analysis
11/9/2020	Governor Northam announces allocations in Federal CARES Act funds

Date	Event
11/13/2020	Governor Northam announced several additional measures to slow the spread of COVID-19: limit of 25 individuals for in-person gatherings, expanded mask mandate, on-site alcohol curfew, and increased enforcement
11/15/2020	Amended Executive Order 63 and Order of Public Health Emergency Five and sixth amended Executive Order 67 and Order of Public Health Emergency Seven
11/16/2020	Moderna vaccine candidate found to be 94.5% effective in preliminary results
12/10/2020	Governor Northam announced several additional measures to slow the spread of COVID-19: curfew from 12 a.m. and 5 a.m., a universal mask requirement, and limit on social gatherings to 10 people.
12/11/2020	FDA approves EAU for Pfizer vaccine for those ages 16 and older
12/14/2020	Virus distribution to states begins
12/14/2020	Executive Order 72 issued: stay at home between the hours of 12 a.m., implements a universal mask requirement, and lowers limit on social gatherings to 10 people. EO-72 will remain in place through January 31, 2020, unless rescinded or amended
12/18/2020	FDA approves EAU for Moderna vaccine for those ages 18 and older
12/22/2020	Governor Northam announced. Executive Order 74 issued: temporary changes to Virginia's Unemployment Insurance (UI) program by holding businesses harmless for the lay-offs that occurred during the pandemic

Figures

Tables