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Colorado Coronavirus Disease 2019 (COVID-19) After-Action Report (AAR)

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Executive Summary

The global pandemic caused by the novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus and the disease it caused, coronavirus disease 2019 (COVID-19), fundamentally changed the world and created critical challenges for those entities responsible for managing and mitigating its impacts. No one could have anticipated what the world ended up facing: COVID-19 was unprecedented in magnitude and disease presentation, ranging from asymptomatic to severe morbidity and mortality. Airborne transmission and the high transmissibility rates of SARS-CoV-2 made it hard, if not impossible, to control the spread despite the world's attempt to mitigate the spread to save lives. COVID-19 also defied public health, emergency management, government, and public health experts' understanding and assumptions of how a highly infectious disease might impact the United States, with extraordinary and cascading impacts on every aspect of society, resulting in unprecedented public health measures (e.g., non-essential business closures, school closures, and statewide stay-at-home orders). As the disease progressed and spread, the world labored to learn about and understand the virus; how to minimize its transmission; how to care for and treat those infected; how to understand and address the economic impacts; and how to maintain other critical activities needed for continuity of government, continuity of health care operations, and everyday life. It also occurred at a time in history when public information and public perception were influenced heavily by mis-, dis-, and mal-information.

In late 2019 and early 2020, Colorado was preparing for the novel SARS-CoV-2 virus, which had been identified in China, to reach the state. To help Coloradans, the State of Colorado—led by Governor Jared Polis—mounted a whole-of-state government response effort before the first case of COVID-19 was identified in the state. The state worked to coordinate response efforts with those of the federal government and Colorado localities. It also implemented critical economic, recovery, and social safety net responses. Due to the unprecedented nature and magnitude of the pandemic, and the fact that the virus, its impacts, and the challenges that arose were rapidly changing, the state needed a decisive, nimble, flexible, scalable, and innovative economic, social safety net, and public health response at a previously unprecedented speed, scale, and duration. Additionally, across the country, plans, assumptions, and scientific understandings related to COVID-19 were upturned at an almost daily rate. For example, pandemic plans did not anticipate a virus so severe that it would critically impact supply chains, resources, and staffing worldwide. The state had to rapidly make many decisions in this very uncertain environment. Furthermore, Colorado and other states expected the federal government would implement actions in support of the states, but actions and guidance from the federal level were at times absent or delayed.

As such, many of the plans enacted, structures implemented, and activities undertaken by the state were new; where plans existed, they were often recreated or modified to reflect the unique considerations of the pandemic. The state used a data-driven approach to carefully balance disease suppression strategies with economic considerations to ensure that hospitals did not become overwhelmed and that mitigation actions minimized negative impacts to determinants of health such as availability of healthcare, employment, education, and the economy.

The state achieved many successes in its response to COVID-19, such as being one of the first states to support drive-through and mass testing efforts in the US to identify community spread of the disease; implement case investigation on an unprecedented scale; provide unified, consistent, and transparent information to the public; provide innovative economic support; and develop a solution to personal protective equipment (PPE) sourcing and distribution to support all state agencies and many response partners' needs. It also encountered many unforeseen obstacles that do not have simple solutions and took concentrated and long-term efforts to address and implement.

While the next pandemic will likely be different than the COVID-19 pandemic, it is essential to document the COVID-19 response and to take time to reflect upon the response and recovery to help inform future efforts. In support of this, the Division of Homeland Security and Emergency Management (DHSEM) within the Colorado Department of Public Safety (CDPS), on behalf of the State of Colorado, initiated a whole-of-state government after-action analysis effort. DHSEM contracted with an independent entity (CNA) with expertise in public health and emergency management critical incident analysis to lead the effort.

To conduct the after-action analysis, CNA reviewed relevant response and recovery documents, examined open-source information, and interviewed over 125 people involved in Colorado's COVID-19 response, including individuals from the Colorado Governor's Office, the Lieutenant Governor's Office, Colorado state agencies, local public health and emergency management agencies, academic partners, and other public health partners. CNA synthesized and analyzed the information into key themes and conducted root cause analysis to trace the issues back to their underlying causes. This report summarizes the findings of the CNA after-action analysis and presents recommendations for enhancing the state's response to future pandemics and other public health threats and emergencies. These findings are not comprehensive of all activities undertaken and lessons learned by the state; rather, they include those aspects of the state-level response that interviewees felt most important to highlight and raise in a statewide after-action report and that the analysis team believed merited awareness across all state agencies. Individual Colorado state agencies should and are conducting internal after-action analyses that will reveal additional findings and next steps for their agencies. Partners organizations (e.g., local governments and hospitals) should do the same and share any relevant findings with the state.

Key findings of the whole-of-state after-action and priority next steps are summarized in the following sections. The state has committed to carefully considering the findings and recommendations presented in this report and, where it has not begun to do so already, work to implement the necessary changes in policies, programs, and plans to increase future preparedness.

Summary of Key Findings

- The incident command structures of the Governor's Policy Group and Unified Command (UC) (consisting of the Colorado Department of Public Safety (CDPS) and the Colorado Department of Public Health and Environment (CDPHE)), led by the governor and supported by lieutenant governor, the Governor and Lieutenant Governor's Offices, and all state agencies, greatly facilitated an effective whole-of-state government response to the public health emergency and should be institutionalized.
- Throughout the response, the governor's stated mission was to protect hospital capacity while also balancing economic and social well-being. With the governor, policy group, and UC unified to reach this goal, state agencies were able to effectively execute their roles in support of the mission and blunt the full scale of possible public health and economic impacts to the state. Today, COVID-19 recovery efforts are well on their way and will continue for years to come.
- The whole-of-state government effort engaged all state agencies, many laboring above and beyond as they found roles in pandemic response and recovery that were not previously envisioned. The state also formed new relationships with the private sector that proved beneficial. If formalized, socialized, and maintained, these new roles and relationships should prove helpful moving forward.
- Some localities expected to be included in the UC and state-level decision-making. However, the rapid pace, magnitude, wide-scale nature, and severe impacts of the COVID-19 pandemic (which touched every aspect of life in Colorado); shortfalls in the federal response; the mission to protect hospital capacity; and dramatically different opinions across the large number of local governments and local authorities necessitated strong and decisive leadership and rapid action from the state that precluded in-depth engagement of all localities. A shared understanding of local versus state roles in a large-scale, statewide emergency, guided by an objective matrix establishing requirements for state or local response, would greatly aid in setting expectations and could improve relationships and collaboration between state and local entities.
- Innovation was a key aspect of the state's public health and economic response. The state developed novel approaches, such as the COVID-19 relief fund, that could prove extremely useful if a similar approach is taken in future emergencies.

However, at times innovation had to occur where plans already existed (e.g., state-level pandemic plans and local Strategic National Stockpile ((SNS)) distribution plans). Both nationally and within Colorado, pandemic response plans did not anticipate a novel and widespread pandemic with such unique characteristics (i.e., high virulence and disease severity with asymptomatic transmission), meriting a wholesale review and update of the state's pandemic and emergency response plans based on lessons learned from COVID-19. Updated pandemic response plans should be flexible and include scaling/tiering of responses to encourage nimbleness, rightsizing, and fiscal conservation.

- The pandemic highlighted and exacerbated the disproportionate impacts a disaster can have on at-risk, disadvantaged, and traditionally underserved groups and vulnerable populations. The state employed a multitude of mechanisms—most critically, community partnerships and targeted messaging—to reach these populations and increase equity and access to COVID-19 testing, vaccination, and treatment. The state has made great strides in institutionalizing its approach to health equity and supporting many different types of vulnerable populations and has created a new Health Equity Branch in CDPHE's Disease Control and Public Health Response Division (DCPHR) to increase capacity to work with the community. The state should continue to work to outline and document how to integrate the Office of Health Equity in CDPHE and the new Health Equity Branch in DCPHR into emergency planning, response, and recovery efforts to ensure vulnerable populations remain a focus of emergency management moving forward.
- CDPHE had to dramatically scale up its disease control and emergency response workforce, adding over 1,000 new people to meet the magnitude of the response. CDPHE also needed human resources, finance, information technology, and mid-level management support to match the massive scaling (almost doubling) of the department. Since the end of the public health emergency, CDPHE has determined the right level of staffing to significantly strengthen its disease control and public health response functions, given lessons learned in the pandemic. Other state agencies and the Governor and Lieutenant Governor's Offices experienced unmet staffing needs, which further contributed to the extraordinary stress levels and burnout that state employees experienced. Many lessons have been learned in how a state agency can scale up quickly, adding new employees, contractors, and staffing agencies to meet the need. The processes should be added to plans and institutionalized. Additionally, the state should ensure that CDPHE and the local public health systems are able to maintain the service levels provided in part by the state's investment. Some state agencies require a framework (and then training on the framework) to help them determine if and how they can bring on additional staff for future emergencies.

- Consistent and accurate data were key for the state's executive decision-making. The Governor's Policy Group and the UC provided timely and accurate data that the governor and response leadership needed to make policy, strategic, and tactical decisions. These data were also shared with the public. Response leadership also captured goals, objectives, and key criteria for success in the Leader's Intent document, which was key to focusing and prioritizing the response, recovery, and social safety net efforts. Early efforts to improve the state's access to pandemic data (e.g., hospital status and capacity) supported a data-driven response. More recently, CDPHE has also made significant improvements that modernize disease surveillance systems to provide interoperability with the Centers for Disease Control and Prevention (CDC). However, shortfalls in response documentation and horizontal and tactical information sharing across DHSEM and CDPHE (below the command level) and with localities impacted the achievement of a common operating picture. Designating leadership to develop a data management and coordination strategy for and between agencies included in a UC would greatly benefit the state. The state should continue current efforts (e.g., those of the Office of Information Technology and Office of eHealth Innovation) to understand and map public health and other state agency data and continue to work to provide data interoperability between response entities.
- The rapid flow and frequent changes in virus and disease-related information, the politicization of the pandemic, and a crush of media requests posed extraordinary challenges for entities responsible for sharing information internally and with the public. The Colorado COVID-19 virtual Joint Information Center and the Governor's Office of Communications responded adeptly, with transparency, and in a unified manner to share information essential to lifesaving efforts and to maintaining public trust. Public communications were synchronized with the Leader's Intent and response priorities.
- Despite considerable barriers early on, the state rose to the forefront of SARS-CoV-2 testing efforts; many states and the federal government learned from Colorado's proactive and coordinated approach. A transparent process to prioritize limited resources (such as testing supplies) that includes considerations for critical infrastructure and continuity of government should be a component of the state's pandemic and other emergency operation plans moving forward.
- Efforts to increase, support, and distribute hospital capacity protected Coloradans from some of the health impacts of the COVID-19 disease. With this, Colorado has developed two new models for managing hospital capacity—the Combined Hospital Transfer Center (CHTC) and Staffing Shortage Fusion Center (SSFC)—that may serve as nationwide best practices and alternatives to expensive and resource-intensive alternate care sites (ACSs).

- The pandemic has dramatically changed many state agencies' approaches to the virtual work environment and continuity of operations (COOP), having demonstrated an ability to switch to virtual operations rapidly and effectively. The state has also learned much about protecting critical infrastructure and that COOP and emergency operation plans must consider state government self-reliance as anticipated federal support, such as the SNS, was diminished, delayed, and at times nonexistent during COVID-19.
- Confusion about emergency procurement arose due to a conflict between regulatory rules and procurement law and the unfamiliarity of some regarding emergency procurement authorities. At times, this prevented the use of emergency procurement processes and delayed acquisition of needed resources. Moving forward, the state should provide refresher training on emergency procurement to all procurement staff and officials with emergency procurement authority.
- Careful attention to procurements and vendor tracking prevented the state from becoming a victim of fraud and abuse. The state should document how it managed to surge staff and resources while preventing fraud, and it should ensure DHSEM, with expertise in emergency procurement, remains responsible for large-scale procurements in future emergencies. The state should also improve real-time tracking and encumbering of emergency expenditures against emergency funds.
- The state considered equity and the one-time availability of economic recovery funds and worked with the legislature to plan for economic recovery expenditures. The long-term mental, physical, and behavioral health impacts and associated recovery needs, however, are only just beginning to be understood. The state has endeavored to better understand these long-term impacts, such as long COVID. Future planning efforts should consider, model, and anticipate these needs and budget accordingly for increased services.

Priority Next Steps

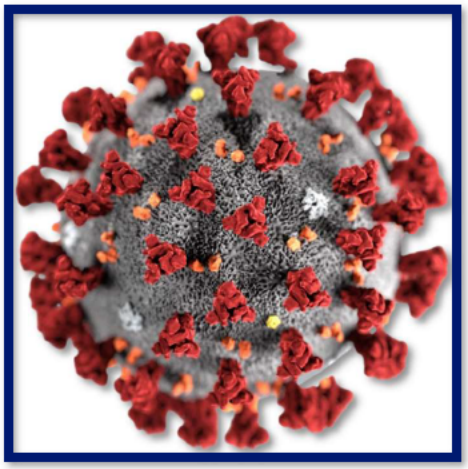
- Develop and implement an objective matrix for public health emergencies that identifies roles and responsibilities and set escalation and de-escalation criteria for local versus state control, as well as requirements for long-duration pandemics and public communications. As part of this, conduct outreach to localities on experiences integrating state-local efforts during COVID-19 and work to establish a shared understanding of roles and responsibilities between state and local entities for future emergencies.
- Address shortfalls in the use of emergency procurement through training and resolve differences between procurement law and regulatory rules.
- Integrate the emergency ordering system and accounting system of record.

- Conduct National Incident Management System/Incident Command System and UC training for all agency leadership that may participate in a UC and include in the training how to integrate the various sections of the UC between responding agencies.
- Revisit the role and structure of the Governor's Expert Emergency Epidemic Response (GEEERC) considering the role it played during COVID-19and its creation prior to the integration of public health into emergency management systems. Additionally, outline the responsibility of, and establish the expectation that, the CDPHE Chief Medical Officer and Executive Director can establish and convene an emergency advisory committee composed of experts selected based on the nature of the situation.
- Codify the authority of the Chief Medical Officer to activate crisis standards of care during an emergency in state statute.
- Continue to develop plans for surging staff, including temporary staff, for all state agencies. Include the ability to simultaneously surge administrative, payroll, budget, communications, legal, human resource, and information technology personnel in those plans. Capture the capabilities of state agency personnel that could support surge operations.
- Continue to codify the plans and organizational structures that proved effective for the COVID-19 response (e.g., Governor's Policy Group, the Governor's Council on Economic Stabilization and Growth, SSFC, CHTC) into relevant state emergency operations and public health response plans.
- Share and document the new roles of state agencies in emergency, economic, and public health response and recovery efforts.
- Revise state emergency operations, pandemic plans, and other relevant plans based on lessons learned during COVID-19.

Contents

Introduction

In late 2019, a novel coronavirus emerged in humans in the city of Wuhan, located in Hubei Province, China. Known as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the novel virus caused a wide range of illness in those it infected, ranging from no or mild symptoms to severe respiratory distress and death. On December 31, 2019, Chinese officials first notified the World Health Organization (WHO) about a pneumonia of unknown etiology circulating in Wuhan.[1] Over the next month, public health officials and medical providers cautiously monitored the situation and began a comprehensive epidemiological investigation to characterize the virus and the threat it posed to human health. On January 30, 2020, the WHO International Health Regulation Emergency Committee declared a Public Health Emergency of International Concern under the International Health Regulations due to SARS-CoV-2 and the disease it causes, known as coronavirus disease 2019 (COVID-19).[2]



SARS-CoV-2 (Source: CDC Public Health Image Library)

SARS-CoV-2 rapidly spread through China and into other parts of Asia and Europe; in Italy, hospitals became overwhelmed. As the virus spread, public health officials in the US closely monitored the situation and began preparing for its likely introduction into the US. This included public health officials and epidemiologists in the State of Colorado. On January 19, 2020, the first case of COVID-19 in the US was diagnosed in the State of Washington. Colorado reported its first positive SARS-CoV-2 test result on March 5, 2020.[3] Days later, on March 11, 2022, the WHO Director General declared COVID-19 a global pandemic.

Also on March 11, 2020 (following a verbal declaration the previous day), Governor Jared Polis issued Executive Order D 2020 003, declaring a state of emergency due to the presence of COVID-19 in Colorado and authorizing response activities associated with the emergency to enable state agencies to coordinate response, recovery, and mitigation efforts.[4] The state's first death from COVID-19 occurred later that week, on March 13, 2020.[5] Across the nation, states began establishing field hospitals and alternate care sites (ACSs) in preparation for the possibility that hospitals would be overwhelmed.

Since January 2020, there have been over 103 million confirmed cases of COVID-19 in the US, resulting in over 1.13 million deaths.[6] In Colorado alone (as of June 2023), there have been approximately 1.785 million cases resulting in over 15,000 deaths, and COVID-19

became the third leading cause of death in 2020 and 2021 in Colorado and across the country.[7] These numbers would likely have been much higher without the state's mitigation actions. Additionally, reported cases only represent a fraction of the true number of SARS-CoV-2 infections as reported cases capture only those cases formally diagnosed through a positive test reported to the Colorado Department of Public Health and Environment (CDPHE). Many other cases went undiagnosed because of the asymptomatic nature of some infections, along with limited access to testing early in 2020, management of cases at home, and, eventually, the development and availability of at-home tests. The Colorado School of Public Health,[8] which aided the State of Colorado with disease modeling efforts, has estimated the total number of infections over the course of the pandemic. This information is captured in Figures 4, 5, and 6 in the timeline overview section. The Colorado School of Public Health estimates the peak (highest prevalence) of SARS-CoV-2 infections in Colorado to have occurred during the Omicron COVID-19 wave in January 2022, with approximately 1 in every 20 Coloradans infected during that time. Table 1 below shows the reported case numbers and estimated infections during the major waves of COVID-19 infection.

Table 1. The number of reported new cases (seven-day average) and estimated new (single day) infections of SARS-CoV-2 in Colorado for each of the key waves. *(Source: Colorado School of Public Health)*

Month of wave peak	March 2020	April 2020	July 2020	November 2020	April 2021	November 2021	January 2022	June 2022
Dominant strain	Original	Original	Original	Original	B.1.1.7 Alpha	B.1.617.2 Delta	B.1.1.529 Omicron	BA.4/BA.5 Omicron
Peak cases (7-day average)	367	467	567	5,466	1,716	3,624	17,313	2,439
Peak infections (estimated)	6,511	4,355	1,874	15,333	4,304	10,165	30,351	20,845

The unprecedented magnitude, nature, and duration of the COVID-19 pandemic presented Colorado agencies and response partners with a host of challenges. In the early days of the pandemic, little was known about how the SARS-CoV-2 virus spread or how to effectively mitigate its transmission. The disease was inconsistent in its presentation—some cases were severe and resulted in death, while other cases exhibited only minor or no symptoms. For initial variants of the virus, the long 8- to 14-day interval between infection and the potential appearance of symptoms, known as the incubation period,[9] made it difficult to pinpoint the source of infections, and false information about the causes, prevention, and treatment of COVID-19 spread rampantly on social medical and other public information channels.[10] Airborne transmission and high virulence made it difficult if not impossible to contain the virus. Mutual aid was nonexistent, as all states and response partners were battling the same challenges and could not share personnel or other resources, and COVID-19 illness and exposure amplified workforce shortages. Initially, the federal government did not deliver on many actions and supplies states had

planned to expect from the federal government, such as ventilators from the Strategic National Stockpile (SNS). On a call between the White House and leaders from all 50 states on March 9, 2020, states were told they were "on their own." Additionally, early in the response, guidance from the federal government, when provided, was not always transparent and at times conflicted with medical experts.

Competition for critical resources, such as personal protective equipment (PPE), ventilators, and sedatives needed to ventilate patients, was fierce not only among public and private sector organizations within the US but across the globe. In response to the shortages, people, including medical professionals, tried to use 3D printers to create ventilators, sterilized medical masks for reuse, sewed their own masks and gowns, used plastic sheeting for gowns, and crafted face shields out of whatever materials they could find. The state also made masks (using the sewing capabilities of the Department of Corrections), studied how to make ventilators out of other medical equipment, tried 3D printing face shields and swabs (at one point, state supply was as low as 2,000 swabs), and chased down possible sources of legitimate PPE from across the world. Public concern and panic buying also led to supply chain issues and shortages for other essential products, such as hand sanitizer and cleaning products, toilet paper, and paper towels.

As case numbers grew across the world and some healthcare systems became overwhelmed, authorities had to make very difficult, previously unimaginable, and often unpopular decisions to attempt to mitigate the spread of the disease. For example, authorities restricted travel; closed schools, businesses, and public services; implemented virtual operations; implemented enhanced cleansing and sanitation procedures; and limited medical procedures to increase hospital capacity for critical care patients. Additionally, authorities had to make these decisions rapidly and often with limited information due to the constantly changing understanding of COVID-19 during the early months. As time passed, authorities also had to work to mitigate the social, economic, and longer-term consequences of the pandemic, such as unemployment, loss of healthcare, and education gaps. In Colorado, unemployment rapidly rose from approximately 3 percent to 12 percent.

"Things that we now take for granted after three years of living with the virus were so astonishingly difficult to comprehend at the time. Our response was limited from the beginning in every way: supplies, personnel, and information."

In this environment of great uncertainty, rapid change, and constrained resources, the State of Colorado, led by Governor Jared Polis, mounted a whole-of-state government public health emergency response, whole-of-state economic response, and social safety net relief efforts, as well as implemented innovative strategies to overcome barriers and solve the complex problems COVID-19 presented. To facilitate the governor's decision-

making most effectively, state agency leadership from the Colorado Department of Public Health and Environment (CDPHE), including the Division of Disease Control and Public Health Response; Colorado Department of Public Safety (CDPS), including the Division of Homeland Security and Emergency Management (DHSEM); and the Governor's Office, led by the governor's chief of staff (as stand-in authority for the governor), stood up the Governor's Policy Group. CDPHE and CDPS also formed a Unified Command (UC), serving as the operational leaders in the execution of the governor's pandemic priorities and operations. For three years and continuing to today, executive leadership and state agency personnel worked assiduously to respond to and recover from the COVID-19 pandemic.

To capture lessons learned from the COVID-19 response and recovery efforts, the State of Colorado engaged in a whole-of-state government after-action analysis. The goal of this effort is to identify what the state has done well in responding to the COVID-19 pandemic, lessons the state can learn from response and recovery operations, and how to enhance the state's preparedness for future pandemics and other critical incidents, especially those that may merit a whole-of-state response. As the state transitioned from a COVID-19 pandemic to an endemic response, it was an ideal time to assess and reflect on the state's efforts. This after-action report (AAR) summarizes the findings of the after-action analysis and presents recommendations for enhancing the state's response to the current and future pandemics and other public health threats and emergencies. It covers the period from January 2020 through approximately the spring of 2023.

Methodology

On behalf of the State of Colorado, the Division of Homeland Security and Emergency Management (DHSEM) within the Colorado Department of Public Safety (CDPS) asked CNA—an independent, not-for-profit research and analysis organization that specializes in critical incident analyses—to conduct the whole-of-state government after-action analysis and develop an after-action report (AAR) on the state's response to the COVID-19 pandemic.

To conduct this analysis, CNA first examined relevant response and recovery documents and open-source information to establish a foundational understanding of the state's response, including agency roles and responsibilities, capabilities, activities, and coordinating structures. The sources of information reviewed include the following:

- Executive orders and public health orders related to the COVID-19 pandemic
- The state's COVID-19 website (https://covid19.colorado.gov/)
- State agency websites and dashboards with COVID-19 information, data, and guidance
- Public messages (media, social media, press releases, and public information campaign materials) distributed through the state's COVID-19 Joint Information Center (JIC) and the Governor's Office
- Response and recovery documents developed by the state (e.g., State Emergency Operations Center (SEOC) Incident Support Plans; Unified Command (UC) briefs; agency AARs; and strategic plans including *Colorado's Next Chapter: Our Roadmap to Moving Forward*)

Next, CNA facilitated after-action interviews of state employees and other individuals involved in the State of Colorado's response and recovery efforts. CNA engaged interviewees through a combination of one-on-one and group discussions focused on (1) agency- and discipline-specific issues relating to interviewees' primary responsibilities and (2) interviewees' perception of collaboration with public and private external partners. Using a semi-structured interview technique, CNA staff interviewed over 125 people involved in the COVID-19 response, including key personnel from the following entities:

- Office of the Governor of Colorado
  - Executive leadership
  - Communications Office
  - Legal Counsel
  - Office of Economic Development and International Trade (OEDIT)

    - Office of Information Technology (OIT)
    - Office of State Planning and Budgeting (OSPB)
- Office of the Lieutenant Governor of Colorado
    - Executive leadership
    - Disability Policy and Funding
    - Colorado Space Coalition
    - Colorado Commission of Indian Affairs
    - Office of eHealth Innovation
    - Office of Saving People Money on Heath Care
    - Serve Colorado
- Colorado Department of Agriculture (CDA)
- Colorado Department of Corrections (CDOC)
- Colorado Department of Education (CDE)
- Colorado Department of Health Care Policy and Financing (HCPF)
- Colorado Department of Human Services (CDHS)
- Colorado Department of Labor and Employment (CDLE)
- Colorado Department of Local Affairs (DOLA)
    - Division of Housing
    - Division of Local Government
    - Division of Emergency Management
- Colorado Department of Military & Veterans Affairs
    - Colorado National Guard (CONG)
- Colorado Department of Natural Resources (DNR)
- Colorado Department of Personnel and Administration (DPA)
    - Office of the State Architect
    - Office of the State Controller
- Colorado Department of Public Health and Environment (CDPHE)
    - Office of the Executive Director
    - Administration Division
        - Office of Human Resources
        - Financial Services
        - Office of Legal and Regulatory Compliance
    - Center for Health and Environmental Data
    - Disease Control and Public Health Response Division (DCPHR)
        - Office of Emergency Preparedness and Response (OEPR)
        - Laboratory Services Division
        - Epidemiology
        - Immunization and Therapeutics
        - Health Equity
    - Health Facilities and Emergency Medical Services Division

    - Office of Communications
    - Volunteer Services
- Colorado Department of Public Safety (CDPS)
    - Office of the Executive Director
    - Colorado Bureau of Investigation (CBI)
        - Firearms InstaCheck Unit
        - Biometric Identification and Records Unit
    - Colorado State Patrol (CSP)
    - Division of Fire Prevention and Control (DFPC)
    - Division of Homeland Security and Emergency Management (DHSEM)
        - Office of the Director
        - Colorado Information Analysis Center (CIAC)
        - Office of Emergency Management (OEM)
            - Field Services
        - Office of Communications
        - Office of Grants Management
- Colorado Department of Regulatory Agencies (DORA)
- Colorado Department of Revenue (CDOR)
- Colorado Department of Transportation (CDOT)
- Colorado Hospital Association (CHA)
- Colorado Health Care Coalitions (HCCs) (South Region, West Region, and North Central)
- Colorado School of Public Health
- Staffing Shortage Fusion Center (SSFC)
- Alternate Care Site (ACS) Dispatch Center
- Local public health authorities (6)
- Local emergency management agencies (3)

Semi-structured interviews are a qualitative data collection approach that draws on predetermined topics and questions, allows for open-ended answers, and provides the researcher with the latitude to clarify responses and explore issues in detail. The semi-structured approach is particularly effective in qualitative research, where the objective is to help identify and home in on a particular issue or challenge that confronts an individual or program. CNA also conducted the interviews in a no-fault and not attributional environment, with the analysis team looking for information and feedback on the performance of the response system (including plans, policies, and procedures) rather than the performance of any specific individuals.

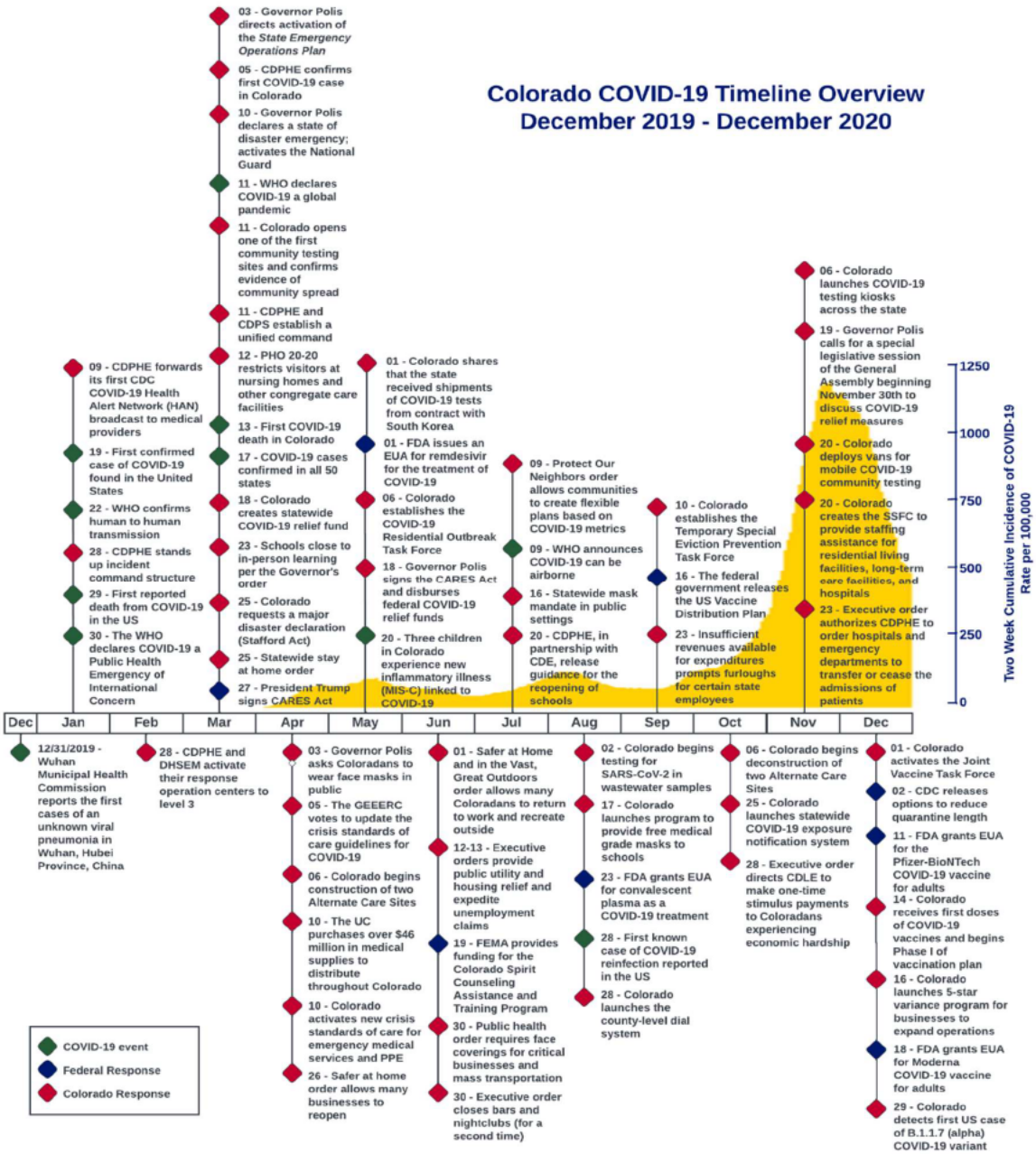
CNA then synthesized and analyzed the information gathered through the document review and interviews into key themes and conducted root cause analysis to trace the issues back to their underlying causes and to understand cascading impacts. CNA presents

the results of this analysis in the Key Findings and Recommendations section of this report. CNA also reconstructed a timeline outlining key activities and milestones during Colorado's COVID-19 response, which is included in the following section and in Appendix C. Finally, CNA developed recommendations, included after each key finding, to address identified gaps and shortfalls and institutionalizing successes and best practices.

Colorado COVID-19 Timeline Overview

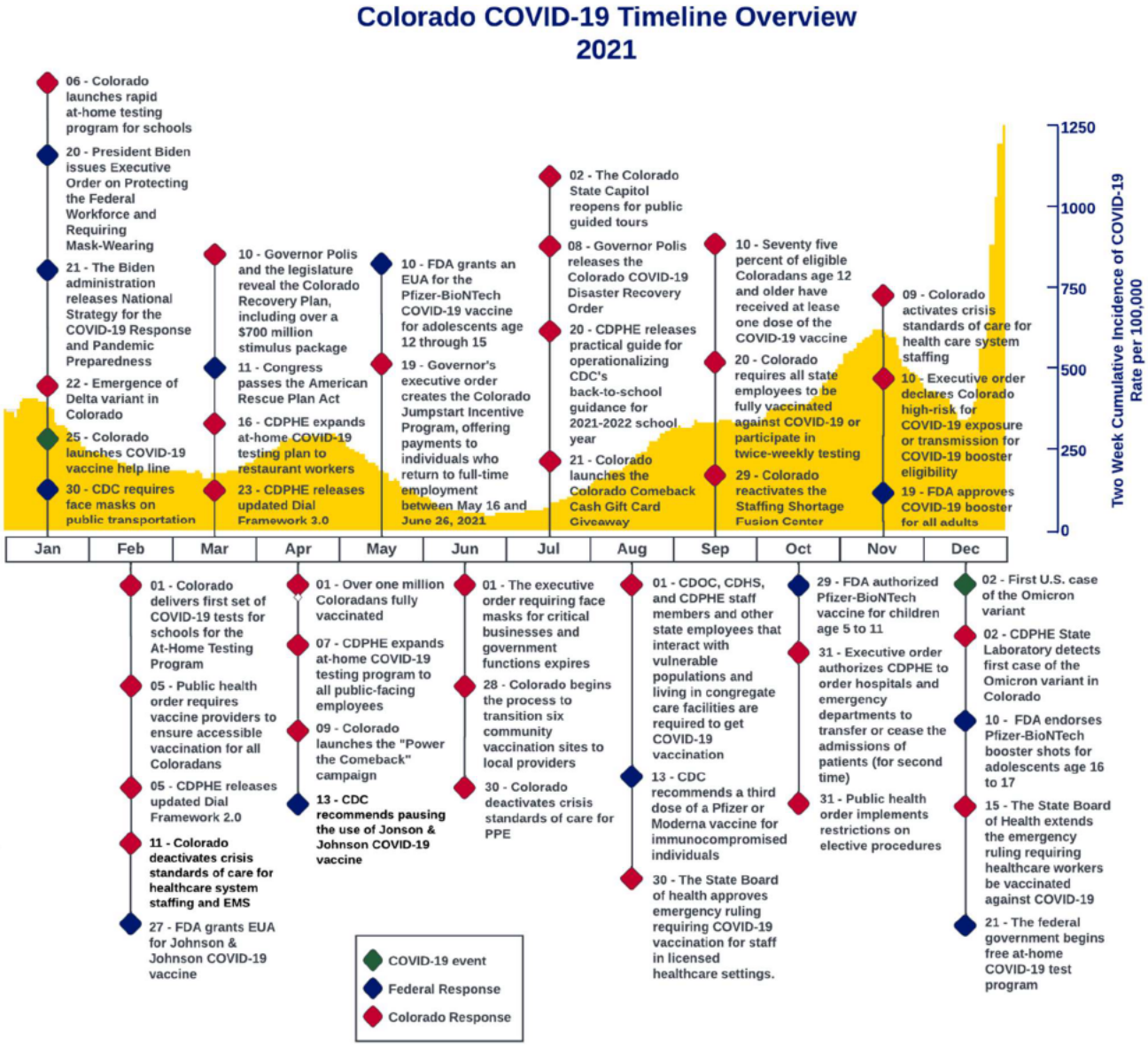
Included below are overview timelines of SARS-CoV-2 infections and key events and activities related to the COVID-19 pandemic in Colorado. A more detailed timeline and a list of activities supported by state agencies are included in Appendix C and Appendix A, respectively.

Figure 1. Overview timeline of key COVID-19 events and activities in Colorado in 2020.



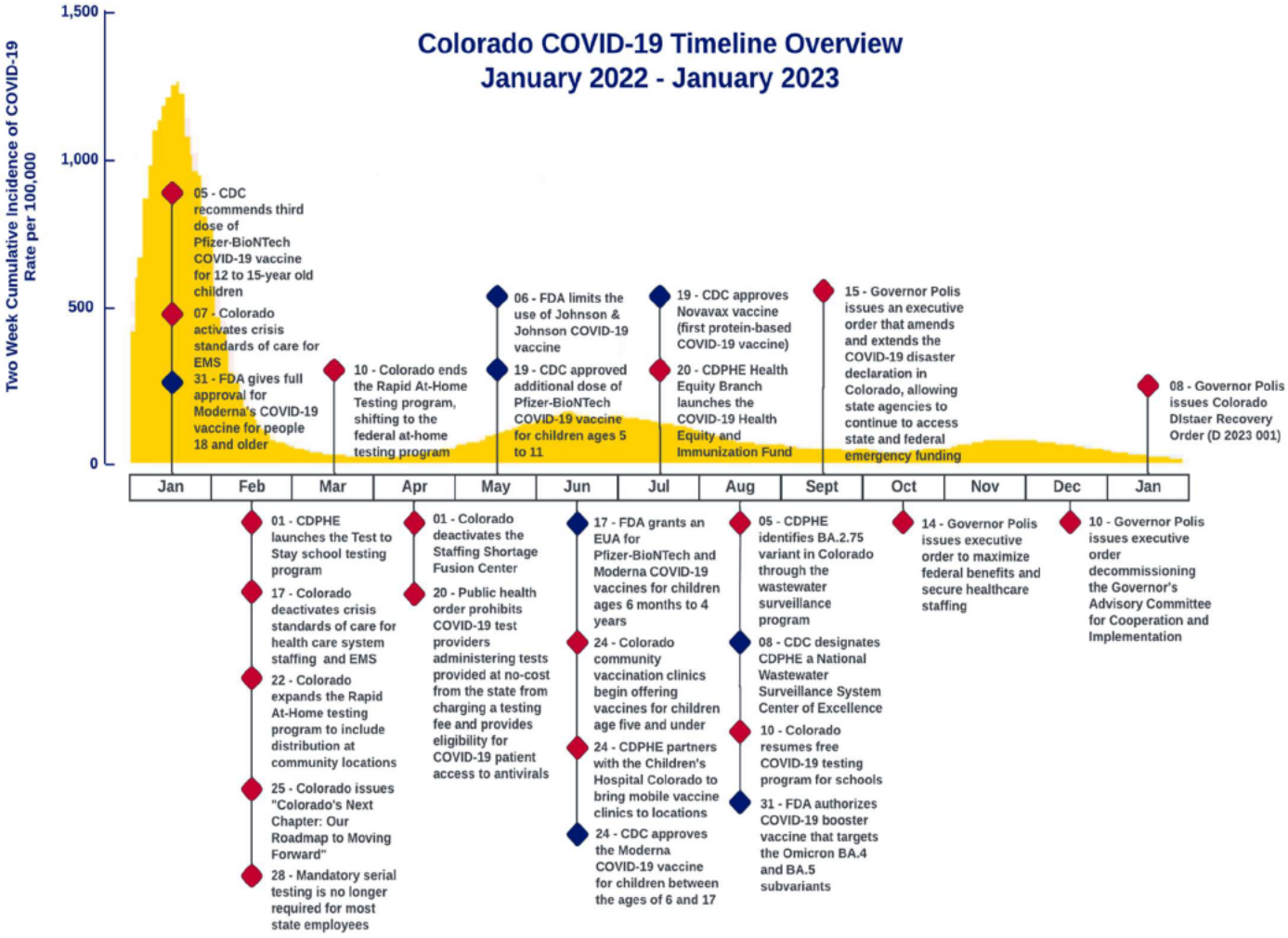
Source: CNA and Colorado School of Public Health

Figure 2. Overview timeline of key COVID-19 events in Colorado in 2021.



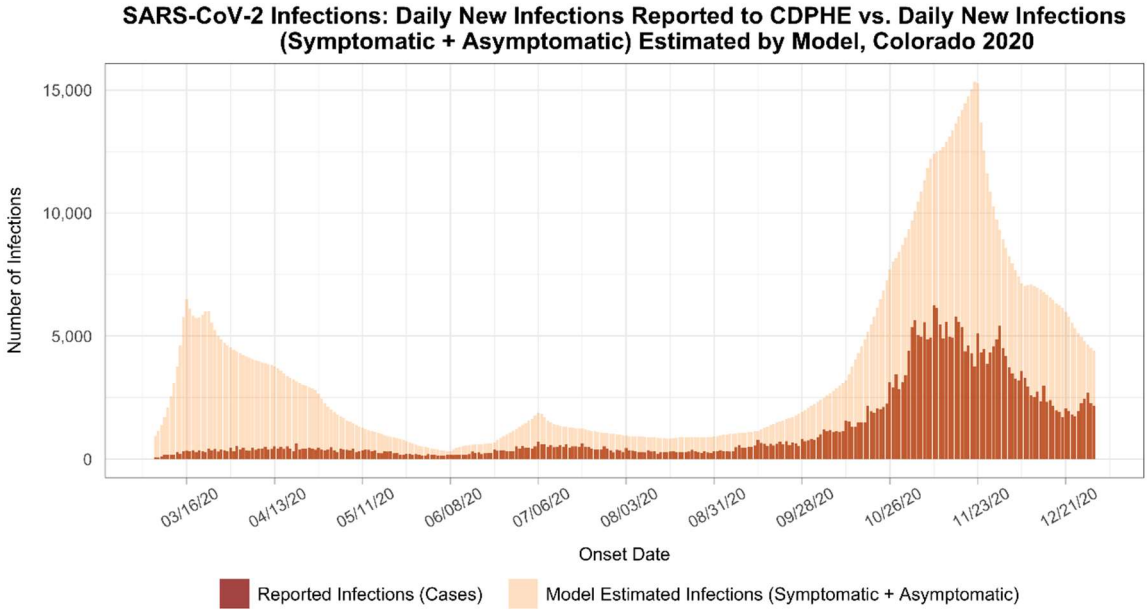
Source: CNA and Colorado School of Public Health

Figure 3. Overview timeline of key COVID-19 events in Colorado from January 2022 through January 2023.



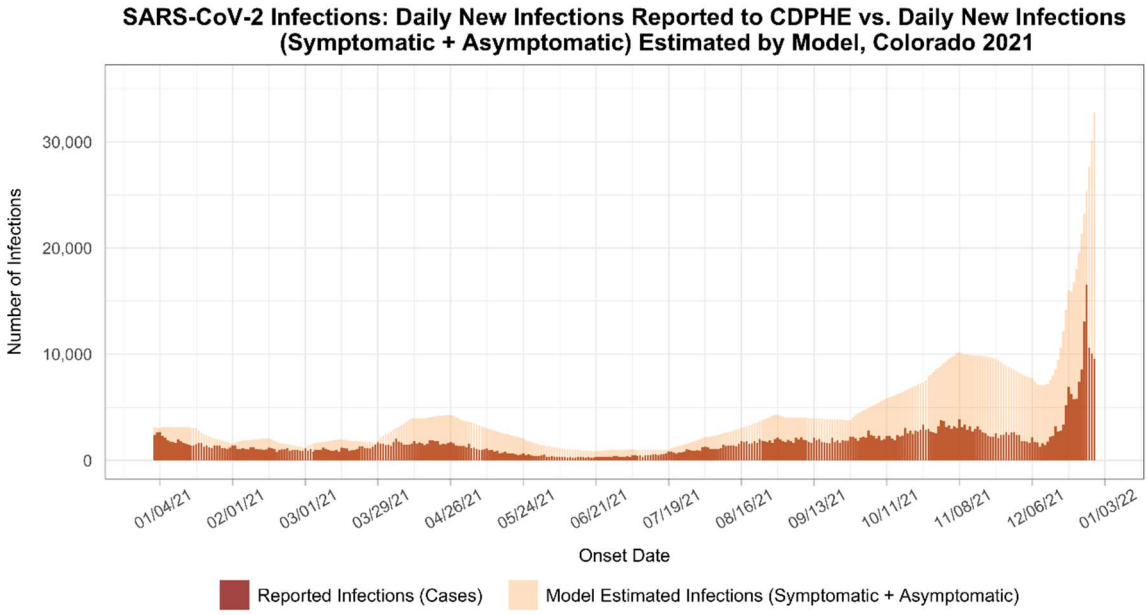
Source: CNA and Colorado School of Public Health

Figure 4. The modeled and reported number of new SARS-CoV-2 infections in Colorado in 2020.[11]



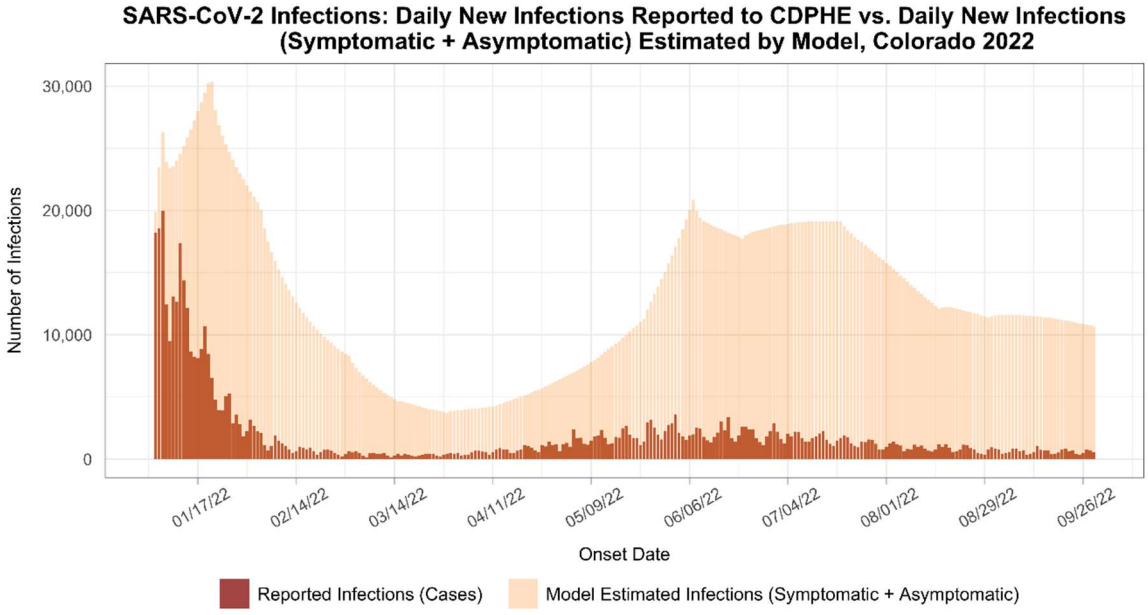
Source: Colorado School of Public Health

Figure 5. The modeled and reported number of new SARS-CoV-2 infections in Colorado in 2021.[12]



Source: Colorado School of Public Health

Figure 6. The modeled and reported number of new SARS-CoV-2 infections in Colorado in 2022.[13]



Source: Colorado School of Public Health

Key Findings and Recommendations

The after-action analysis revealed 54 key findings related to state-level actions undertaken in response to the COVID-19 pandemic, presented in the following sections. These findings span 10 categories: response structures, planning and innovation, executive orders and public health orders, health equity and vulnerable populations, state staffing and personnel, public information, situational awareness, continuity of operations (COOP), medical capacity and surge, and recovery. The findings focus on strategic, policy-level, and major operational issues and capture both successes and areas for continued improvements related to the state's pandemic response. These findings are not comprehensive of all activities undertaken and lessons learned by the state; rather, they include those aspects of the state-level response that interviewees felt most important to highlight and raise in a statewide AAR and that the analysis team believed merited awareness across all state agencies.[i] In the findings, callout boxes highlight state activities and quotations come from interviewees. Recommendations to sustain and further improve the state's preparedness are included after each finding.

To understand the whole state government response to the COVID-19 pandemic and the key findings, it is important to understand how unusual the long duration of the pandemic was for emergency management purposes and how the statewide response evolved over time with different areas of focus based on the need of the moment. Example areas of focus included initial response actions, recovery, balancing mitigation with economic impact, economic safety net response, state and local testing, reversion to local control for mitigation measures, vaccination campaigns, and the roadmap to moving forward. Findings may be relevant to one or many of these areas and thus may apply to a shorter timeframe than the entirety of the pandemic. The state also made many midcourse improvements based on feedback and lessons learned over the past three years, so the state has already started implementing components of the recommendations. Where known, this is noted in the report.

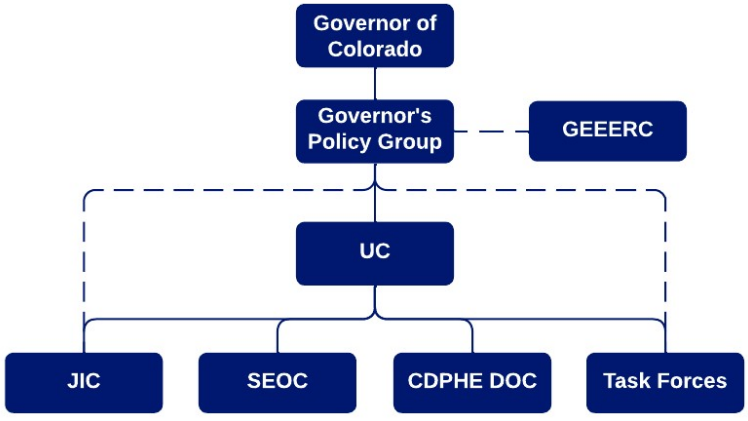
[i] Many state agencies and response partners are currently engaged in, planning, or have conducted similar after-action efforts of their COVID-19 responses that can inform future planning and further increase the State of Colorado's preparedness.

Response Structures

Finding 1. The Governor's Policy Group effectively brought together state agency leads to advise the governor and enable a coordinated, expert-informed, and data-driven whole-of-state government public health and emergency response to the COVID-19 pandemic.

The scope and magnitude of the pandemic caused a public health emergency and economic emergency, threatening each resident's overall well-being and necessitating state leadership response and recovery operations nationwide to a degree not seen in previous disasters. To facilitate the governor's decision-making most effectively, state agency leadership from the Colorado Department of Public Health and Environment (CDPHE), including the Division of Disease Control and Public Health Response; Colorado Department of Public Safety (CDPS), including the Division of Homeland Security and Emergency Management (DHSEM); and the Governor's Office, led by the governor's chief of staff (as stand-in authority for the governor), stood up the Governor's Policy Group. This group brought together executive leadership with expertise, responsibilities, and capabilities to advise the statewide emergency and pandemic response. The policy group formed the core group of advisors to the governor on the public health emergency response. The governor made statewide policy decisions and set key operational goals. CDPHE and CDPS formed a Unified Command (UC), serving as the operational leaders in the execution of the governor's pandemic priorities and operations (see Figure 7 for the overarching response structure and Appendix B for a more detailed organizational chart). Key to the success of this structure was establishing clear roles, responsibilities, and lines of authority for individuals in the policy group, UC, and other agency leadership very early in the response. Notably, this group also stayed largely consistent throughout the response.

Figure 7. The overarching COVID-19 response structure



The governor, lieutenant governor, and the governor's chief of staff received daily briefs from the state epidemiologist and unified commanders to ensure continuity of situational awareness and continuity of operations. Recommendations to the governor and decisions recommended by the policy group, UC, and other agency leadership were driven by data on the state of the pandemic and response and recovery operations. The governor used this data-driven approach to inform executive orders,

establish response priorities, balance disease suppression with economic impacts, communicate with the public, and generally lead the state's efforts. Being data-driven was foundational to Colorado's approach. As an example of the data-driven response, the governor received a daily briefing on the number of cases, percent change in cases, number of positive tests, available hospital beds, and other relevant data to help guide decision-making. The Governor's Policy Group also leveraged expertise from the public and private sectors and from academic partners and used models predicting the future course of the pandemic to inform decision-making, draft executive orders and public health orders, and create the strategies and plans for the state-level response. The Colorado School of Public Health provided the governor frequent updates on models showing the potential future epidemiological curve and impact on hospital capacity. The state also used metrics to gauge the success of media campaigns and their ability to reach the public, including vulnerable populations.[ii]

With the advice of the policy group, the governor established goals, objectives, and key metrics for evaluating the success of the response that were captured in the "Leader's Intent" document. This was key to focusing, prioritizing, and coordinating the response, recovery, and economic safety net efforts of the state agencies. Data sharing at the leadership level (governor, policy group, and UC) also facilitated consistent and accurate information sharing with state agency personnel and the public as leadership was "briefing off of the same deck." In the Leader's Intent document, the governor identified hospital capacity as the "North Star" for the response to ensure Coloradans could continue to receive care for other high-risk and potentially fatal health conditions. As such, hospital capacity was the gauge for how the state was faring and the state tracked and publicly shared data on this and other COVID-19 impacts. Additionally, executive decisions aimed to suppress disease transmission enough to protect hospital capacity but not to be so restrictive to create economic and social catastrophes potentially equal in magnitude to the pandemic. Communications with the public, led by the governor's communications team and the Joint Information Center (JIC), reinforced the Leader's Intent to help set public expectations and be transparent regarding state actions and goals.

Executive leadership was in consensus that the policy group was an effective way to advise the governor, inform policy and response efforts, and collaborate and share information across agencies to make informed decisions and conduct operations. Through the Governor's Policy Group, the governor set ambitious ("wildly important") goals and priorities and tracked those goals, which helped drive progress.

While the concept of a policy group is covered within the Incident Command System (ICS)/National Incident Management System (NIMS) guidance (as a subset or example of a

[ii] Examples of public outreach metrics tracked include website clicks, number of page impressions, traffic/questions to the COVID-19 hotline, and penetration of geotargeted messaging.

multiagency coordination system), the concept was new to some. Additionally, Colorado state agency executive leadership had not formally implemented a policy group of this scope and magnitude during previous responses. Past statewide disasters that required significant involvement from the Governor's Office and a policy group (e.g., floods in 2013 and 2015, and the 2018 Colorado Department of Transportation (CDOT) ransomware attack) engaged more informally and primarily to support recovery efforts, and the primary lead for the response resided with the UC or Incident Command.

Examples of COVID-19 Wildly Important Goals:

Seventy percent of Coloradans aged 70 and older to be vaccinated against COVID-19 vaccine by the end of February 2021

Achieve and sustain ≤90% ICU bed utilization based on a 7-day moving average

Increase the total number of critical care beds in Colorado from 1,849 to 5,000 by April 18, 2020

It is also worthwhile to note that the Governor's Policy Group essentially took on the intended role of the Governor's Expert Emergency Epidemic Response Committee (GEEERC)[14] in day-to-day operational decision-making. The GEEERC was established by state statute in 2000, which was prior to the integration of the public health field into emergency management systems. The GEEERC was established to advise the governor during an emerging or ongoing public health threat. Prior to COVID-19, it was responsible for wargaming the pandemic plan and was expected to have a sizable role in pandemic response. Instead, because of the voluntary nature of the GEEERC compared with the needs of the response, the GEEERC primarily held the role of advising CDPHE on matters pertaining to medical decisions and public health orders. The magnitude of the pandemic also necessitated near-full-time support from medical advisors, which was more than the committee of volunteers that composes the GEEERC could reasonably be asked to support. A subset of GEEERC members were, however, critical in advising the CDPHE chief medical officer on crisis standards of care. Additionally, individual members of the GEEERC often engaged pandemic response leadership with their expertise throughout the response. With the pandemic impacting every aspect of state operations and every business and citizen in the state, a much larger array of expertise available full-time was needed for the COVID-19 response than what was envisioned and assumed would be needed for a pandemic response when the GEEERC was created.

Recommendations:

- The Division of Homeland Security and Emergency Management (DHSEM) should codify the plans for the Governor's Policy Group in the *State Emergency Operations Plan*. Additionally, state agencies and the Governor's Office should

exercise the formation of a Governor's Policy Group on a recurring basis (recommended yearly or every other year) and after any major change in administration. Transition orientations for key positions, such as the governor's chief of staff, governor's communications director, and executive leadership for CDPHE and CDPS, should include briefings on their responsibilities in the event of a statewide disaster.

- The Governor's Office should convene with those that served on the UC, the Governor's Policy Group, and CDPHE's and the governor's legal teams to discuss the role of the GEEERC and evaluate the structures and processes that worked best in making sure the governor had access to the expertise needed during the public health emergency. The Governor's Office, CDPHE, and CDPS leadership should also meet with the GEEERC for a similar discussion to receive its input. Based on these discussions, the Governor's Office, CDPS, and CDPHE should determine if any changes to the GEEERC's authorities, structure, and composition are needed. They should also determine the need for any other formal or ad hoc advisement structures for the governor and CDPHE leadership. For example, in the future, the GEEERC may be best suited to serve as an ad hoc advisory committee for the CDPHE chief medical officer, rather than for the governor, and maintain its role in crisis standards of care. Once a recommendation regarding the GEEERC is agreed upon, efforts should then be made to work with the legislature to update state statutes regarding the GEEERC.
- CDPHE should seek legislation that grants the chief medical officer authority to activate crisis standards of care during an emergency. To execute this authority, the chief medical officer also needs authority to convene an expert committee of advisors (with a composition based on the needs of the incident) and establish mechanisms to maintain relationships with medical institutions and medical ethicists to aid in emergency planning and response.

Finding 2. The organizational structure of the UC dynamically adapted to meet the changing needs of the response.

The organizational structure that guided the COVID-19 response for the State of Colorado including the Governor's Policy Group, UC, State Emergency Operations Center (SEOC), CDPHE Department Operations Center (DOC), and JIC is shown in Figure 7. Response partners modified and adapted this structure over time to accommodate the changing needs of the response, primarily through the creation of new task forces and subgroups responsible for various aspects of the mission. For example, during the first six months of 2020, response partners created a PPE team, a testing task force, a residential outbreak task force, and a team designated to stand up alternate care sites (ACSs). As the response progressed and needs changed, some of these groups were demobilized and new task forces stood up. For example, when it was clear a vaccine would become available, the

state established a vaccine task force. In another example, when the need for ACSs did not materialize, response partners demobilized two ACSs and shifted to using the contracts for medical personnel established to staff the ACSs to support other medical facilities throughout the state, managed and assigned through the novel Staffing Shortage Fusion Center (SSFC).

To coordinate across these various groups, the UC was described as the "nucleus of efforts," aligning internal DHSEM and CDPHE personnel to support the various task forces and the localities. In turn, the UC reported to the Governor's Policy Group (although at times the task forces would also report directly to the policy group and UC simultaneously). The unified commanders attended all policy group meetings to stay connected and aware of policy group recommendations and activities. At times, key leadership from the JIC, the governor's Office of State Planning and Budgeting (OSPB), the state epidemiologist, and immunization branch leadership briefed and regularly attended policy group meetings for operational awareness and efficiencies. The DHSEM SEOC and CDPHE DOC reported to the UC and engaged with the task forces, as well as county emergency management agencies and local public health authorities (LPHAs), respectively, to provide resources and other support as needed. Localities would engage the UC, SEOC, CDPHE DOC, and task forces depending on need. Specifically, CDPHE handled requests for medical supplies (e.g., needles, vaccines), DHSEM handled requests for PPE, and task forces handled support for specific missions (e.g., vaccination, testing). For example, if a county requested a truckload of masks, that would be sourced through the SEOC Logistics Section through its standard resource fulfillment process. However, if a county requested a testing team, the SEOC passed that to the testing task force for coordination.[iii]

The creation of task forces and the separation of roles and responsibilities between the SEOC, CDPHE DOC, task forces, and other substructures helped the state manage the multitude of activities required for both the response and recovery efforts. In most cases, clear roles and responsibilities minimized duplication of effort. Additionally, this flexibility and adaptability allowed DHSEM, through the SEOC, to manage concurrent disasters and incidents (e.g., the Marshall Fire and Afghan refugee housing effort).

Early in the response, the governor's chief of staff, executive director of CDPHE, and the executive director of CDPS recommended to the governor, and the governor agreed, to move into a UC structure with a policy group. While it took some time and effort to implement the UC structure, state agency leadership agreed that the UC structure was

[iii] It is worthwhile to note that this resource fulfillment process diverged from traditional logistics support to counties, which resulted in confusion at the local level. Normally, all requests for logistics support would go through the DHSEM Regional Field Managers to the DHSEM SEOC; during COVID-19 localities could contact the task forces, DHSEM SEOC, or the CDPHE DOC directly for logistics support, depending on the needed resource.

very helpful in bringing together partners to manage the various missions. While DHSEM had exercised and used the UC concept before (e.g., the ransomware attack on CDOT in February and March 2018 and the avalanche and dam crisis in March 2019), the UC structure was not exercised or planned for a pandemic response. As described in the next finding, this resulted in challenges fully integrating state agency operations, most notably between DHSEM's and CDPHE's operations centers and personnel.

Recommendations:

- DHSEM and CDPHE should codify the approach and flexibility of the UC organizational structure for future exercises and real-world incidents.
- DHSEM and CDPHE should examine the task forces created and determine if any should be institutionalized for future response efforts. Where applicable, potential task force compositions, roles, and responsibilities should be outlined in an annex to the *State Emergency Operations Plan* and the state's pandemic response plan.

Finding 3. Response partners quickly stood up the UC; however, the novel nature of the event, the newness of employing a UC for a pandemic response, and pre-pandemic staff turnover resulted in some challenges unifying and integrating the response.

Prior to the first case of COVID-19 in the state, DHSEM and CDPHE activated their emergency operations centers, and on March 3, 2020, the governor called on all state agencies to activate the *State Emergency Operations Plan*. On March 14, CDPS (including DHSEM) and CDPHE established a UC, and on March 18, 2020, the UC established a UC Center (UCC) at the SEOC. In pandemic planning prior to COVID-19, CDPHE was identified to lead the response, and state agency coordination was to occur through the Emergency Support Function (ESF) #8 liaison in the SEOC. However, it quickly became evident that the magnitude of COVID-19, both in prevalence and severity, would greatly exceed any one agency's capability to manage and that a larger effort that effectively merged aspects of the public health, emergency management, and many other state activities would be required. Having the governor lead the response allowed the state to leverage all its resources and personnel and made the approach consistent across all state agencies, greatly contributing to unity of effort. Response partners also stood up the UC and Governor's Policy Group, which consisted of executive leadership from the governor's office, CDPHE, and CDPS (see Appendix B). The role of the UC was to coordinate and "unify" response activities across all involved parties and to operationalize the goals, metrics, and strategies created by the governor and the Governor's Policy Group. The Governor's Policy Group helped inform executive decision-making. The UC reported to the Governor's Policy Group and worked to implement the executive orders and public health orders coming from the governor, CDPHE executive director, and the policy group's recommendations. This structure, while previously not planned for a pandemic response,

effectively merged capabilities and capacities across state agencies and gave the state a greater ability to respond.

Since the UC structure was not planned, exercised, or used for a pandemic response (e.g., it was not used or needed for the 2009 H1N1 response[iv]) and many staff and leaders within CDPHE were relatively new (with significant turnover occurring just prior to the pandemic), establishing a UC came with challenges and questions about how to effectively integrate DHSEM and CDPHE. Transitioning into the unified structure at the SEOC was a learning experience for these agencies, but also necessary given the magnitude and scope of the pandemic response. While leadership from the two agencies effectively came together at the policy group and command level (aided by CDPHE bringing in a senior official with a background in emergency management and public health to serve as the CDPHE executive director's liaison for the UC effort), beneath the leadership level, public health and public safety functions remained largely segregated and lacked horizontal integration and lateral information sharing.[v] Components of the structure also changed frequently, so it was hard to capture in an organizational chart. This led to some confusion about roles and responsibilities, instances of duplication of effort, and some shortfalls in information sharing and situational awareness. For example, there was a lack of integration of the data functions of CDPHE and DHSEM below the command level. Rather, each operated its own data teams and did not share data or capabilities. Data were integrated by and for the UC and Governor's Policy Group and for provision to the governor, but the data streams and teams were not horizontally integrated within the UC Situation Unit.

The task forces were able to more effectively integrate CDPHE, DHSEM, and other pertinent stakeholders to address a particular function, but that integration was limited to within the task forces and vertically to leadership (not horizontally to others in the operations centers). For example, CDPHE logistics, DHSEM logistics, and logistics staff assigned to task forces were not integrated under an overarching UC Logistics Section. This resulted in considerable challenges for the DHSEM Logistics and Finance Sections when they took over responsibility for identifying and tracking expenditures, returning equipment, and requesting Federal Emergency Management Agency (FEMA) reimbursement after the task forces demobilized because the DHSEM SEOC sections had difficulty tracking what was procured by the task forces. Better integration across the

[iv] The 2009 H1N1 pandemic did not threaten hospital capacity or require a shutdown to control the spread of the disease, so a UC was not implemented to lead the response to that pandemic.

[v] Virtual operations, differing cultures within CDPHE and DHSEM, and a physical restructuring of the SEOC to reflect the task forces rather than sections and ESFs likely also contributed to this problem. At first, DHSEM, CDPHE, and response partners established an in-person UCC at the SEOC, but after COVID-19 cases grew in the state and there was a positive case in the SEOC, many employees had to switch to virtual operations or work back at their agency offices, with many from CDPHE returning to the CDPHE DOC.

agencies involved in a UC can help share resources and capabilities, reduce duplication of effort, and aid in better coordination of efforts.

A lack of sufficient documentation (e.g., in WebEOC and in standard ICS document, such as incident action plans and situation reports) further contributed to shortfalls in situational awareness for some in the UC substructures (e.g., sections and task forces), and for those individuals with which the UC would share information through ICS documents. Additionally, early on, the transition to UC was confusing for some local health officials, resulting in their lack of clarity about who was in charge at the state level—the governor, UC, CDPHE, or DHSEM.[vi]

Recommendations:

- CDPHE Office of Emergency Preparedness and Response (OEPR) should update the state's pandemic response plan to capture the use of a UC, the Governor's Policy Group, and task forces.
- The state should execute the future use of task forces for emergency response efforts following the ICS structure. ICS identifies task forces as falling under the Operations Section, under divisions or branches.[15]
- CDPHE should ensure that leaders who could be involved in a unified or incident command are trained in emergency management to facilitate integration with response partners during a public health emergency.
- In future activations, response entities should integrate across the involved departments below the UC command level and within the various sections. For example, logistics personnel assigned to work on task forces, in the SEOC, in the CDPHE DOC, and other parts of the mission should all be integrated into an overarching Logistics Section and report to a single logistics chief. Similarly, the CDPHE and DHSEM data teams should work together under a single planning section or Situation Unit, and the CDPHE and DHSEM finance teams and any other agencies in the UC should work together under a single Finance Section.
- DHSEM Office of Emergency Management (OEM) and CDPHE OEPR should maintain plans to staff the Situation Unit with a data lead (e.g., section chief or chief data officer) for every activation. For a UC, this individual should ensure coordination between the departments and be responsible for collecting situational awareness needs and tasking the staff across both agencies.

[vi] It is worthwhile to note that this was compounded by the significant turnover in CDPHE staff just prior to the pandemic, resulting in many local public health authorities losing the points of contact to whom they would normally go with questions and for information.

- DHSEM and CDPHE should establish a Documentation Unit as part of their operation center's Planning Section and should activate and staff the Documentation Unit for every response.[vii]
- DHSEM and agencies with which they may establish a UC (e.g., CDPHE, Colorado Department of Agriculture (CDA)) should exercise establishing a UC (including integration of section and adherence to standard ICS structures) on a recurrent basis.

Finding 4. Local public health and emergency management authorities expressed concern about feeling disconnected from state-level decision-making within the UC.

Conventional wisdom heretofore believed "all disasters start and end locally"; however, COVID-19 was not only a local disaster, but also a statewide, national, and global disaster. With previous disasters, localities (through local public health authorities or local emergency management agencies) would have been integrated in the SEOC, CDPHE DOC, and UC to help drive the response and recovery efforts. Given previous experiences, some localities expected a "seat" at the decision-making table. For the COVID-19 response, the UC did not include representation from localities. Additionally, COVID-19 had a much larger impact than solely public health, so the response needed to be elevated to a level at which the government could bring all its resources to bear and balance the public health emergency with the economic and social well-being of every resident. Furthermore, with hospital capacity extending across multiple localities, identifying hospital capacity as the "north star" for the response meant it could not be managed at the local level when hospital capacity was at risk. The state did attempt to devolve the decision-making power to locals when hospital capacity was not at risk through the executive orders of "protect our neighbors" and the public health order establishing the COVID-19 Dial system.

The governor, UC, JIC, and state agencies communicated with localities on a very frequent basis through regularly scheduled meetings (e.g., daily or weekly calls with local public health directors, local governments, epidemiology, and the JIC), and the UC briefed out on these calls to the Governor's Policy Group to provide real-time feedback. CDPHE developed a new dashboard so that local public health authorities could have access to data to aid in local decision-making. Early on, the governor established a weekly check-in between himself (or his designee) and the largest cities' mayors of Denver, Colorado Springs, and Aurora as well as a weekly check-in between himself and the Colorado hospital chief executive officers, all of which occurred regularly for the first

[vii] The ICS structure identifies the Documentation Unit as a component of the Planning Section. It is responsible for creating shareable versions of the incident support plans, situation reports, and other UC documents.

year of the pandemic and was reactivated depending on hospital capacity. The governor also had periodic check-in calls with school superintendents, Metro Mayors Caucus, Colorado Municipal League, and Colorado Counties, Inc. On April 26, 2020, the governor also established (by Executive Order B 2020-002) the bipartisan Governor's Advisory Committee for Cooperation and Implementation[viii] that consisted of a group of rural and urban localities and included two local public health authorities, two mayors, two county commissioners, two local public health officials, a fire chief, and a sheriff. It was chaired by the governor's chief of staff and also included CDPHE, CDPS, and DORA's executive directors. The purpose of the committee was to "focus particularly on how local jurisdictions and local public health agencies can coordinate with the state on public education efforts that aim to maximize compliance and enforcement efforts for the duration of the COVID-19 pandemic."[16] In this role, the committee helped review draft executive orders and inform policy decisions related to social distancing measures and enforcement throughout 2020 and 2021. However, some interviewees indicated that there was not widespread knowledge of this committee.

"There were trust issues with local governments. We always have to balance state guidance and local authority. There were political tensions early on. But at a certain point, we are also just a microcosm of these bigger nationwide currents."

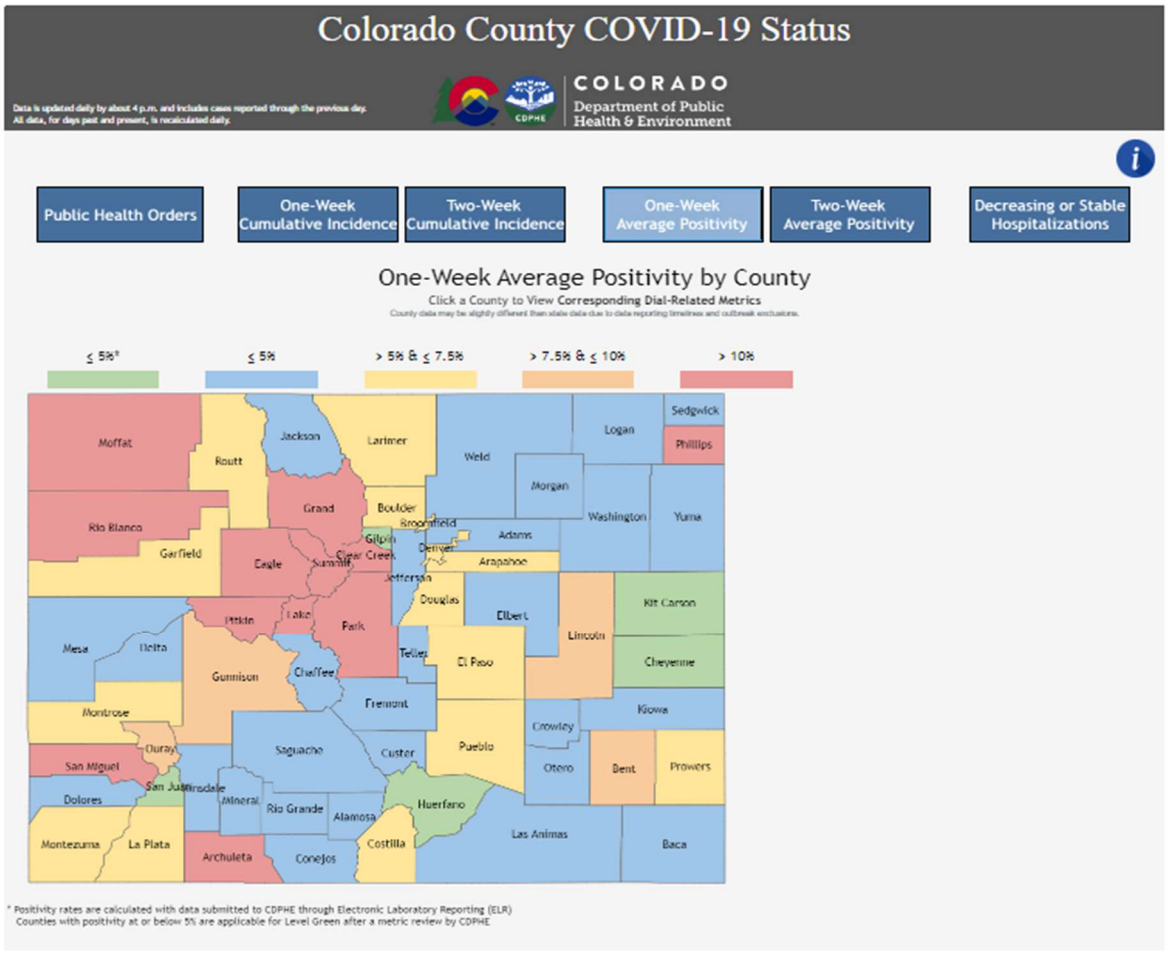
While there was not extensive local engagement prior to the "Stay at Home" and "Safer at Home" executive orders, the Governor's Office did establish a process and structure for collecting feedback on draft executive orders starting with "Safer at Home and in the Vast, Great Outdoors" executive order. This process was used for executive orders with the most impact on localities, for example, the executive orders modifying the COVID-19 Dial system. The Governor's Office published draft executive orders on a website portal where reviewers could provide feedback. Leadership also leveraged calls with stakeholders (targeted to impacted industries and local elected officials) to receive feedback on draft orders. These processes and the personnel resources needed to staff the structure took time to create and implement and did not exist prior to the pandemic.

While the engagement of all localities in decision-making certainly would have been untenable—with hundreds of mayors, thousands of county commissioners, 53 local public health agencies, and 64 local emergency management organizations (and a very convoluted and complex array of governing structures at the local level that differed widely politically)—especially when decisions need to be made rapidly, the alternative was that the majority of localities lacked visibility and input into planning efforts and

[viii] This was originally titled the "New Normal Advisory Board" but was renamed by Executive Order B 2020-003.

information about statewide plans, and localities sometimes perceived that UC decisions did not always reflect the operating realities on the ground. For example, some localities felt the COVID-19 Dial[17] (see Figure 8)—which was used to determine localities' ability to reopen and what mitigation measures needed to be in place—did not accurately reflect the local situation and was hard to implement. Additionally, the metrics for each level of the dial system went through a few revisions, complicating its use. It is worthwhile to note that the dial system and its revisions were based on feedback from local public health authorities and as part of the state's attempt to develop objective criteria that would allow for and empower locals to scale down interventions and revert to local control based on the varying levels of disease transmission risk in the localities.

Figure 8. The COVID-19 Dial Dashboard. ***(Source: CDPHE)***



Another challenge with the COVID-19 Dial was that hospital regions do not match (geographically) with local public health authority areas of responsibility. This makes it difficult to make recommendations for an area based on regional hospital status, as local public health authorities may include more than one regional hospital system. Furthermore, the mechanisms that were used by state agencies (including CDPHE, DHSEM, and the Department of Local Affairs (DOLA)) to coordinate and communicate with

localities, such as weekly calls with the UC (discussed further in the next finding), were mostly avenues for localities to receive information from the state rather than provide input to decisions. The Advisory Committee for Cooperation and Implementation was the only standing structure that allowed localities to provide guidance and recommendations to the governor on executive orders; however, the committee, comprised of a cross-section of levels of local governments, only included representatives from a small number of localities. The perceived lack of transparency and disconnect of localities from decision-making challenged the relationships between local and state personnel developed prior to COVID-19 and fostered some distrust. Localities also perceived that conflicts between state and local guidance and plans may have led to public confusion and placed local health authorities in difficult positions (e.g., when initial plans for the vaccination bus locations were not coordinated with localities and when locals perceived that local plans for contact tracing were negated when the state recruited AmeriCorps volunteers to serve that function, although this was an optional service for localities). The state did support localized efforts that needed to go further than those implemented by the state, and state guidance was viewed as the minimum requirement.

> *"There needs to be a conduit to local levels. I have a great appreciation for chain of command, but the local level was just missing. There were good communications between state agencies, but how that filtered down or issues filtered up was not effective."*

Recommendations:

- DHSEM and CDPHE should develop and implement an objective matrix for a pandemic response identifying criteria that would trigger state versus local control along with criteria for reversion to local control.
- DHSEM and CDPHE should identify what pandemic-related surge capabilities (e.g., contact tracing, statewide call centers) it can and will be prepared to provide to localities during pandemics that threaten to overwhelm local capacity. The state should coordinate these plans with localities.
- DHSEM, CDPHE, DOLA, and the Governor's Office should convene to discuss the Advisory Committee for Cooperation and Implementation to determine whether it should be institutionalized for statewide responses moving forward and, if so, document it in the *State Emergency Operations Plan* and socialize its existence with all localities. The state should also determine and formalize the composition of the committee (e.g., preidentified local representatives or filled on a rotational basis), identify when it would be activated and deactivated for a disaster, and determine whether it has a role in non-emergency situations (e.g., to inform state-level planning efforts).

- As the staff required to collect feedback on draft executive orders was borrowed from the Lieutenant Governor's Office, the Governor's Office, and CDPHE, the Governor's Office, DHSEM, and CDPHE should consider if and how to staff future efforts to solicit feedback on draft executive orders, considering the staffing and time commitments required for this effort during the COVID-19 response.
- CDPHE, DHSEM, and DOLA should convene working groups with local health authorities, local emergency management agencies, and local elected leaders to understand their concerns about state-led responses and ask about their expectations for involvement in decision-making. They should also discuss areas where local input into the decision-making is most critical. During discussions, the state should be candid about the challenges of engaging all localities in decision-making in a statewide response. The result of these working groups should be a shared understanding of how and how much input localities can have in future large-scale, statewide, and rapidly evolving emergency responses, along with new ideas for how to better engage localities in decision-making.

Finding 5. Traditional processes and structures to coordinate and share information about the public health emergency response with localities were perceived by localities as insufficient for the pandemic.

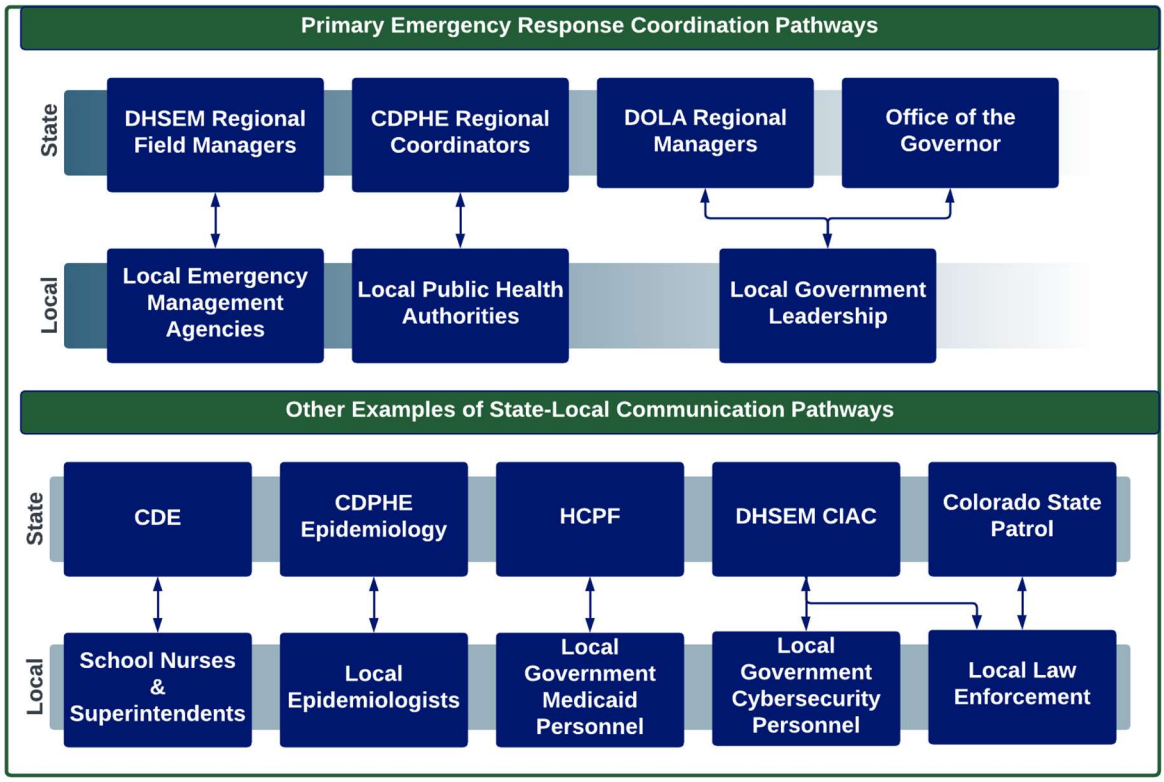
During both emergency and steady state operations, in addition to localities normally being part of the command structure (as described in the previous finding), multiple pathways and structures exist to coordinate between localities and the state agencies, as shown in Figure 9. Despite the information sharing and coordination pathways, localities, especially their local public health authorities, often felt they were lacking information about state-level public health emergency response plans and operations and did not always receive advanced notification of new and changing policies, plans, and orders (especially in the early days of the pandemic response). High-level direction, resource priority decisions, and incident courses of action were not always provided to local public health offices before the public. Rather, localities felt that they were often informed at the same time as the general public (e.g., during the Friday press conferences) and were not provided guidance on how to implement these policy decisions.[ix] Some interviewees noted that one reason for this was that information shared with localities in advance of the public is often leaked to the public before official distribution (at times before plans are finalized), which could potentially result in public confusion. A primary reason noted by many was the need to respond rapidly and with urgency, especially in the early days

[ix] It is worthwhile to note that the state often felt the same way regarding learning about federal actions during press conferences. The public would learn about federal action at the same time as Colorado government personnel, so members of the media would then ask, "What does this mean for Colorado?" and representatives from the state would have to figure it out on the spot.

"We would crank out information as fast as we could, but it would catch locals flat-footed. We couldn't give them the lead time they wanted sometimes, often."

and weeks of the COVID-19 pandemic, did not always allow for preemptive communication with local authorities before the public. After the first two months of the pandemic the state built staffing teams, improved contact lists for stakeholders, and developed web forms responsible for this function, which improved the early communications dynamic, but concerns about leaks persisted with broad dissemination of information, which made the Advisory Committee for Cooperation and Implementation the best venue for sharing sensitive policy considerations and soliciting feedback.

Figure 9. State-local emergency response coordination pathways



Furthermore, the state agency personnel whom localities would normally contact for more information or help with guidance (i.e., DHSEM regional field managers or DOLA regional managers) had no additional information to provide. As a result, localities were often left on their own to understand how the changes would impact their communities and determine how to enact procedures to implement the requirements. For example, when the mask mandate was enacted, local law enforcement agencies were unclear if or how they should enforce the mandate (see Finding 15). It also created confusion among local response personnel and caused wasted efforts if a locality had made a policy decision or established response plans, only for the state to enact conflicting guidance or plans.

Localities voiced concerns that mixed messages made local and state governments look less credible, added to the confusion and chaos of COVID-19, and caused the public to lose confidence. This was compounded by the politicization of the pandemic.

A complicating factor to coordination with localities was CDPHE's engagement structure. There was some disagreement about whether a structure similar to the DHSEM regional field managers and DOLA regional managers exists for CDPHE. Prior to the pandemic, funding was provided to local public health agencies to support regional coordinators with CDPHE (rather than having a CDPHE employee assigned as a regional field representative). These grant-funded regional coordinators were not used as a conduit for information sharing during COVID-19 as they tend to be embedded with local health districts, were used as additional capacity for the local response, and were therefore not privy to any additional information from CDPHE headquarters. The CDPHE executive director and the UC met with the local public health authorities on a weekly basis. Some local public health authorities also received information through local emergency management partners, the JIC and their weekly calls with local public information officers (PIOs), and weekly meetings between local and state epidemiologists. Some also collaborated with other state agencies (e.g., some asked to attend the Colorado Department of Education's (CDE's) webinars for school nurses). Health Care Coalitions (HCCs) also served as a venue for information sharing with localities.

As the pandemic response progressed and evolved, the state established additional structures to alert LPHAs in advance of announcements. Additionally, in response to the need for better information sharing, DOLA stood up several new communication venues, with the Division of Local Government taking on a more prominent role in the emergency response. Some examples include the following:

- Leveraging the Colorado Resiliency Office web page to communicate with local governments.
- Developing a webinar series on COVID-19 recovery funding for local governments.[18]
- Establishing a peer exchange program between local governments to quickly share information and evolve best practices in economic recovery and public health.[19]
- Conducting local government coordination calls (originally occurring weekly, then biweekly and monthly as the pandemic progressed).
- Establishing a working group focused on policy issues associated with federal funding, involving local government membership associations, elected local leaders, and federal agency representatives.

In 2022, CDPHE's executive director initiated a nine-month collaborative effort with LPHAs to transform CDPHE's regional system. As part of this effort, CDPHE restructured and rebuilt the regional public health emergency preparedness and response program to

mirror the DHSEM regional field manager program to ensure greater connections between the state and local partners. This entailed CDPHE hiring epidemiologists, emergency response field staff, and health equity coordinators (assuring cultural competency in the response) and placing them around the state to be prepared to aid local public health agencies in any level of emergency response event.

Recommendations:

- DHSEM and CDPHE should map the many connections state agencies have with localities to inform future planning efforts. State agency leadership, in collaboration with localities, should determine how to better leverage these coordination mechanisms and pathways for future, large-scale incidents.
- CDPHE should continue to transform its regional emergency preparedness and response system in concert with DHSEM and LPHAs. CDPHE should maintain a functional regional model (rather than relying on grant-funded local staff), and work with the legislature to ensure these regional staff, epidemiology, and health equity positions are continuously funded. CDPHE should also consider aligning CDPHE regions with DHSEM regions.
- DHSEM and CDPHE should include the new state-local coordination mechanisms in plans and procedures, including in the *State Emergency Operations Plan*.
- DHSEM should work with DOLA's Division of Local Government (including the Colorado Resiliency Office), the Governor's Office of Community Engagement, and the Office of Economic Development and International Trade (OEDIT) to formalize DOLA's role in emergency response and recovery and document its most successful communication methods. Notably, legislation passed in 2022 created the Office of Climate Preparedness and Disaster Recovery within the Governor's Office to facilitate whole-executive-branch coordination in partnership with DHSEM. Care should be taken to ensure coordination, but not duplication, between these entities' roles and responsibilities for local government engagement.

Finding 6. Prior to COVID-19, OEPR mainly administered the Public Health Emergency Preparedness (PHEP) grant and lacked a robust emergency response functionality and capability. Months prior to COVID-19 becoming a worldwide pandemic, the CDPHE had consolidated OEPR, the state public health laboratory, and the communicable disease and immunization branches under a new division, DCPHR (aka. Decipher). The purpose for this new division was to be better equipped to respond to public health emergencies, actions which proved very sagacious as the reorganization greatly facilitated internal COVID-19 response coordination within CDPHE headquarters.

CDPHE OEPR's mission prior to COVID-19 was primarily focused on preparedness activities, such as developing plans and standard operating procedures (SOPs) and conducting

training and exercises. From a practical standpoint, much of OEPR's time was spent administering the Center for Disease Control and Prevention's (CDC) Public Health Emergency Preparedness (PHEP) grant—the primary federal vehicle that funds state and local public health preparedness. Prior to COVID-19, OEPR did not have extensive real-world response experience or sufficient staff with the knowledge, skills, capabilities, and training required to coordinate a whole-of-agency response, let alone a whole-of-state response to a complex and rapidly evolving public health emergency like COVID-19. Prior to COVID-19, Colorado's largest outbreaks requiring case investigation and mass vaccination (in some cases) lasted months and involved a few hundred people, including a Hepatitis A outbreak among individuals experiencing homelessness and incarceration and a salmonella outbreak in a local water supply.

In 2019, an internal reorganization of CDPHE brought together under one division—the Disease Control and Public Health Response (DCPHR) Division—the expertise that CDPHE would most heavily rely on to guide the state's public health response to COVID-19: OEPR, the state lab, the immunization branch, and Colorado's communicable disease epidemiologists. The CDPHE executive director initiated this reorganization months prior to the COVID-19 pandemic and in consultation with the governor to help the agency be better able to respond to public health emergencies. The reorganization enabled CDPHE to run the disease control response primarily out of the DCPHR Division, and the key players in that division had established relationships that facilitated response coordination, information sharing, and collaborative problem solving. There was also a direct line from the CDPHE incident commander to the department's executive leadership, which promoted vertical integration of the department's response. As structured, DCPHR will likely continue to serve as the focal point for CDPHE in most public health emergency responses, especially infectious disease outbreaks.

However, even with the reorganization, to their credit, CDPHE, DHSEM, and the governor recognized early on—even before the first confirmed case of COVID-19 in the state—that any single agency would be overwhelmed trying to manage a response of great magnitude and scope on its own, so they coordinated to put in place a UC structure to support the state's response.

Recommendations:

- The state should review the type and level of response functionality that is expected of OEPR and then sufficiently resource and fund this mission for future public health emergencies. Efforts are already underway to do this; those efforts should carefully consider the long-term costs required to sustain increases in staff and operational capabilities given the ebb and flow of federal funding for public health emergency preparedness and response.
- CDPHE should codify updated roles and expectations for OEPR in existing preparedness and response plans and policies (including the biological/highly

infectious disease annex of the *State Emergency Operations Plan*), and test these plans through a rigorous, multiyear training, exercise, and corrective action program.

- CDPHE's DCPHR Division should continue to codify in the agency's emergency plans and procedures, the processes and information-sharing protocols that worked effectively during COVID-19.
- The DCPHR Division should continue to train and exercise as a unit to promote preparedness for future emergency responses.
- DHSEM should work with CDPHE, the Governor's Office, and other agencies that have a role in emergency response to ensure the appropriate leadership and staff are trained on NIMS/ICS as part of their onboarding process.

Finding 7. The lack of strategic direction for health care coalitions (HCCs), as well as conflicting expectations and authorities, created confusion around the role of HCCs during the response.

HCCs are "a collaborative network of healthcare organizations and public and private sector emergency response partners that come together to coordinate and prepare for emergencies and disaster events."[20] However, during COVID-19, HCCs lacked a clear understanding of their response role in a public health emergency despite efforts in recent years at the federal level to encourage coalitions to develop an incident response capability.[x] In some instances, HCCs identified and filled gaps to improve situational awareness of the impacts on healthcare organizations, but the HCCs' overall response was inconsistent across the state. Prior to COVID-19, the coalitions served primarily to coordinate preparedness activities among hospitals, other healthcare providers, and other partners in

Figure 10. A map of the Colorado HCCs (*Source: South Region HCC*)

[x] The CDC Hospital Preparedness Grant requires the funding of HCCs as a key component of the grant. However, the implementation of this funding is variable across regions, leading to inconsistent implementation of the coalitions and their roles and responsibilities.

the regions, such as emergency management. When the pandemic struck, there was no strategy or plan describing the HCCs' role in response. As HCCs engaged with their members to see how they might be able to help in the response, it became clear HCCs could play a key role in gathering, collating, and analyzing data on healthcare facility capacity and resource needs for distribution to CDPHE. To varying degrees, HCCs attempted to fill this role despite not being sufficiently resourced or trained to assume a response role, especially over a long-duration incident like the COVID-19 pandemic. Additionally, due to the impact of COVID-19 on hospital status, and the priority of response efforts to preserve hospital capacity, the governor and UC needed a direct connection with hospitals, which was filled by two standing meetings: one between the governor and hospitals' chief executive officers (held for approximately the first six to nine months of the pandemic) and the other between the CDPHE executive director, UC, CDPHE chief medical officer, and the hospitals' chief medical officers (held for the duration of the response). Throughout the pandemic, the state worked very closely with these entities to share critical information on hospital status. Additionally, CDPHE developed systems to capture hospital status (e.g., bed capacity) directly from the hospitals. These actions supplanted some of the potential roles of the HCCs.

Recommendations:

- In the future, HCCs could serve as a resource to support incident response, especially in bridging information gaps between public health and healthcare. There is a possibility that they could also play a role in the response (e.g., vaccine distribution, sourcing scarce supplies). CDPHE and DHSEM should assess the authorities of HCCs to help determine what, if any, roles they could fill. The state should be careful to ensure there is utility in having these groups involved in emergency response and not simply adding another layer of required coordination and information flow that could delay operations.
- The state should examine if any best practices emerged nationally or in other states for HCCs' roles in the COVID-19 pandemic and consider these approaches when developing plans for HCCs in Colorado.
- If a role for HCCs is identified and agreed to, the state should develop a plan and strategy for engaging HCCs in response to an emergency and include HCCs in future training and exercise opportunities.
- CDPHE should formalize relationships and coordination structures established with the hospitals (e.g., the weekly meetings with hospital executives that were held throughout the COVID-19 response) in the appropriate emergency management and public health response plans. CDPHE and DHSEM should invite hospitals and hospital executives to participate in future exercises.

Planning and Innovation

Finding 8. Understanding that the COVID-19 pandemic would have considerable economic impacts, the state quickly stood up an economic task force and implemented innovative economic initiatives to support Coloradans.

On March 20, 2020, Governor Polis announced actions the state was taking to address the economic impacts of COVID-19, including the implementation of a social safety net response (e.g., deferral or suspension of tax payments, evictions, foreclosures, loan payments, and utility shutoffs and expedition of unemployment claims) and establishment of a council on economic stabilization and growth.[21] The Governor's Economic Stabilization and Growth Council was a new partnership between the state, business and civic leaders, and industry groups tasked with assessing the economic impacts of COVID-19 in the state that was responsible for identifying actions and recommendations to help protect the Colorado economy and economic well-being of Coloradans. The council looked at multiple sectors of the economy and established nine committees: arts and culture; energy; entrepreneur, local, rural, and women- and minority-led businesses and nonprofits; financial services; infrastructure; labor, employment, and education; outdoor recreation; tourism; and transportation recovery working group.[22]

"The economic and social components [of the response] were as critical as the public health component."

Committees were staffed by hundreds of community volunteers interested in helping their fellow Coloradans. These committees had to be creative with recommendations as at the beginning of the pandemic there was no funding available for economic recovery and the budget outlook for the next year was "devastating" as businesses were shut down. Over its nine-month tenure, the council made both short- and long-term recommendations to the governor, which helped inform executive orders and policy decisions and provided guidance to individuals and businesses. The council also made recommendations to the federal government in areas such as permitting processing, tax credits, transportation relief, economic relief funding, waivers (e.g., for rental charges), assistance navigating financial programs, food access programs, and requirements for federal relief programs like the Small Business Administration's (SBA) Paycheck Protection Program (PPP) and the Economic Injury Disaster Loan Emergency Advance (EIDL) program.[23,24]

We were essentially asking the question, 'How do we get funding out to support businesses and the community without a budget?'"

Many of the recommendations made by the council were implemented and helped support Coloradans and Colorado businesses. For example, the council helped inform the COVID-

19 relief fund (discussed in the next finding), established minority and small business grants, Colorado Loans to Increase Mainstreet Business Economic Recovery (CLIMBER) fund[25] (which borrowed money from the treasury for life insurance policies that the state held), and helped businesses apply for the SBA PPP loans. To provide assistance with PPP loans, the committee established a 24/7 call line that businesses could use to ask questions and trained over 300 small business consultants to provide direct assistance.

Recommendations:

- The state should define and formalize the Governor's Economic Stabilization and Growth Council, identify its relationship with other state-level economic and recovery structures and organizations, and identify when and how to staff the council, including which sectors to include, ensuring diverse representation from across the state, and identifying members with time and expertise available to devote to the effort.
- OEDIT should continue to maintain and grow relationships with existing industry groups and leverage these relationships to help inform future response and recovery activities. This includes maintaining up-to-date stakeholder lists to enable rapid communications when merited.
- DHSEM should include potential sources of funding for future economic recovery programs in emergency response and recovery plans for situations when funding is not available from the state and federal government.

Finding 9. The innovative COVID-19 Relief Fund filled early funding gaps and fostered key relationships with communities.

Governor Polis developed the philanthropic Colorado COVID-19 Relief Fund (launched on March 18, 2020) to provide rapid financial support directly to those in the community most impacted by COVID-19.[26] Between April and July 2020, the philanthropic Colorado COVID-19 Relief Fund raised just under $24 million and gave out over 1,000 grants of up to $25,000 (or up to $100,000 for a collaborative grant involving three or more organizations) for work focusing on prevention, impact, and recovery. The fund supported 763 community-based organizations across the 64 counties, including local food banks, community-based organizations making masks, hospitals, school districts, and other facilities that needed funding to purchase PPE. To accomplish this, the Governor's Office partnered with Mile High United Way, which managed and distributed funds, and the Colorado Health Foundation, which reviewed and approved the grants. Using this model, the Governor's Office also helped set up another relief fund in the fall of 2020 for restaurants to apply for $5,000 grants to purchase infrastructure to set up outdoor dining.

That effort raised $3 million and provided grants to about 250 restaurants. Importantly, through this effort, the Governor's Office engaged with and built relationships with community partners, which had a critical impact on the vaccination campaign, as they reached out to these same partners for outreach assistance to increase access to disadvantaged communities (see Finding 16).

Governor Polis announcing the Colorado COVID-19 Relief Fund (Source: Denver7 ABC)

Recommendations:

- The Governor's Office and DHSEM should leverage the experience of setting up the philanthropic COVID-19 Relief Fund and develop a framework or plan to create similar relief funds for future real-world incidents.

Finding 10. There were several additional examples of innovation that bolstered response and recovery operations.

Colorado's response to the pandemic was marked by innovation throughout as many of the activities undertaken and response structures developed were not previously part of pandemic plans (see Finding 11). In addition to the economic innovations covered in the Findings 8 and 9, many of CDPHE, CDPS, and CDOC's actions were innovative (and are discussed in other findings) and include, for example, mass and drive-through testing, the at-home testing program, a data portal CDPHE developed for local public health authorities, mobile vaccination buses and pop-up vaccination clinics, 24/7 CDPHE laboratory operations, collaboration with academic institutions for epidemiologic disease modeling, the staffing shortage fusion center, and the statewide approach to PPE acquisition and distribution.

Some additional noteworthy examples of innovative actions taken by the state government include the following:

- In the early days of the pandemic, the Governor's Office established the Innovation Response Team (IRT), which tapped into the state's business community to bring new perspectives and talent to the response. Over the course of the pandemic, the IRT conducted vendor research and vetted requests for purchase orders; developed a rapid technology procurement process involving a 30-day vendor trial period and input from users to quickly source and test new

technology and used this process to procure the contact tracing system, Dr. Justina; explored new technologies, such as 3D-printed face shields to address the PPE shortage; identified new sources that have not typically been engaged in government procurement, such as identifying and sourcing test kits from South Korea when there was no available domestic supply (which was the first time the state directly procured and imported a product from another country); explored ways to modernize databases for vetting and mobilizing volunteers; and supported the development of exposure notification applications for cell phones that anonymously alerted people when they had been around someone with COVID-19.

- The CDOT Office of Transportation, Safety and Risk Management developed a decision tree to help identify quarantine times for employees, based on CDC guidance and CDPHE protocols. They shared the decision tree with CDPHE, which provided it to the Department of Personnel and Administration (DPA) for further dissemination to other state agencies.
- In early 2021, CDPHE developed a partnership with Amazon and a digital medical health provider to provide telehealth appointments and ship Abbott BinaxNOW COVID-19 antigen at-home test kits directly to educators' homes. This was an important step in returning students and teachers to in-person learning in classrooms.[27]
- The state auctioned the unused and unneeded medical equipment procured for the ACSs.[28] While auctioning of unused equipment (to recuperate costs) is not novel and usually handled by Colorado Correctional Industries, leveraging this approach following a disaster response and with outside support was a relatively new concept in Colorado and uncommon across the nation.
- State agencies under Emergency Support Function (ESF) #6, which addresses mass care, emergency assistance, housing, and human services in the SEOC, established a task force focusing on the homeless population, which often was not explicitly addressed in the executive orders and public health orders addressing congregate settings (e.g., they were not included in establishing priorities for PPE and vaccines).

Recommendations:

- DHSEM should examine the role of the Governor's IRT in the response and identify if any aspects of the approach should be included in plans for the state's business emergency operations center (BEOC) and strategy for engaging the private sector in disaster response and recovery efforts.
- The Governor's Office should consider institutionalizing an innovation taskforce.

- Successful innovations should be codified into standard operating procedures for future SEOC activations. For example, DHSEM and ESF #6 are codifying their task force focused on the homeless population, and the state should work to develop a rapid technology testing and procurement process for emergency situations.

Finding 11. With the novelty and scale of the pandemic, and limitations on resources, some existing pandemic response systems were inadequate to guide the response to the COVID-19 pandemic, so the state pivoted quickly to develop new, scalable response plans.

Prior to the COVID-19 pandemic, state agencies and their partners had developed and exercised plans to guide their response to a highly infectious disease incident, outbreak, or pandemic. For example, CDPHE had a *Pandemic Response Plan* and Strategic National Stockpile (SNS) distribution plan; the *State Emergency Operations Plan* has an annex for highly infectious diseases (developed post-H1N1); all state agencies have COOP plans; the Colorado Department of Corrections (CDOC) facilities have pandemic response plans; and localities had SNS and point of distribution plans. However, these plans were mostly focused on an influenza-like pandemic and (like similar plans across the nation and the world) did not contemplate a pandemic caused by a virus with high virulence, airborne transmission, and with both severe presentations and asymptomatic transmission.[xi] With COVID-19, planning assumptions were quickly negated and plans upended across the country.

> *"Nothing like COVID was really contemplated because it simply hasn't been seen before. It was so novel—the level of infectiousness coupled with high virulence and the asymptomatic nature—it was the perfect storm."*

Colorado's response partners quickly realized that most, if not all, of their plans greatly underestimated the impacts and needs of the COVID-19 pandemic. This was common across the nation. For example, plans did not anticipate that such a severe pandemic would reach everywhere at the same time, critically impacting supply chains, resources, and staffing; causing a global competition for resources; and affecting how the community spread of a highly infectious disease would impact agency operations and create a need for large-scale remote work.

Additionally, Colorado's emergency preparedness plans hinged on an escalation from the local to state to federal level. State partners expected the federal government to offer plans for some aspects of the response, such as priorities for vaccination, and in many cases national direction was wanting or delayed. For example, Colorado built plans on an

[xi] Colorado also used a number of these plans effectively during the 2009 H1N1 pandemic. A primary reason the H1N1 pandemic was more easily controlled was because infected individuals had symptoms (there was little to no asymptomatic transmission) and infected individuals self-isolated.

assumption that federal medical teams would be able to surge and provide immediate support to impacted states. The Strategic National Stockpile (SNS) was assumed to have enough critical medical supplies to support the needs of the state during a time of crisis. Unfortunately, states found that there were neither personnel nor supplies available from the federal government in quantities necessary to meet the demands of all 50 states at once.

As a result, this unprecedented pandemic required a fluid and nimble response that adopted new structures and plans to guide operations. Partners rose to the occasion and quickly developed many innovative new plans that they enacted with success (e.g., mass testing and vaccination). However, without preexisting plans to guide some operations, some felt that they were delayed in their response, were constantly trying to "play catch up," lacked awareness of the new plans, and plans were not always comprehensive and coordinated. There were also a few instances in which partners believed the existing plans should have been leveraged and modified to guide operations.

"They had a plan, but the pandemic was so much worse than any disaster that had ever happened, including Katrina because that was local. The playbook went out the window."

Some plans were partially followed and modified to meet the needs of the COVID-19 pandemic. For example, the CDOC's facility pandemic plans (although they did not consider a pandemic of this severity and scale) offered good strategies for how to isolate, quarantine, and protect the vulnerable population and "served as a jumping-off point" for their response. The state's existing vaccine distribution plan was also helpful in guiding those operations.

Recommendations:

- A wholesale review and update of the state's response plans, annexes, and operating procedures based on the lessons learned during the COVID-19 pandemic is likely merited. Where new capabilities were developed, the state should codify them in state agency and overarching plans. Care should be taken to not be overly prescriptive and too closely tied to what was enacted for the COVID-19 pandemic, as the next pandemic or emergency may have unique needs and considerations. The plans should also be flexible and dynamic, leveraging a scalable and modular response (e.g., as was implemented with the task force structure for the COVID-19 pandemic).
- Relevant state agency personnel and response partners should be trained on and exercise the updated plans once developed.
- CDPHE and DHSEM should update the *State Emergency Operations Plan*'s Biological/Highly Infectious Disease Incident Annex and Public Health Annex to

mirror the structure of the state's fire response plan. It should include an objective matrix identifying roles and responsibilities and set escalation and de-escalation criteria for public health emergencies, as well as requirements for long-duration pandemics and public communications.

Finding 12. For many of the organizational structures put in place and activities undertaken, the questions of if, when, and how they should be downsized, demobilized, and reactivated remains to be determined.

At the onset of the pandemic, the State of Colorado endeavored to determine which organizational structures and plans to activate. It was clear some structures were needed immediately (e.g., UC, Governor's Policy Group, and the JIC), and the state acted quickly to activate and establish them. The structures initially established were based primarily on existing plans and procedures and informed by previous disasters and emergency responses. However, as the pandemic progressed, the state found some of the preplanned structures and organizations, such as the ACS management structure, were not optimal for the response. In response, the state conceived and established several new organizational structures, including the SSFC, Governor's IRT, and various task forces.

The novelty of some of the structures, along with the uncertainty presented by the pandemic, led many to question when and how activated structures should be downsized or demobilized and later reactivated, if necessary. The at times conflicting goals of being fiscally responsible, able to rapidly respond, and organizationally nimble make these decisions an ongoing trial for emergency management and public health entities. The unpredictability of COVID-19 (e.g., the characteristics and impacts of the different virus variants) further complicated these decisions. Additionally, the protracted timeline for the pandemic and associated response efforts upended everyone's expectations about how long response structures should or could be activated. Prior to COVID-19, the longest activation of the SEOC for a single event was approximately 30 days (for the 2013 floods). This has led many to wonder if emergency management should reimagine its role for long-duration events like pandemics, especially as disasters become more frequent and severe.

As the state experienced the various waves and strains of COVID-19 (e.g., original, Delta, and Omicron variants), responders deactivated and reactivated some response structures, for example, the SSFC. As a result, state agency personnel now have a vast amount of institutional knowledge about what organizational structures worked well, which were suboptimal for the pandemic response, and when they were needed or could have been useful. However, much of this still resides as institutional knowledge and has yet to be or is in the process of being codified into policies, plans, and procedures. If not captured and documented, that knowledge may be lost with turnover, reassignment, and promotion of personnel.

Additionally, when the COVID-19 pandemic began to wane and organizational structures demobilized, CDPHE had to determine which of their over 1,000 new positions needed to be kept to "right size" the organization and provide the needed personnel for a potential future surge. CDPHE engaged a consultant to conduct an organizational assessment to inform these decisions. Through legislation, the state has temporarily funded approximately 100 CDPHE positions required to address personnel gaps identified during the response (e.g., mid-level managers, regional liaisons, and equity branch personnel).

"COVID-19 is not an incident. We treat it that way, but it's an ongoing public health emergency. That means the problems are not incident problems or response problems, but system problems."

Finally, the next COVID-19 variant or wave, pandemic, or public health emergency may not be the same, and some of the structures put in place and activities undertaken may not be merited. The diminishing availability of federal funding for the pandemic also presents challenges for the state, as many of the organizational structures and activities enacted and undertaken were supported by federal funding (e.g., COVID-19 testing for state employees and public outreach and communications efforts). The fact that federal funding is not a consistent funding source[xii] further complicates the development of "titrated" or tiered response activation and deactivation plans.

Recommendations:

- As part of the review, update, and development of state agency pandemic and emergency response plans (described in Finding 11), state agencies should consider and determine triggers for activation and deactivation of response structures, along with how to scale the capabilities provided to meet the needs of the incident. For example, the pandemic response plan could titrate the level of activation with infections, rates of vaccination, hospitalizations, and deaths.
- DHSEM should engage in discussions with the Governor's Office and other response partners on long-duration emergency responses and the role of emergency management.
- CDPHE should work with the state legislature to ensure long-term funding is provided for the approximately 100 new CDPHE positions required to address the personnel shortages (e.g., regional emergency management staff, equity personnel, mid-level managers) identified during COVID-19.

[xii] The availability, amount, and types of federal funding varied over the course of the pandemic, with most of the funding a result of emergency response and stimulus packages authorized by Congress solely for COVID-19. Additionally, requirements the federal government levied on the use of federal funds evolved over the course of the pandemic.

Finding 13. The COVID-19 pandemic response was truly whole-of-government for Colorado. State agencies not normally engaged in disaster response have learned what capabilities and support they can offer; however, efforts remain to educate others about each agency's roles and capabilities.

The first reported cases of COVID-19 in Colorado in early March 2020 initiated a whole-of-state government response that, over three years later, was still ongoing. Most of the agencies that make up the State of Colorado government were involved in some facet of the pandemic response. Even those agencies that thought they would not have a role in a pandemic, who were not included in pandemic plans pre-COVID-19, and who do not normally engage in disaster response in the traditional sense found they had a role to play. Over the past three years, through the rise and fall of case rates in the state, state agencies have identified and defined their roles in the COVID-19 response—roles that can be leveraged in future pandemics and other emergency responses.

However, even as roles crystalized and agencies adapted to the extraordinary demands of the pandemic, because of the breadth of the response, many likely still do not know the entirety of the activities conducted by the various state agencies in response to the COVID-19 pandemic. Appendix A highlights several key activities supported by state agencies. Those agencies involved in more traditional response, with pre-established relationships and ways of working, may be more aware of each other's activities, but for those agencies that are not traditional participants in disaster response, an awareness of the capabilities and support other agencies have and can offer and vice versa remains nascent. Conducting after-action reviews at the state and agency level (some of which are already occurring) can support identifying the roles served and deconflicting roles for the endemic phase of the response and for future efforts.

Recommendations:

- Each state agency should create an internal AAR of its response to the COVID-19 pandemic to capture activities and lessons learned and share the results of their analysis within their agency and with partner agencies. This report captures many aspects of state agency responses but is unable to capture all lessons learned because of the magnitude of the COVID-19 pandemic and associated response efforts.
- State agencies should codify new emergency response roles in agency and state response plans in coordination with DHSEM and CDPHE.
- State agencies should find creative and engaging ways to socialize their newfound capabilities with other state agency partners. For example, spotlights could highlight and laud the exceptional work of individual staff members and share their experiences supporting the COVID-19 response with other state partners.

Executive Orders and Public Health Orders

Finding 14. The executive orders and public health orders issued by the Governor and CDPHE Executive Director, respectively, were informed by state agency leadership, stakeholder engagement with industry and constituents, data-driven, and largely helpful in meeting the needs of the response.

Over the course of the pandemic response, the State of Colorado issued over 200 executive orders and 18 "original" public health orders (with many amendments leading to a total of 99 public health orders) to address different issues and actions needed to mitigate the spread of COVID-19 throughout the state. This was a historic number of executive orders and public health orders, far exceeding the average of approximately 50 executive orders and one public health order per year. The governor had exceeded 50 executive orders by the end of April 2020, which demonstrates the speed by which decisions had to be made and actions implemented to protect Coloradans.

It is also worthwhile to note that public health orders prior to the COVID-19 pandemic had been mostly directed to one person or organization and were usually short in duration (a few days to months). The CDPHE executive directors had never before experienced a situation where a public health order was needed for the entire state or even a county. However, public health statutes provide broad authority to the CDPHE executive director to take actions necessary to stop and mitigate disease spread, so the legal authority to implement them at that level did exist.

The executive orders and public health orders that the governor and CDPHE executive director implemented, respectively, were data-driven, using available epidemiological data, outbreak data, hospital capacity information, and modeling data. The Governor's Policy Group, CDPHE director of legal and regulatory affairs, and the governor's legal team worked together to determine if an order was required and whether it should be implemented as an executive order, public health order, or a combination of the two (based on authorities and desired impact). Often, an executive order set the framework for a mitigation activity and the public health order implemented the executive order in more detail.

The development and implementation of the executive orders were also informed by stakeholders (e.g., medical facilities, hospitals, and constituents), leadership from state agencies, the Advisory Committee for Cooperation and Implementation, industry groups, community groups working with vulnerable populations, and additional experts. The collaborative and multi-stakeholder nature of the efforts to develop public health and executive orders ensured the orders met the need. The involvement of leadership from different state agencies, for example, ensured they could be implemented by the agencies. Additionally, in Colorado, state and local public health entities both have statutory authority of disease mitigation. When necessary, the state executed that

authority and, when conditions merited, the Governor's Office and CDPHE executive director reverted to local authority by amending and rescinding the executive orders and public health orders that implemented temporary statewide requirements. Finally, all actions implemented through executive orders and public health orders were temporary in nature, and not intended to circumvent the rule-making process to implement permanent changes. Any orders that require a permanent change (e.g., hospital reporting requirements and universal access to immunizations) have since or will soon go through the legislative process to determine if they should become laws or rules.

Recommendations:

- DHSEM and CDPHE should review the executive orders and public health orders enacted in response to COVID-19 and capture the actions taken and regulations modified. These activities should be included in an addendum to the state's biological/highly infectious disease annex to the *State Emergency Operations Plan* as possible mitigation activities for future public health emergencies. They should also consult the Governor's Policy Group for activities considered but not undertaken, to determine any additional mitigation strategies that might be helpful to include as options.

Finding 15. Some of the executive and public health orders issued to suppress disease transmission through increased understanding of best practices and voluntary compliance caused confusion on mechanisms for compliance in local agencies.

During periods of peak disease transmission rates and before vaccines were readily available, the governor and CDPHE executive director issued executive and public health orders on mask-wearing, business closures, recreation, congregate living conditions, and stay-at-home mandates for non-essential workers. These orders were clear in their intent to suppress disease transmission. However, statewide orders presented challenges and confusion on how to best gain compliance. The intent of the executive and public health orders concerning individual actions was to suppress disease transmission through voluntary compliance. Issues regarding voluntary compliance versus strict enforcement were mainly addressed through CDPS working directly with local law enforcement. CDPS emphasized the intent of the orders and the need for local law enforcement to continue to exercise discretion appropriate for their individual communities. This discretion was weighed against both reduced capacity of enforcement agencies and challenges with system capacity and staffing during the pandemic. To better facilitate these actions, the Governor issued an executive order creating the Cooperation and Compliance Committee to facilitate voluntary compliance and share best practices suited for the variety of diverse communities across the state.

Recommendations:

- When updating the biological/highly infectious disease annex to the *State's Emergency Operations Plan*, including possible pandemic mitigation strategies (described in Finding 14), DHSEM and CDPHE should include information on potential challenges and public responses associated with implementing each mitigation strategy.
- For future executive orders and public health orders, the state should consider co-issuing an internal memo to state agencies and localities reminding them of the intent of the orders and that they should continue to have discretion in their enforcement activities.

Health Equity and Vulnerable Populations

Finding 16. The pandemic highlighted and exacerbated the disproportionate impacts disasters have on at-risk, disadvantaged, and traditionally underserved groups. The state responded with a multifaceted approach to reach these populations and increase health equity and access to COVID-19 testing, vaccination, and treatment.

Socially, economically, geographically, and physically disadvantaged individuals and other vulnerable populations suffered disproportionately from the effects of COVID-19. As the pandemic progressed, so did the state's understanding of which populations were at risk and more vulnerable, and therefore necessitated a priority focus for the state's response. Priority populations grew to include Black, Latinx, and Native American individuals and other people of color; those living in remote communities; people with disabilities and access and functional needs; older populations; homebound individuals; those under the care and custody of the state (e.g., those in adult and youth correctional facilities, individuals in long-term care facilities, children in the welfare system, and those in facilities for the developmentally disabled); the LGBTQ community; the homeless population; those with transportation barriers; those with limited use or no access to communications technology (internet, cell phones); those with limited English proficiency; undocumented individuals; and K-12 students.

In response to the health inequities revealed by COVID-19, the state undertook a variety of activities to reach vulnerable populations. Efforts to support those in correctional facilities and K-12 students are discussed in Findings 19 and 20, respectively. Other key examples include the Governor's Office COVID-19 Health Equity Response Team[29] and DCPHR's Health Equity Branch within CDPHE (discussed in Finding 17), the Vaccine Equity Task Force,[30] Champions for Vaccine Equity Initiative,[31] Residential Care Strike Team,[32] SEOC Homeless Population Task Force, "Resilience Hubs," vaccine equity clinics, and a mobile vaccination capability[33] to address access barriers to testing, vaccination, and treatment.[34]

- The **Colorado Vaccine Equity Task Force**—a collaboration between the state, private sector, academia, and local public health authorities—worked to identify vulnerable populations and develop strategies to reach them as part of the state's overall vaccination effort. They also offered vaccination guidance to help ensure vaccines were available to everyone.[35] After the vaccination effort, this task force then helped invigorate the effort to equitably offer access to and distribute monoclonal antibody treatments.

The state provided emergency housing payments to over 45,000 Colorado households totaling over $229 million in assistance.

- Through the **Champions for Vaccine Equity initiative**, CDPHE's Immunization Branch worked with healthcare professionals and crisis counselors to reach communities of color and share accurate information about vaccine efficacy, safety, and access, empowering them to make the best decisions for themselves and their families.
- The state established a **Residential Care Strike Team**—made up of individuals from the Department of Health Care Policy and Financing (HCPF), CDPHE (including Health Facilities and Emergency Medical Services Division), Colorado Department of Human Services (CDHS), Colorado Department of Public Safety (CDPS), Department of Regulatory Agencies (DORA), and the Governor's Office—focused on reducing the number of deaths in residential care settings. The team provided guidance, testing, and other resources to residential care and other long-term care providers.
- The SEOC, led by ESF #6, established a **Homeless Population Task Force** that developed a housing plan for isolating and quarantining those experiencing COVID-19 and helped establish priorities for PPE, testing, and vaccination for the homeless population and the congregate settings in homeless shelters. The SEOC established this task force because it could assist that vulnerable population, who were often not explicitly supported by other efforts or called out in executive orders. As a result, the SEOC is codifying this task force into an SOP for future SEOC activations.
- Through the philanthropic COVID-19 Relief Fund (discussed in Finding 9), the state had a direct line to communities and developed trusted partnerships with priority populations and local leaders. Leveraging these relationships, the state helped create **"resilience hubs,"** which were community owned, supplemented government actions, and created new avenues for marginalized populations to participate in government. They also informed the location of vaccine clinics.

- The state established **vaccine equity clinics** for each region (using census data) and a network of over 2,000 vaccine providers. At these clinics, the state provided the vaccinations and medical staff, and CDPHE developed a reimbursement process for other supplies (e.g., PPE) funded through philanthropies. When the vaccine was approved for children, the state established vaccination clinics at locations frequented by children (e.g., zoos, children's museums, schools, and children's hospitals).

The state supported over 2,000 vaccine equity clinics and over 2,000 mobile vaccine clinics in key equity areas.

- The state used 15 **mobile vaccination clinics** (buses) to reach individuals in rural and underserved urban communities. Mobile clinics also helped reach individuals off hours—in evenings and on weekends.

Colorado COVID-19 mobile vaccination bus (Source: DHSEM)

A key aspect of the equity efforts included developing true community partnerships to help reach the priority populations, inform the location and design of vaccine equity clinics, and inform decisions about how to distribute vaccines and later therapeutics, including to those who are homebound and lack transportation access. For example, the state set up vaccine equity clinics in the community where Latinx people felt comfortable, and buses transported vaccines to people in mountain and other rural communities. Through the relationships developed through the COVID-19 Relief Fund many community health centers funded through the funds agreed to be locations for vaccination clinics.

Additionally, the state required no fee, identification, or insurance at Colorado community vaccine and testing sites; provided transportation to vaccination sites in partnership with the private sector; and vaccinated over 2,000 Coloradans in their homes. In-home vaccinations supported individuals with mobility-related disabilities and those in mountain and frontier communities living great distances from vaccination sites. The state also made testing resources widely available through drive-through testing sites,

mass testing sites, the nation's first at-home rapid testing program, and provision of at-home tests to congregate care facilities and schools (see Finding 47).

By December 2022, between the mobile vaccine buses and all equity and pop-up clinics, Colorado administered nearly 940,000 COVID-19 vaccine doses. The 34 Community Vaccination Sites, from the spring of 2021 to fall of 2022, administered over 345,000 COVID-19 vaccine doses.

In the future, and as identified in *Colorado's Next Chapter: Our Roadmap to Moving Forward*, the state will continue to focus on equity in its response.[36] It will continue efforts to provide vaccines to hard-to-reach communities through the mobile vaccine bus and equity clinics and will focus on investigating and reporting COVID-19 outbreaks in residential care facilities, correctional settings, childcare and overnight camps, and highly mobile populations. It is also institutionalizing health equity within CDPHE's DCPHR Division (see Finding 17), and state agencies are hiring equity, diversity, and inclusion officers to infuse equity into government.

Recommendations:

- The state should sustain the focus on vulnerable populations for emergency response and recovery and institutionalize and codify this approach in state plans. Efforts are already underway with the SEOC's SOP for the Homeless Population Task Force and the establishment of the Health Equity Branch of CDPHE. Additionally, state personnel should be trained on and exercise the approach and new plans.
- The state should maintain the partnerships developed with priority community populations, leveraging resilience hubs, and involve them in disaster planning and response so that these communities are aware of the Health Equity Branch and can access services provided during steady state and disasters. The Health Equity Branch should work to build relationships with new community partners and populations to expand the resilience hubs.
- The state should engage community partners and vulnerable populations to solicit feedback on the state's response to the COVID-19 pandemic to inform future planning efforts and identify ways to continue to grow equity efforts.

Finding 17. State efforts to advance health equity related to COVID-19 testing, treatment, and vaccination for at-risk/underserved populations resulted in the creation of a permanent Health Equity Branch within CDPHE's DCPHR Division.

At the beginning of the pandemic, the state identified the need to develop a strategy to address the needs of priority populations—those who suffered disproportionately from

COVID-19. Because of the impacts of COVID-19, equity became a significant focus for response and recovery efforts across many aspects of the state's response and a unified approach was merited. On April 17, 2020, the governor established the COVID-19 Health Equity Response Team.[37]

The Health Equity Response Team generated and used data about vulnerable populations to inform decision-making; developed proactive measures to curb the spread of COVID-19 in specific communities; increased access to testing, care, and vaccination; developed policy recommendations; shared information; and brought in community members to help inform equity decisions and reach vulnerable communities. This group's efforts and the additional activities focused on health equity (noted in Finding 16) demonstrated an essential recognition by the state of the need to provide tailored and targeted public health and safety information and services to these populations. In late 2021, the state decided to institutionalize this approach by creating a new Health Equity Branch within CDPHE's DCPHR Division. This new branch consolidates many of the relationships and efforts focused on health equity for COVID-19 and enables the state to integrate equity considerations into existing communicable disease programs.[xiii]

Recommendations:

- Equity should be a component of all emergency responses (in addition to communicable disease efforts), and the state should institutionalize the Health Equity Response Team beyond COVID-19. The state should consider adding an equity position to the incident management structure and ensure long-term funding for the DCPHR Health Equity Branch (funding for this branch is term limited and currently ends in June of 2024).
- The state should consider merging efforts of the SEOC Homeless Population Task Force with the Health Equity Response Team and expanding focus to all vulnerable populations, with a flexible definition of which groups may be vulnerable as different disasters and emergencies may affect different vulnerable groups than those impacted by COVID-19.

Finding 18. The state leveraged credible community messengers, targeted marketing, and audience-sensitive messages to provide accurate information and increase equity access for at-risk populations.

This approach was seen across state agencies, the Colorado Commission of Indian Affairs in the Lieutenant Governor's Office, and the JIC, which used layered, broad, and diverse communication strategies and tactics. For example, the Colorado Commission of Indian

[xiii] CDPHE also has an Office of Health Equity established in 2004 and dedicated to dismantling equity barriers at the state level.

Affairs worked directly with tribal chairpersons from the tribal nations in Colorado to understand the unique needs and characteristics of Native American populations that make them more vulnerable to the impacts of COVID-19, such as limitations on running water, internet connectivity, remote learning, and telework options. The commission tailored its messaging and support to these populations based on the guidance of the tribal chairpersons. The commission also worked with American Indian and Native Alaskan population providers and nonprofits and the Indian Health Service to make sure these providers also understood the unique needs and vulnerabilities of these populations as it relates to COVID-19 and were able to access and provide services to the Native American populations.

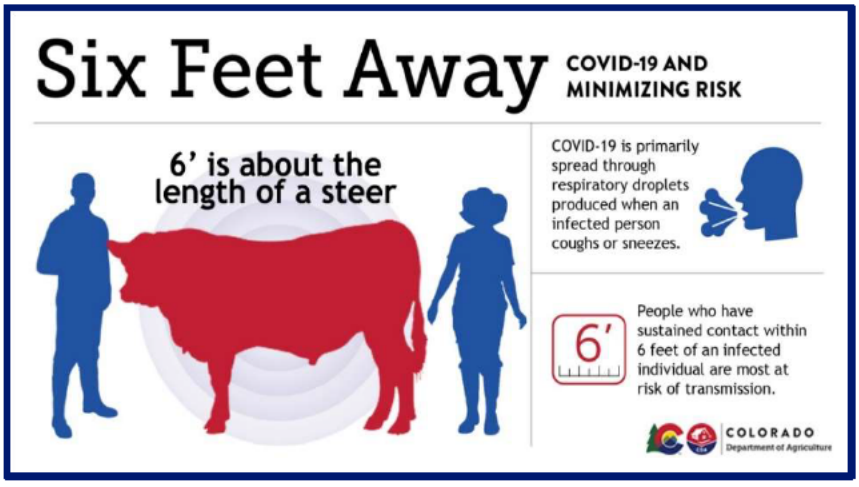
A screen capture of a "Power the Comeback" advertisement (Source: DHSEM)

In another example, in April 2021, CDPHE launched a public information campaign called "Power the Comeback"[38] (#PowertheComeback) to increase access to information about the COVID-19 vaccine in an effort to reduce vaccine hesitancy and help Coloradans schedule appointments. The campaign was informed by CDPHE, local public health agencies, and community organizations and involved community leaders and community members to help increase its reach. Phase II of the marketing campaign focused on vaccination and included deliberate targeting in areas that may not have access to this information through technology. They used nontraditional marketing methodologies such as food trucks, grocery stores, and barber and beauty shops. The credible community messengers from faith-based and community organizations spread messages in geo-targeted areas where at-risk populations are concentrated. Additionally, they geo-targeted digital and radio ads in areas where the mobile vaccine buses were scheduled; the JIC would call local radio stations in advance to alert them of the buses' schedules. In total, the COVID-19 JIC managed eight marketing campaigns educating the public about the COVID-19 vaccines. In total, these campaigns resulted in 1.1 billion impressions. Finally, the messages disseminated were audience sensitive. Graphic designers, at the

direction of public information officers (PIOs), deliberately avoided anything that could inadvertently promote stereotypes and racism, such as showing masks on people of Asian descent.

An advertisement from the "We're Here for YOU, Colorado!" HCPF Campaign (Source: HCPF)

Another example of tailored marketing campaign for vulnerable populations was HCPF's "We're Here for YOU, Colorado!" campaign (#hereforyouCO).[39] The goal of this campaign was to spread awareness of the healthcare coverage available through the Health First Colorado (Colorado's Medicaid program)[40] and Child Health Plan Plus[41] programs to eligible individuals and families (especially as program eligibility increased due in large part to increased unemployment during COVID-19). Another goal of the campaign was to recruit additional healthcare providers. HCPF distributed the campaign in multiple languages and through printed and digital media, including social media, such as YouTube.[42]



A social distancing message from CDA (Source: CDA)

Additionally, the Colorado Department of Agriculture (CDA) supported messaging for farmers and rural populations regarding social distancing. Messages that

encouraged testing at sites operated by the Colorado National Guard (CONG) indicated clearly that no questions would be asked about residency status and that offering a name was not required. Infographics used in ads and at testing and vaccination sites guided those with limited English proficiency. At medical clinics, the state provided funding for community outreach to meet local language needs to guide non-English-speaking people through clinics.

Recommendation:

- The state should continue this approach to messaging for public health and other emergencies and look to determine how it can institutionalize and expand the effort. For example, consider (1) engaging more faith-based and community organizations that can help disseminate messages and formalize a mechanism to engage them at a regular cadence; (2) expanding the types of community members engaged (e.g., expand the use of social influencers and celebrities); (3) expanding languages supported; (4) determining if there is a way to compensate cultural brokers for their support (If demands on their time surge); and (5) developing a catalog of messaging examples and templates.

Finding 19. Actions implemented by the Colorado Department of Corrections, the governor, DHSEM, Colorado National Guard, Office of Information Technology, and CDPHE helped limit the spread of COVID-19 in correctional facilities.

A primary mitigation activity involved support from CDPHE, CONG, OIT, and DHSEM to CDOC to establish ongoing testing capabilities (at times, twice-weekly testing) for all staff and CDOC residents. To develop the CDOC testing capability, CDPHE helped develop the plan and provided subject matter expertise, DHSEM provided the tests and other testing resources (including mobile buildings), CONG provided personnel, OIT developed a program with scanners and computers to automate the processes, and CDOC provided staff (including hired temporary staff) to run the testing centers. CDOC's COVID-19 testing capabilities remained operational through the writing of this report and became a model for other state agencies.

"With exception of two of 40 facilities around the state, the rate of spread was safer than if [those in the state's custody] had been in the community."

Pre-existing CDOC pandemic plans also laid the foundation for mitigation plans, including how to isolate and quarantine individuals; CDPHE helped CDOC tailor and expand these plans as they learned more about the virus and its transmission. CDOC also developed a centralized response team for staff, including a hotline, to help them report exposure or illness, determine when individuals should test following exposure, and identify how long they should isolate or quarantine to limit exposure to CDOC residents. The team involved two nurses, three analysts, and data

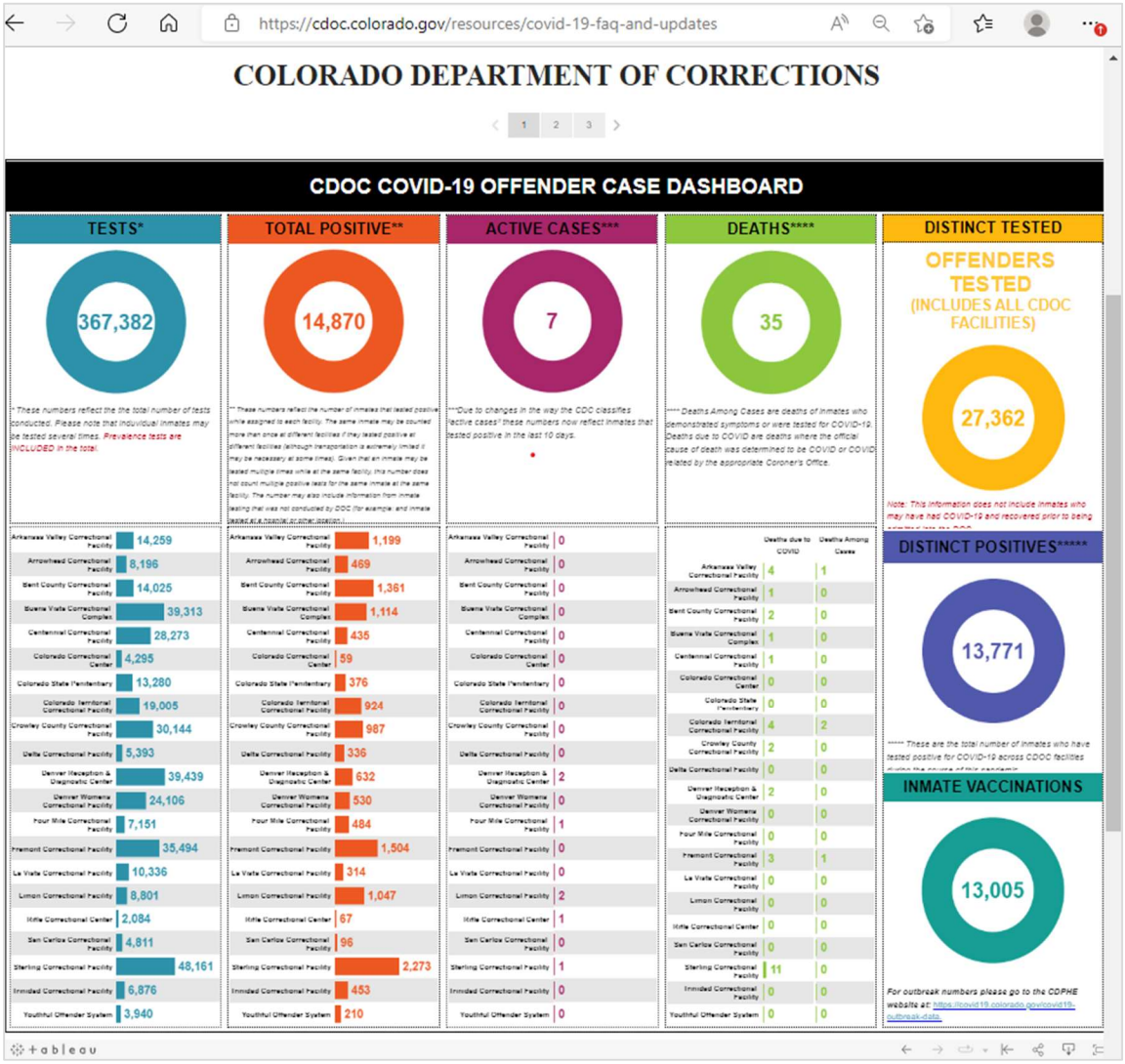
technicians. Staff could only return to work once approved by the centralized CDOC COVID-19 response team. The team's approach followed CDC guidelines and standardized the process across the agency, which also reduced the burden on individual facility leadership (e.g., wardens) to manage staff who were out sick with or exposed to COVID-19. Once available, the system was also used to track immunization status and exemptions.

Additional actions that helped reduce the spread were the executive orders from the governor allowing for efficient management by the parole board of some CDOC residents near their parole dates to manage the prison population, which provided more flexibility and space to isolate and quarantine exposed or sick individuals. DHSEM also helped to source PPE for correctional facilities. CDOC also helped the families and loved ones of incarcerated individuals manage the fear and stress of the pandemic through virtual visits and transparency. CDOC developed a publicly available dashboard[43] (see Figure 11) that provided information on the number of COVID-19 cases at each facility, along with informational resources on topics such as visitation guidelines, video visitations, parole process, and executive orders.

When the COVID-19 vaccine was approved, the federal government decided prioritization for vaccine distribution would be up to each state. In Colorado, the vaccine was prioritized and mandated for those caring for vulnerable populations, including those working in correctional facilities. While the CDOC received some pushback from employees, CDOC leadership communicated the rationale to employees, which included CDOC leadership traveling in person to every facility to hear employees' concerns. CDOC also offered a vaccine booster incentive (bonuses). These actions increased acceptance and led to very few correctional officers leaving CDOC and the rest agreeing to the vaccination or receiving a waiver for faith or medical reasons. CDOC also carefully reviewed requests for vaccine exemptions, ensuring those staff that requested them had a valid reason for receiving a waiver. CDOC also established vaccine clinics to make it easier to get the vaccination. Finally, correctional facility residents more vulnerable to the impacts of COVID-19 (e.g., due to comorbidity or age) were prioritized for vaccination at the same time as their cohort in the general population. For example, residents in CDOC facilities over 70 years old were offered the vaccine at the same time as all individuals over 70 in the state.[xiv]

[xiv] It is worthwhile to note that based on pre-pandemic planning assumptions, all those in congregate care facilities (including correctional facilities) were identified as a population potentially more susceptible to communicable disease due to their living situation. Accordingly, a very draft initial plan for COVID-19 vaccine distribution that CDPHE submitted to the CDC to meet funding requirements prioritized all congregate care residents for vaccination at the beginning of Phase II. When the state examined the data regarding which populations COVID-19 most severely impacted, the analysis revealed that the most

Figure 11. The CDOC COVID-19 dashboard *(Source: CDOC)*



Recommendations:

- The state should develop a data-driven and risk-based framework for prioritization of limited resources (e.g., vaccines, testing, PPE) to individuals, groups, and communities. The prioritization framework should incorporate the needs of the incident (not a set list) as diseases have different impacts and high-risk groups. Also, prioritization of any limited critical supplies during an emergency should

vulnerable population was individuals aged 70 and over, regardless of their living situation. Informed by this data, in the final version of the vaccine distribution plan, all individuals aged 70 and over were prioritized at the same time for vaccination.

involve the input of multiple stakeholders through the UC or Governor's Policy Group and should include equity considerations.

- The state should formalize the prioritization framework in pandemic plans and procedures, including in overarching state-level plans and work to socialize the plan with the public so that future prioritization decisions are more easily defensible. DHSEM should work to integrate the equitable prioritization process into emergency plans and procedures, incorporating the knowledge of which populations may be vulnerable and how vulnerability is defined (e.g., not just more susceptible to disease but also vulnerability present from inequity in access).
- CDOC should continue efforts to update its facility pandemic plans (this activity is already underway).
- CDPHE and DHSEM should document the actions taken to protect this vulnerable population in the state's biological/highly infectious disease annex to the *State Emergency Operations Plan* (as discussed in the recommendations for Finding 13).
- CDOC should (and has plans to) conduct an AAR documenting its response to the COVID-19 pandemic. If possible, CDOC should consider sharing their lessons learned and best practices with other agencies and other departments of corrections, including those outside of Colorado.

Finding 20. Actions implemented by the governor, lieutenant governor, policy group, CDE, CDPHE, and DHSEM prioritized and enabled local school districts to return to in-person learning.

School Mask Program:

Over 5.5 million masks provided to hundreds of educational staff state-wide (406 educational institutions/2,000 schools)

With the April 26, 2020, "safer at home" executive order, schools were to remain closed to in-person learning through the end of the 2019-2020 school year. After the "safer at home" executive order expired, the decision to open or close schools to in-person learning returned to the local school districts, with many (especially rural) school districts electing to open to in-person learning in the fall of 2020. The governor supported local school districts in their decision and enacted programs and provided support to protect students and teachers and enable return to in-person learning. For example, at the direction of the governor, CDE, CONG, and DHSEM distributed masks (including children-sized KN-95 masks) to all schools in Colorado—public, private, and parochial. DHSEM sourced and distributed the masks, and CDE created the distribution request system. Additionally, in early 2021, when at-home COVID-19 tests became available, at the direction of the governor, CDPHE developed a partnership with Amazon and a digital medical health provider to provide telehealth appointments and ship at-home COVID-19

test kits directly to educators' homes. The state also established a school-based testing program, which provided surveillance testing for every student in Colorado beginning in September 2021. When vaccines were available, teachers were prioritized for vaccination.

Through the efforts of the lieutenant governor and the Colorado Commission of Indian Affairs, the state recognized students on tribal lands as vulnerable to learning loss as they could not access remote learning. To address this challenge, the lieutenant governor and the commission solicited help from AmeriCorps and Serve Colorado to provide in-person tutoring for students on tribal lands. Serve Colorado and AmeriCorps also helped address the digital divide by working to teach people on tribal lands about how to use the internet and internet-enabled devices.

Over the summer of 2020, CDE and CDPHE stood up a task force, including a CDPHE epidemiologist, CDE associate commissioner, school nurse liaison, school health inspector, and the Governor's Office, that worked diligently to enable a return to in-person learning, primarily by providing guidance and helping schools apply for funding. CDPHE, informed by CDE's support to understand the school environment, worked to develop guidance on how to safely open and operate schools (i.e., Return to School Toolkit and Guidance[44] and *Roadmap to In-person Learning*[45]), even before the federal government provided guidance.

Additionally, and fortuitously, in the fall of 2019, CDE connected each local school district with their local public health authority and local epidemiologist through a series of workshops on outbreaks in schools (normally held in the spring of each year). This helped foster collaboration early on. When the pandemic occurred, CDE supported school nurses and superintendents with information about COVID-19 precautions and safety protocols through continuous information sharing, including written guidance, weekly webinars and meetings, updates on the CDE website, newsletters, and special information bulletins. Many were frustrated by the slowness and frequent changes in guidance (as the understanding of COVID-19 evolved) so CDE constantly communicated that it understood the guidance was changing, and that it would continue to change as it learned more. This acknowledgement of why information was changing helped many accept and understand the changing guidance.

"Communications was the oxygen; getting everything out to the districts and enabling them to decide what to do…. It was a race to get good information out."

"Here is what we know, here is what we don't know, and here is what we are doing to find out. If you don't tell them information, people will start making up stories."

CDE also helped local school districts apply for and develop plans for federal funds, a requirement for providing those funds to school districts. CDE developed the system required by the

federal government to disperse the funding for schools, including a component to apply for the funding, and reviewed the applications that came in through the system to approve distribution of federal funds.

For the future, in *Colorado's Next Chapter: Our Roadmap to Moving Forward*, the state has prioritized efforts to expand the indoor air quality program and wastewater surveillance at schools to further increase efforts to support a safe in-person learning environment for students.

Recommendations:

- CDE and DHSEM should document the logistics process used to provide materials (PPE and tests) to schools in case a situation arises in the future where this process needs to be repeated. This is important because CDE does not have a role in distributing supplies to schools, so the process used was developed for the first time for COVID-19.
- CDE should engage in efforts to maintain the network and contacts for schools (including private and parochial schools) developed as part of the PPE and test kit distribution efforts.

State Staffing and Personnel

Finding 21. The dedication and efforts of state agency personnel, local agency personnel, and their response partners are laudable.

Since March 2020, state agency personnel, local agency personnel, and their response partners have risen to the immense challenges posed by the COVID-19 pandemic. As many interviewees noted, state agency personnel were incredibly dedicated to the mission and to making things work even with the unprecedented nature, global scale, and uncertain course of the pandemic. Staff efforts in response to the increased demands brought about by the pandemic (both as a result of the pandemic itself and due to staffing shortages as a result of staff members or their families contracting COVID-19) were noteworthy especially as meeting these demands required working well over 40-hour work weeks (while being unable to recoup overtime). For example, many reported working 15-hour days without taking a day off (including working weekends) for months.

"I am most proud of our staff—our staff and the ability of them to just pivot and flex on whatever we asked and whatever came up. The ability to step up and show they are not doing it just for the paycheck."

Despite the fear and uncertainty and the difficulty of navigating staying and working at home—including many COVID responders that wrestled to ensure their children could

simultaneously participate in virtual learning—and despite living through a pandemic while responding to it, people treated each other with kindness, grace, and support. This positivity, flexibility, and collaborative effort between personnel and agencies led to strengthened existing relationships and the establishment of new relationships—relationships that can be beneficial during the endemic phase, any future pandemics, and during non-disaster times.

"What makes this different is in an emergency you go home and forget about the emergency. But here, the emergency is everywhere. There is no shedding of it."

However, even as staff pressed onward in the face of these stressors, the long hours and increased demand resulted in burnout and fatigue. This phenomenon is not unique to Colorado and presents an ongoing challenge for the workforce, even over three years into the pandemic.[46]

Recommendations:

- The state should officially recognize those state employees that tirelessly devoted themselves to the COVID-19 response.
- State agency managers should receive training on managing and identifying stress for their personnel (e.g., training on signs of stress versus burnout).
- As CDPHE, DHSEM, and other state agencies develop plans for rapidly surging staff (as discussed in Finding 25) and for protracted incidents, they should include requirements for time off and limitations on consecutive days worked for both staff and leadership.
- DHSEM and DPA should work with all state agencies to pre-identify essential staff.

Finding 22. The ability to bring on additional personnel to support the pandemic response varied across state agencies, leaving some to manage with acute staffing shortages.

The COVID-19 pandemic increased the workload for many state agency personnel and the Governor's and Lieutenant Governor's Offices and exacerbated workforce shortages for state agencies and certain professions. For many state employees, workload dramatically increased due to several factors, including new roles and responsibilities to support the pandemic response; the retirement of eligible staff; and COVID-19 illness, isolation, and quarantine. These additional staffing pressures came on top of staffing shortages already experienced by many state agencies (e.g., for the Colorado State Patrol (CSP) and CDOC). CDOC experienced a shortage of correctional officers prior to the COVID-19 pandemic. In another example, a shortage of nurses and certified nursing assistants was a critical issue for Colorado's pandemic response and medical surge capacity. In response to these unmet staffing needs and increased workloads, many worked unsustainably long hours, worked

(at home) while sick, and experienced burnout and fatigue, placing further stress on the system.

"With the weight of both the grind and the relentless nature of change that came with the first year, we experienced burnout with a lot of staff members. I think also contributing was the weight of understanding the impact of the work; we couldn't just put some work down for the next day. We do have resources, for example the Colorado State Employee Assistance Program (CSEAP), but it's hard to access them when you're so busy doing the work. Sometimes, with good intention, someone might say you just need to take time off; that's not helpful because it's not realistic. An emergency perpetuates a sense of obligation. And the grind has started becoming the norm and this has to be accounted for."

Some state agencies were able to address the need by hiring additional staff (temporary and permanent), increasing the number of hours staff members were approved to work, offering bonuses (e.g., CDOC and CDHS), providing overtime pay, and leveraging staff from other parts of the agency or other state agencies. For example, early on CDOC made the decision to pay for overtime using funds available from their operating budget (based on vacancies) and American Rescue Plan Act (ARPA) funds. They also offered discretionary pay for the CDOC testing team and when facilities were in an outbreak status. Parole officers (normally working in the community) were offered discretionary pay to work in CDOC facilities. With little activity in international tourism and trade during the early months of COVID-19, OEDIT was able to move staff from supporting those functions to helping with the COVID-19 business funding and incentives office efforts.

Prior to COVID-19, CDPHE's disease control and emergency response functions had experienced over a decade of federal funding reductions cuts, with little state investment. In 2021, the Colorado General Assembly appropriated 21 million dollars annually to CDPHE for three fiscal years for state and local public health administration and support. With this, CDPHE massively scaled up, bringing on more than 1,000 new employees. The scale-up of CDPHE also benefited DHSEM; as a partner agency they received five additional staff members. The JIC was also able to temporarily bring on additional staff from other state agencies' PIOs. The Colorado Department of Labor and Employment's (CDLE) Division of Unemployment Insurance doubled in size from 400 to 800 staff.

For other agencies, staffing obstacles (perceived and actual) persisted. Some agencies turned toward and were supported by the CONG; however, CONG is limited in the tasks it can support based on its scope and mission (see Finding 25). Additional staffing needs were filled by volunteers from Serve Colorado, other agencies, and contracted support,

but there were limitations and challenges to each of these sources as well. COOP plans, for example, often call for agencies to seek assistance from other agencies when experiencing staffing shortages, but those resources were not readily available. CDPHE and DHSEM did source a few volunteers from other agencies in the early months of the pandemic, but volunteers were not a long-term solution, as it would leave other agencies with more severe shortages. Mutual aid was also unavailable.

> *"When it came to hiring additional staff, people didn't ask. The culture was that departments/agencies need to live within their means, so when that shifted during COVID-19, [hiring new staff] didn't happen."*

When asked if agencies considered hiring staff, many noted they believed the Colorado Taxpayer Bill of Rights (TABOR) restrictions limited their ability to hire more staff. In actuality, there are no hiring or spending restrictions with TABOR; rather, it caps revenue for state agencies. Additionally, with the declaration of an emergency, agencies can hire additional staff; however, it seems several state agencies were not aware of this authority or how to ask for it. Even when funding and hiring authority existed and was known, because of the global nature of the pandemic, it was difficult to find, onboard, and train qualified people. Because of the specialty training and experience needed for some positions, just-in-time hiring would not have been a helpful approach to managing the increased workload.

Recommendations:

- DHSEM and DPA should work together to develop clear briefing documents on emergency hiring authorities and processes for all state agencies and distribute these widely across the state agencies.
- The State of Colorado should assess and consider developing a centralized, statewide human resources (HR) software system to help enable DPA maintain visibility of and communicate with Colorado state employees, especially during emergencies.
- The Governor's Office should continue to expand its emergency management knowledge, capabilities, and personnel. The governor and state legislature have already established a new Office of Climate Preparedness and Disaster Recovery in the Governor's Office, including two and a half staff members. This office should work with DHSEM to provide the appropriate and recurring emergency management training and exercise opportunities to those new staff and the staff in the Governor's Office, Governor's Cabinet, and all state agency leadership. This training should cover the potential actions each agency may need to take during and following a disaster to share knowledge of capabilities, roles, and responsibilities.

Finding 23. CDPHE and the JIC (activated for the response) were challenged to rapidly scale their workforces and redirected existing staff across the agency, state, and contractors in an "all hands on deck" approach to help meet urgent COVID-19 response and information needs.

CDPHE relied heavily on contractors to supplement its workforce to respond to COVID-19. Emergency procurement processes were critical to hastening the hiring process. However, early in the response, before contractors could be brought in, CDPHE redirected staff from across the agency to assist, temporarily disrupting other public health work. CDPHE did not have a mechanism to easily identify staff throughout the agency with the desired education, training, or skills to help in the response, so this occurred mostly through word of mouth or personal relationships, which was inefficient. Very early on, CDPHE hired 50 public health students to help with case investigation and contact tracing to increase their capacity. In addition, CDPHE was creative in redirecting contractors already on contract with the agency to support the COVID-19 response. For example, a contractor who operated the state's courier system to support newborn screening prior to the pandemic was used to distribute swabs for testing as well as vaccines to local public health agencies since this contractor was well connected to a multitude of healthcare settings throughout the state.

Early in the pandemic response, it was also difficult to get state agencies to commit long-term PIO support to the JIC, which was established during the response to ensure joint, coordinated, and consistent messaging across all state agencies and response partners. The UC required each of the 26 state agencies to identify and provide PIO support to the JIC in 7- to 14-day cycles. Additional temporary communications officers were secured through CDPHE for nine-month deployments and CDPHE contracted staff that reported to the JIC. The JIC also contracted for several communications efforts and hired temporary staff. The Governor's Office of Communications was also understaffed in light of the public communications needs during the pandemic.

While the provision of agency PIOs to the JIC happened "begrudgingly" for some state agencies, it proved to be essential with the crush of media demands and the public outcry for information about the disease and how to stay safe. The increased staff handled a wide variety of public information tasks (e.g., press releases, liaisons, media relations, talking points, graphics, social media, website). They also enabled development of remote media briefing processes and assignment of a full-time member of the JIC to coordinate language availability and American Sign Language (ASL) interpretation. This included daily media briefings for the first six months (transitioning to once weekly thereafter).

Additionally, JIC priorities and how staff expertise was leveraged changed over the pandemic to help the JIC manage the onslaught of media requests. The new structure had different JIC staff assigned to different efforts (e.g., information gathering, website

updates, responding to inquiries, developing graphics, developing talking points). However, even with the restructuring and additional support, JIC staff worked excessively long hours under high pressure.

Recommendations:

- CDPHE should examine the feasibility and costs of implementing a system to capture employee education, training, and skills (including language proficiency) to aid in identifying potential surge staff in a future large-scale or protracted response. Other state agencies should discuss and determine if this would also be a valuable effort for their organizations.
- CDPHE and DHSEM, with support from DPA and CDLE, should develop a scalable/tiered approach and plan to surge staffing from both within their agency and from other state agencies. Tiers could be based on the expected size, scope, and duration of the incident.
- DHSEM should develop a formal *PIO Staffing and Support Services Plan* for the JIC. This plan should include directives from the Governor's Office to state agencies that a defined minimum number of PIOs must be made available to the JIC within 24 hours at the request of the SEOC incident commander, the strategic communications director, or the JIC lead. It should also include a backup bench of support staff and associated resources for multilingual translation and interpretation services in languages most commonly spoken in Colorado (and ASL).
- DHSEM should review the JIC plan to ensure it adequately captures the potential need to restructure the JIC based on the needs of the response (and as part of the NIMS/ICS structure), including what that restructuring might entail.
- DHSEM should pre-vet contractors for JIC support services and ensure contractors are able to be readily activated under emergency activation/procurement.
- DHSEM should advise contractors and state agency personnel of JIC requirements, including anticipated long work hours as disasters are not limited to traditional work hours and weekdays.
- DHSEM should ensure that cabinet-level staff are trained on the role of PIOs and the SEOC and exercise a JIC on at least a yearly basis.

Finding 24. As CDPHE scaled its workforce, a persistent challenge was the lack of mid-level managers to help oversee the work of the new staff.

As CDPHE enacted emergency procurement processes, the largest needs were for contractors to support testing, contact tracing, and case investigation. The communicable disease epidemiology team grew from approximately 50 people pre-COVID-19 to almost 1,000 people at the peak of the response. Yet even as contract staff were identified and

hired, the agency struggled to identify staff with management experience to take over the duties of managing this new workforce. The programs that deliver routine public health services typically do not require many mid-level management staff, which created a dearth of experienced people in this key role as hundreds of contract staff were brought on to support COVID-19 response efforts. Additionally, human resources (HR), information technology (IT), and finance personnel were overwhelmed by the need to rapidly onboard so many new staff, especially with many working in a virtual environment.

Recommendations:

- CDPHE should look for opportunities to expand its core group of mid-level managers or provide management training to lower-level staff so they can quickly assume this role in a future public health emergency. CDPHE should identify or request funding to support this capability.
- The state should include HR, IT, and finance personnel in the plans for rapidly scaling CDPHE, DHSEM, and JIC staff. The plans should identify how HR, IT, and finance will simultaneously scale to meet onboarding requirements and other support needs for new staff members.

Finding 25. The Colorado National Guard was instrumental in the COVID-19 pandemic response, and experienced several lessons learned for future activations for emergency response and protection of the people missions.

Prior to COVID-19, the CONG's planned role in pandemic response was limited to vaccine distribution for CONG personnel. However, on March 12, 2020, just a few days after the first COVID-19 case was confirmed in Colorado, DHSEM asked CONG to support the COVID-19 mass drive-through testing mission. Over time, their missions grew to include contact tracing; helping setup the ACSs; supporting planning efforts in Colorado counties; acquiring and delivering PPE; leading the Vaccine Task Force, including the logistics of ordering, shipping, receiving, equitably distributing, and storing vaccine; distributing gift card incentives for getting vaccinated; leading and managing the vaccine equity clinics and other vaccine sites; building and managing urgent care outreach; supporting CDPHE with medical analysis of COVID-19 trends; supporting the state laboratory; providing shelter support for those without homes; and providing non-nursing capabilities for long-term care facilities. The response has resulted in the engagement of hundreds of CONG guard members.

Initially, CONG support was engaged through Joint Task Force-Centennial, which is a standing task force that receives, plans for, and executes all domestic emergency missions. For the vaccination mission, however, CONG, DHSEM, and CDPHE established a separate task force that reported directly to the Governor's Policy Group but also at times to the UC. The Joint Vaccination Task Force stood up in November 2020. Setting up as a task force was considered a best practice, as it allowed CONG to have direct access to

executive directors, division directors, the Incident Command/UC, and the Governor's Office, and it brought together the appropriate individuals across agencies to work on the mission. After it was established, the task force covered all CONG missions.

CONG member supporting shelter operations (Source: Denver Rescue Mission)

Additional lessons learned based on CONG's significant role in the COVID-19 response can inform an expanded role for them moving forward:

- The presence of uniformed personnel was helpful but also deterring, depending on the population served. Generally, the presence of uniformed personnel encouraged civility and calmness at the testing and vaccination sites; however, it deterred undocumented individuals from receiving services at locations. As a result, CONG personnel helping with vaccine equity clinics wore civilian clothing.
- The CONG was asked to support several missions outside its usual mission set or that might not have been the highest use of CONG talent. For example, CONG guard members were asked to provide staffing support to hospitals and residential healthcare facilities. They were not able to support hospitals but did support nursing homes and other long-term care facilities. However, contracted firms for medical professionals would likely have been a better source of staff for the

residential healthcare facilities, as CONG personnel are not medically trained.[xv] Severe staffing shortages prevented the state, hospitals, and long-term care facilities from obtaining staff on staffing agency contracts. For COVID-19, CONG personnel received just-in-time training on medication dispensing (Qualified Medication Administration Personnel training), which did help because it enabled them to provide those services at the assisted living and group home facilities.

- Involvement of the CONG in the testing and vaccination sites provided the CONG an opportunity to engage with more counties across the state, as well as local health departments and sheriffs. As a result, these local entities gained a better understanding of the CONG's missions and capabilities, which will be helpful in future incidents that the CONG could support.
- It was helpful to have a military member serve as the go-between for the hospitals/private industry and the state, as the CONG did not have to worry about relationships or offending people (e.g., if they had to shift vaccine distribution to a different facility because the first facility was not using the doses in the three-day required window).
- The CONG supported the effort to distribute gift cards to incentivize vaccination because of how rapidly they could act; however, it did not fit within the CONG's emergency response and protection of the people mission.
- CONG guard members remained on 502(f) status (Title 32 federally funded orders under state control) for over two years (through July 2022) and there were questions about when to transition away from emergency operations.

Recommendations:

- DHSEM, CDPHE, and the CONG should work together to document the ways in which the CONG assisted during COVID-19. Partners should determine which of these activities the CONG can support moving forward and create mission-ready packages for them as applicable. DHSEM should also capture them in the *State Emergency Operations Plan's* CONG Annex and Biological/Highly Infectious Disease Annex.
- The CONG, DHSEM, and CDPHE should codify the task force structures in the state's COVID-19 pandemic and public health emergency plans. However, the state should consider integrating the CONG task force into the NIMS/ICS structure under the Operations Section of the Incident Command/UC, rather than reporting

[xv] The CONG Civil Support Team (CST) and the Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (CBRNE) Enhanced Response Force members are the only CONG personnel with biological capabilities.

directly to the Governor's Office or policy group, to facilitate coordination between other aspects of the response.

- The CONG, DHSEM, CDPHE, and Governor's Office executive leadership should discuss the plan for protracted responses involving the CONG.
- The CONG should continue the increased outreach to Colorado counties following COVID-19 (e.g., participating in more emergency management conferences) so that locals understand its resources (e.g., chem/bio, lost hiker), not just the ones used in the pandemic. (The CONG has already begun this activity.)
- CONG should be included in future pandemic and public health emergency planning efforts and exercises.

Finding 26. The state experienced a rapid expansion of its volunteer workforce during the response.

Volunteers were involved with many aspects of the state's COVID-19 response, including staffing testing sites, vaccination clinics, and long-term care facilities, and supporting contact tracing. Prior to March 2020, the Colorado Volunteer Mobilizer (CVM) had a little over 1,500 registered and accepted volunteers and one employee in charge of coordinating the CVM. By the end of 2020, the number of volunteers had more than doubled, and by May 2021, the number of volunteers in CVM had more than doubled again to over 8,250. Staffing for the CVM also increased. In February 2021, when the state needed volunteers to assist with vaccination clinics, the staff supporting the CVM increased from one full-time person to seven people to help with managing these new volunteers and creating mission sets.

CVM processes also improved over time. The initial process to create missions and identify available volunteers was cumbersome and slow. The state created a new process and standardized mission requirements to streamline the identification of volunteers. In total, 383 missions were created for state-run clinics, with over 3,435 volunteers being assigned to those missions between February 2021 and December 2021.

One of the key missions supported by volunteers was the state-run contact tracing and other services provided by the COVID-19 Containment Response Corps established by Serve Colorado. In June 2020, under the Lieutenant Governor's Office, Serve Colorado initiated this program with AmeriCorps to develop a containment and response corps.[47] CDPHE and two nonprofit organizations supported the effort by training the volunteers. In total, between June 2020 and December 2021, 934 AmeriCorps members assisted with contract tracing (over 60,000 people supported), isolation and quarantine monitoring, connecting people with resources, vaccine outreach, and testing tracking. These volunteers provided surge capacity for the state and localities could opt into the support or send individual cases to the state. The initiative was especially successful because it

could surge quickly, which was made possible by the integration of AmeriCorps and CDPHE to recruit and train volunteers. After the end of the mission, 85 of the volunteers were hired by CDPHE. Additionally, after the success of the program and the recognition that local public health agencies benefit from the support, the Lieutenant Governor's Office and Serve Colorado developed the AmeriCorps Registrant Apprentice Program through which volunteers can be trained in clinical settings and then placed in a local public health agency. They also developed a training and service program for certified nursing assistants, medical assistants, and behavioral health technicians, and AmeriCorps tutored children experiencing learning losses due to COVID-19.

"Some people we served shared some gut-wrenching stories. So many people were alone and afraid and that contact with AmeriCorps was everything."

Recommendations:

- CVM should institutionalize strategies that proved effective in allowing for rapid mobilization and surge support to manage volunteers.
- CDPHE should educate local authorities on the processes and systems required to request volunteer support.
- CDPHE should examine how to streamline the background check process during declared emergencies, as this can significantly delay the process of accepting and onboarding potential volunteers.
- CDPHE should assess its volunteer management systems to determine if improvements are required to support the mission.

Finding 27. CDPHE developed strong partnerships with academic institutions to augment response capability and address workforce shortfalls.

As the state shut down and canceled school during the early weeks of COVID-19, CDPHE formed a partnership with the Colorado School of Public Health that proved beneficial in several ways. For example, students provided staffing augmentation in the state lab and supported the communicable disease branch with case investigation and contact tracing. Students helped the state lab create and document a step-by-step workflow for sample processing, testing, and reporting that was subsequently used to train contractor staff and get them up to speed. The school also provided the lab with access to critical supplies, such as PPE and pipet tips, that were hard to purchase through normal channels due to disruptions in the supply chain. Finally, the school supported modeling efforts for the state and provided technical writing assistance to help translate complex scientific information into press releases.[48] CDPHE also developed relationships with Colorado State University and the University of Colorado, which helped with the quality control process

for PPE (see Finding 53). Colorado State University also joined the modeling team and led the mobility studies modeling population movement within the state and into the state. They also developed analytical approaches to characterize the concentrations of SARS-CoV-2 in wastewater samples from across the state, providing a picture of how these concentrations varied from place to place and over time. This information was critical to understanding the spread of COVID-19. Colorado State University, Metropolitan State University, and the University of Denver also supported wastewater testing for Colorado. Colorado State University and the University of Colorado engaged with the state to test PPE supplied from vendors for authenticity and quality.

Recommendation:

- CDPHE should explore the possibility of establishing a memorandum of understanding (MOU) or memorandum of agreement (MOA) with the Colorado School of Public Health, Colorado State University, University of Colorado, other academic institutions, and other nontraditional response partners (public and private) that could be sources of reliable public health or healthcare staffing, supplies, or technical expertise during an emergency. In doing so, the state should consider all types of emergencies (e.g., biochemical spills) and not just pandemics. Possible conditions or triggers for activating these MOUs/MOAs, and the processes and authorities required to do so, should be codified and documented in plans and exercised.

Public Information

Finding 28. Facilitated by a disciplined and effective Joint Information Center (JIC), the Governor's Office of Communications, state agencies, local response partners, and the JIC itself distributed accurate, consistent, transparent, and coordinated information and guidance for the public throughout the response.

With the activation of the State Emergency Operations Center, partners also establish a JIC to provide coordinated, consistent, and accurate public messaging related to the COVID-19 pandemic and the state's response. Members of the JIC included representatives from the Governor's Office of Communications, all 26 state agencies, and localities. Provision of accurate information was critical as the understanding of SARS-CoV-2 and COVID-19 was rapidly evolving, with much remaining unknown in the early months of the pandemic. Additionally, multiple entities had responsibilities for disseminating information to the public (e.g., the Governor's Office, CDPHE's Office of Communication, other state agencies, and localities), so the information needed to be consistent and coordinated so as to not confuse the public and to foster public trust in authorities responsible for providing information essential to lifesaving efforts. The JIC was a component of and the communication arm of the UC and was therefore connected

to decision makers and the most accurate and up-to-date information and planned response activities. To coordinate and ensure consistency of messaging, all messaging went through the JIC for review and approval. While this may have resulted in a slightly longer timeframe from information creation to dissemination, it ensured that all messages distributed, regardless of the source, were accurate and up to date. To disseminate information and guidance, the JIC and the Governor's Office of Communications hosted frequent press conferences (almost daily in the early months), distributed media/press releases, shared information on social media, responded to requests for information, and established and maintained a COVID-19 website. The cadence and approach to communications was set early on by the governor's daily press conferences, where information and decisions were shared with transparency. The Governor's Office of Communication also posted press releases on the governor's website. Using these mechanisms along with the JIC's disciplined and coordinated approach, entities coordinating through the JIC disseminated accurate and consistent messaging throughout the response.

Recommendation:

- DHSEM should share lessons learned and best practices from the COVID-19 JIC and public communications efforts with partner agencies.

Finding 29. Even though COVID-19 represented the first time some team members with public information duties participated in a virtual Joint Information Center (JIC), the JIC responded with anticipation and nimbleness.

The JIC initially deployed in-person at the SEOC with the UC; however, the transition to remote work during the pandemic presented a challenge for public communications with the need to operate a virtual JIC. COVID-19 was the first time some team members with public information duties participated in a virtual JIC. There was a learning curve, but the 20- to 40-member team adjusted, despite many not previously receiving training on virtual JIC operations and coordination. Collaboration across all public information officers (PIOs) and with UC was strong, and the JIC team rapidly adjusted to the communication needs of the public, media, state agencies, and response partners during the COVID-19 pandemic. This is especially noteworthy, considering the massive volume and variety of media requests and public information needs (see Finding 33), as data and scientific information about the virus evolved. Messaging was challenged by a need to distill and distribute advanced scientific and health-related information, particularly in a very contentious political environment, where leaders often had to make hard and unpopular decisions amid rapidly changing information and many unknowns.

> *"For a fire or a flood, you are responding to an emergency in a contained area and a type of disaster you have responded to before. But this was new every hour."*

State public information efforts that facilitated success include the following:

- Development of messaging materials in anticipation of forthcoming and potential state and federal activities
- Drafting of messages in close collaboration with epidemiologists and other experts
- Development of a public information message approval checklist
- Pre-approval of messages so they could be quickly disseminated
- Debriefs and regular status checks on PIO shift changes to maintain situational awareness and continuity of messaging operations
- Real-time collaboration tools and the development of a "hold" folder on a shared virtual collaboration platform that facilitated the approval process and quick release of information (see Finding 30)

For example, when CDPHE learned the Pfizer vaccine for the pediatric age group was expected, the communications team, in collaboration with epidemiologists and immunization experts, developed several materials and some key safety messages and frequently asked questions (FAQs) needed prior to pediatric vaccine approval. JIC personnel requested pre-approval of these messages and once approved, stored them in the "hold" folder. This process also supported last-minute updates before information went "live" and positioned the state for rapid communications response readiness.

Further, the JIC team used the approval checklist to manage the creation, dissemination, amendment, access, storage, and archiving of messaging materials produced for COVID-19 outreach campaign efforts. Onboarding of new PIO staff included introduction and use of this checklist, and staff who migrated into the JIC used the checklist to become familiar with up-to-the-minute messaging status. The messaging material approval process included, as needed, subject matter experts from all lines of effort (e.g., epidemiology, legal, data) and supervisors.

With these efforts, the public information team advanced data-driven, state-endorsed public health efforts, even before the federal government in some instances. For example, the federal government reportedly was initially hesitant to recommend boosters; however, the Colorado public health scientists believed these were necessary, based on available data. As a result, the public information team pushed "stronger" messaging about the benefits of vaccine boosters before the federal government.

Recommendations:

- DHSEM should update JIC plans and SOPs based on lessons learned from COVID-19, including how multiple JICs would be staffed and would communicate across multiple concurrent events (e.g., as DHSEM implemented multiple JICs for the simultaneous wildfire and COVID-19 responses).

- DHSEM should regularly train state agency PIOs on JIC operations, virtually and in person, with a variety of emergency scenarios and include key external stakeholders in the training. DHSEM should also conduct both virtual and in-person exercises for the JIC (at least one a year).
- DHSEM should invite, and emergency response coordinators should bring, their public information officers (PIOs), leadership, and others that may have public information responsibilities to the quarterly SEOC exercises to learn about PIO and JIC responses.
- All state PIOs should complete FEMA I105 Basic PIO and FEMA Advanced E388 courses.
- DHSEM should formalize the process for anticipatory message development, including the message approval checklist, and ensure that all newly onboarded team members continue to be trained in this process.

Finding 30. The JIC team successfully leveraged digital tools to collaboratively develop, store, and share communications tools and messages; however, digital accessibility could improve further.

The switch to virtual JIC operations necessitated the use of digital communication and coordination tools to develop multilingual public information content, website content, social media messages, fact sheets/FAQs, graphics, and other COVID-19-related materials for public consumption.

The JIC team successfully established and leveraged a shared workspace, real-time collaboration tools, and folders to collaboratively develop, store, and share the public information materials. Separate individuals were assigned to manage the shared workspace and user access (e.g., edit/view privileges), manage content, and check it for accuracy and timeliness according to current guidance. This facilitated consistent and up-to-date messaging. COVID-19 websites were also managed by a designated individual who also cataloged all website updates. The JIC made approved messages and materials available and accessible on the shared drive to local, state, and federal responders through the workspace. This helped to ensure consistent messaging. The JIC team also established a collaboration group that included all state PIOs, along with approximately 700 other local, state, and federal personnel; all news releases were sent to that distribution list. The JIC manager also ensured all documents stored in the shared drive and folders were archived to protect against inadvertent manipulation or data loss and to store so they would be available for future reference, if needed.

While use and maintenance of the collaborative workspace was effective, the platform used was not a fully accessible and functional need-enabled platform. This did not present as an issue that hindered the JIC team's response, as there reportedly were no PIO team

members who required fully accessible accommodations (e.g., ASL). However, such accommodations should be considered in planning to demonstrate inclusion among any staff members (or external partners) who may need accessibility support.

Virtual meeting platforms that enable "pinning" and viewable adjustments that optimize the ability of an individual who is Deaf to see an interpreter's facial and body movements were used. Virtual press conferences included ASL and Spanish interpreters. However, there is an opportunity to increase the accessibility of press conferences by including interpreters who speak the other most common languages in Colorado (i.e., Vietnamese, Somali, simplified Chinese, Arabic, and Nepali). Materials made available at these press conferences should be translated into these same most-spoken languages.

Finally, digital accessibility was also a consideration for outward-facing websites, including the new Colorado COVID-19 website. For example, the COVID-19 dashboard (managed by CDPHE) includes an option for Spanish translation and digital content that incorporates alt text. However, accessing other languages most often spoken in Colorado requires scrolling to the bottom of the page. Additionally, the state used Facebook, Twitter, and Instagram to disseminate information mostly in English, but social media did include Spanish translations at times. CDPHE's press conferences were livestreamed on Facebook in English, Spanish, and ASL and then published on CDPHE's YouTube page. Many of the governor's key press conferences are also posted on the governor's YouTube page. The JIC team also worked with the Office of Information Technology (OIT) accessibility team to make sure that websites were accessible to screen readers to facilitate people in the Blind and low vision community.

Recommendations:

- DHSEM and those involved in the JIC for COVID-19 should codify in a standard operating procedure (SOP) the procedures used to establish and manage the shared workspace for the JIC. The SOP should include processes to develop public information materials using the shared space, processes to maintain version control of documents with multiple users with editing permissions, backup and archiving protocols, roles and responsibilities of the JIC and its team members to maintain the shared space (e.g., how to ensure up-to-date information and grant user access), and processes to provide information to external partners.
- DHSEM should train JIC personnel on the SOP for the shared workspace, ensuring several people are trained in the activities needed so there is depth in the roster.
- CDPHE should elevate all languages supported on the state's COVID-19 website and dashboard to a drop-down listing on the home page menu to make multilingual information easier to find.
- CDPHE and DHSEM should continue efforts to improve the ease of use and navigation of websites for individuals with visual impairments.

Finding 31. Message accessibility across print was favorable; however, contracts for language interpretation/translation services initially were slow to yield results that kept up with the pace of demand.

The JIC had a staff member dedicated solely to coordinating language support for public information materials for the entire activation. Initially, this staff member oversaw contracted personnel who translated COVID-19-related print content developed by the JIC into the seven languages (other than English) most often spoken by Coloradans (as identified through coordination with local public health authorities). This enabled the creation of messages and materials in languages that matched the communities where they would be disseminated. However, due to slow turnaround times for translation service contracts and the rapid pace at which information changed, it was hard for the JIC team to keep up with the demand for translation. In response, a few Spanish translators were hired to work full time with the JIC team for the COVID-19 response.

Additionally, CDPHE had a team of three access and functional needs (AFN) specialists to help partners, including state and local agencies, craft and disseminate messaging (including the technical aspects of AFN messaging) for individuals with access and functional needs. This is a permanent position within CDPHE, so the AFN staff was available the entirety of the response.

Recommendations:

- The awareness of and responsiveness to the communications needs that reflect local demographics should be maintained and built on as local demographics change. The JIC team should document languages required for print content and the process to identify the languages to support.
- The state should thoroughly vet numerous multilingual certified, professional translation/interpretation providers (including for ASL and languages beyond Spanish) to identify possible contracts for translation/interpretation services. Vetting considerations should include the availability of service delivery within specified time periods of the request (e.g., 24 hours or less as needed) with an adequate bench during long-term activation periods.
- Across state government, a regular part-time or full-time bench of individuals who speak the most common languages in Colorado is recommended. These individuals should be trained to the *State Emergency Operations Plan*, highly infectious disease annex, *Crisis Communications Plan*, and other appropriate emergency management plans and procedures.

Finding 32. The JIC team continuously monitored media to track and respond preemptively to misinformation and to disseminate accurate public health messaging.

There was abundant misinformation and disinformation (largely about vaccines) across social media—especially YouTube and Reddit—during the COVID-19 response. The State of Colorado used a media consulting firm of cyber experts to monitor trends in misinformation across social media channels (including in Spanish) and provide weekly reports and recommendations. At times, this changed the way the state communicated about COVID-19 and protective actions. As rumors surfaced through this search, the JIC team addressed this misinformation across the state's Facebook, Twitter, and Instagram social media channels, as well as in FAQs posted on the state's COVID-19 webpage. The JIC team also conducted a robust paid search effort with a search engine, using 1,500 different words in English and Spanish, so people would find information about the state's efforts first in their search results. For example, a vaccination site was set up at a soccer stadium; anyone who searched for this was sure to get accurate information about COVID-19 generated by the state government. This trend tracking and search optimization also enabled the governor's statements at press conferences to anticipate media questions that reflected misinformation trends (e.g., vaccines can cause fertility issues). The effort of monitoring social media grew to include stakeholders among community and faith-based organizations. The investment in this deep-dive data mining was beneficial and contributed to favorable vaccination rates.

Recommendation:

- The JIC team should consider how it can implement this type of media monitoring for future activations and determine what resources within the state government can be leveraged for this effort. For example, state fusion centers, such as the Colorado Information Analysis Center (CIAC), often have software and systems that monitor social media and may be able to support these efforts (if they do not already). If resources do not exist within the state government, the JIC team should develop a list of possible (pre-vetted) sources to provide this service to the state.

Finding 33. The crush of media requests required a change in fulfillment procedures, and the public information approval process slowed some messaging but ensured accurate information dissemination.

With the announcement of the first COVID-19 case in Colorado came an unprecedented onslaught of information requests from the media. The media crush continued for the duration of the response. For example, in 2021, the Governor's Communications Office responded to over 4,000 media inquiries (compared with 800 in 2019) and the JIC responded to almost 4,500 media inquiries.

The public information demands required coordination across agencies, with the Governor's Office, CDPHE (legal, epidemiology, and policy), various other subject matter experts, and other individuals with public information responsibilities. All public messages were approved by JIC leadership, often in coordination with UC. While the various levels of coordination and approval may have slowed information dissemination at times, the coordination and reviews were essential to ensure accurate information was provided to the public. At times, disagreements about the appropriate level of transparency[xvi] and what information should be shared publicly created tensions between those at various levels of approval.

Despite challenges, state agency personnel and the JIC team worked tirelessly and collaborated effectively throughout the pandemic to respond to thousands of information requests and in the process established new relationships and strengthened existing relationships with partners. The systems the JIC team used also enabled and streamlined coordination (as discussed in Finding 30), and the cadence of press briefings and meetings that occurred within and among teams with public information responsibilities reflected the high demands for services and information.

Because of the complexity, high visibility, and magnitude of the messaging, the JIC team also had to adapt its information fulfillment procedures. For example, the JIC answered many information requests via email instead of phone calls so that complex scientific responses could be clearly communicated, and so that these responses could be sent to multiple media outlets asking the same questions.[xvii] Many reporters also requested responses via email for the same reasons. Additionally, the subject matter experts (SMEs) that could authoritatively respond to certain questions about COVID-19 were already extremely busy with response activities, so having them talk to reporters would not have been an effective use of their time. Instead, SMEs were available for press conferences and media briefs. The JIC and the Governor's Office of Communications held multiple press conferences each week to respond to many information requests in an efficient manner. In the early months of the pandemic, the JIC also had daily media availability times, which eventually transitioned to weekly after the first few months. The JIC also established an email account and phone number for all media to send inquiries. Multiple JIC staff monitored the email inbox and shared responsibility for responding to the

[xvi] Transparency was among the governor's main goals, but epidemiologists and medical professionals were concerned about Health Insurance Portability and Accountability Act (HIPAA) requirements and sharing protected health information (PHI). Ultimately, it was decided that transparency should be the priority until and unless information for release infringed on personal PHI.

[xvii] Notably, the media was simultaneously working to figure out how to manage its efforts and the JIC often received similar—if not duplicate—requests from different reporters at the same media outlets.

requests to keep up with the high demand. The JIC met daily to review all media requests and develop a plan to respond to each request.

Recommendations:

- The JIC team should include the modified media development and development procedures in all JIC planning documents and identify triggers where these modified actions could come into play.
- CDPHE should memorialize the Media Request Template in plans with a public information/media relations component.
- The Governor's Communication Team and the JIC leadership should review the public information approval process for COVID-19 and determine if there are any opportunities to streamline it.

Finding 34. Hotlines and call centers offered the public "live" access to real-time information. While some may not have been widely used, the state successfully established a statewide call center, COVAXCO, that served millions of Coloradans.

Early in the pandemic, DHSEM established a call center for general information about COVID-19 (e.g., number of cases in the state, symptoms, and how to self-protect). CSP troopers and communication officers staffed the DHSEM call center and were guided by a COVID-19 fact sheet. DHSEM also worked to establish a line for people to schedule vaccine appointments. DHSEM and OIT were challenged in setting up this hotline due to considerable security requirements—among other issues—and eventually decided to contract services to host the call center and provide the supporting technology. Data agreements and MOUs were established with the vendor who made appointments.

Coloradans could also get COVID-19 information from 2-1-1 and CDPHE's Colorado Health Emergency Line. The state also has the SEOC's line (303-279-8855) and the Public Information Line (720-432-2433) for Coloradans. In late January 2021, as the vaccine became available, CDPHE launched a multilingual call center specifically to address questions about the vaccine. This center was open Monday through Saturday. This hotline (1-877-CO-VAX-CO) extended hours to include Sundays beginning in February 2021. Fifty trained staff were initially dedicated to the hotline.

These hotlines were helpful in providing information to Coloradans, especially for those with limited technology access or digital skills to otherwise access this information online. For example, the CDPHE's vaccine call center helped individuals find locations and directions to vaccination sites, schedule people for vaccine appointments, and provide information about treatments. However, the public's awareness of some of the various call centers may not have been widespread. For example, on first activation, the DHSEM call center received hundreds of calls per day, but after the first month, calls diminished

to just a few calls per day and the state demobilized it. During the COVID-19 Delta variant wave, the state re-established the DHSEM call center, but it only received a few calls and was again decommissioned. At the same time, however, people were calling 9-1-1 for COVID-19 information. When call centers were active, 9-1-1 dispatch transferred these calls to the call centers. Currently, the 9-1-1 communications centers screen calls before they go to dispatchers and redirect COVID-19–related calls to the CDPHE website, which has a webpage chat bot, or to the COVID-19 help desk, which provides automated information about COVID-19.

The COVAXCO call center had better success reaching the community. This call center was advertised in paid communications including TV advertisements, billboards, and digital advertisements. Between January 2021 and December 2022 (when it wound down operations), the COVAXCO call center received over 290,000 calls, provided over 1.8 million minutes (over 30,000 hours) live assistance to Coloradans, scheduled almost 14,000 vaccine appointments, and helped over 22,000 individuals access their vaccine records in the Colorado Immunization Information System.[49]

Recommendations:

- The state should review plans for emergency call centers (including comparing CDPHE and DHSEM plans) and determine how to consolidate efforts to establish a single statewide call line for emergency response efforts, especially those that involve a UC.
- The state should also determine how to better advertise call centers in future public health emergencies and institutionalize mechanisms that contributed to the success of COVAXCO.
- If not already part of call center plans and processes, consideration should be given to tracking the nature of calls coming into all the public health hotlines and through the websites. This may reveal information about the audiences reached, as well as issues, questions, and trends related to COVID-19 information deficits and misinformation hot spots.

Finding 35. Given the number of state agencies involved in COVID-19 response efforts, there was confusion about who should manage Colorado Open Records Act (CORA) requests.

Similar to the public information requests, the state was inundated with an overwhelming number of CORA requests during the COVID-19 response. In many cases, these requests were sent to the JIC (rather than directly to the appropriate agency). Initially, there was a CORA officer assigned to the JIC who was responsible for managing CORA requests and routing them to the appropriate agencies. However, determining who owns records and who should be releasing them after a request was received quickly became problematic (especially if a request involved more than one agency). CORA requests must be

responded to very quickly, which further complicated the problem. In the end, the legal advisors for each agency coordinated to determine who should respond to each CORA request.

Recommendation:

- The Governor's Legal Counsel should set the policy and DHSEM should define the process for how to handle and route (triage) CORA requests when the SEOC and JIC are activated. DHSEM should include this information in the JIC's operational plans and SOPs.

Finding 36. Colorado state government does not have a designated media center or production team.

With COVID-19 mitigation measures in place, many of the media briefs needed to occur in controlled areas with limited personnel and in a facility or location that could broadcast to a larger audience. Early on, the state held press conferences from the SEOC, but the SEOC had to set up and break down the physical equipment and virtual connection each time there was a press conference. Eventually, press conferences were transitioned to the governor's residence. The JIC also hosted virtual press conferences. Ideally, a permanent media center or press briefing room should be established at DHSEM, CDPHE, or the state capitol; currently, Colorado state government does not have such a facility or room.

"The Governor's Office is underfunded relative to what people expect from their government during an emergency."

Additionally, the governor's press conference production capabilities were first handled by state employees who were challenged to render high-quality video because of dated equipment. Eventually, the Governor's Office contracted out for this service with a production firm. Some believed the lack of a designated media center and production team decreased the public's perception of professionalism and readiness. In addition, having a designated and consistent location where the state and agency leadership will regularly brief the media on disasters and other critical incident response efforts can reduce the JIC team's workload, as the media will be prepared to receive the most up-to-date information at the next press briefing, thus decreasing information requests to the JIC. A designated area will also enable the media to be familiar with where to go to participate.

Recommendations:

- To avoid the additional expense and delays associated with contracting out a production service, and to enable regular provision of information to the public on disaster response and recovery efforts, the state (in concert with the legislature) should consider developing or hiring a permanent production team and

designating space in the state capitol building or at the DHSEM SEOC for media events and sufficiently equipping and staffing it.

- DHSEM and the Governor's Office should detail their requirements for what is needed in a media center (e.g., space, technology, location) and then work with the OIT to estimate the cost of the media center based on those requirements.

Situational Awareness

Finding 37. Staffing shortages, operations conducted outside the purview of the UC support staff, and a divergence from standard SEOC operations contributed to inadequate documentation of response activities in some instances.

A primary contributor to a shortage of documentation for the UC was the lack of full-time Situation and Documentation Units. Additionally, and as mentioned previously, with some task forces reporting to the Governor's Policy Group and with CDPHE and DHSEM not integrated horizontally to the lowest levels of the UC response structure (see Finding 3), the UC, SEOC, and CDPHE DOC personnel (also responsible for documenting response activities in Incident Support Plans) at times lacked visibility into the response operations.

This resulted in the Incident Support Plans missing information, for example, on activities of the task forces. Additionally, the UC did not create traditional Situation Reports to share with partner agencies and organizations. This had cascading impacts, for example, when UC/SEOC personnel took over responsibilities for creating the financial documentation required for FEMA reimbursement after task force demobilization. Dashboards were helpful in providing some situational awareness, as were the SEOC daily briefs; however, data sharing across partners lacked strategic direction (see Finding 39). The lack of documentation also contributed to challenges tracking funding in the state's Disaster Emergency Fund (DEF) (discussed further in Finding 40).

Recommendations:

- DHSEM and CDPHE should establish Situation and Documentation Units in their operation centers' operational structures and activate and adequately staff them for every response.
- DHSEM should develop an SOP for the SEOC including information required to be reported to SEOC/UC leadership, Situation and Documentation Units, and the Finance Section.

Finding 38. Initially, CDPHE lacked timely and reliable data to develop a common operating picture of the pandemic's impact on the healthcare community, but quickly modified an existing system and implemented reporting requirements to capture the needed information.

The state lacked an adequate tool and reporting requirements for maintaining timely situational awareness of the pandemic's impact on the healthcare community (e.g., intensive care unit bed availability, staffing issues, and critical supply needs). For previous incidents, EMResource had been used to collect information on healthcare system status, but there was no requirement for hospitals or others in the healthcare community to report their status to CDPHE. At first, state staff did not know how many available hospital beds there were in the state, especially because the bed number changes dynamically; the number of available hospital beds can change due to many factors including management, waivers, and staffing decisions. This gap was especially important because one of the key drivers of the governor's response strategy was to ensure that hospitals did not become overwhelmed.

Through modifications to the EMResource platform and through a new requirement to report status, CDPHE was able to receive better data from healthcare organizations, but compliance with reporting in EMResource was inconsistent at first and burdensome on the facilities. When facilities became accustomed to reporting, EMResource became a valuable data aggregation and reporting system. Each hospital and nursing facility dedicated a staff member responsible for updating status. Data were compiled for the region and sent to the state. Weekly meetings helped to identify any missing information that needed to be communicated. Over time, the data reported through EMResource were critical to informing executive decision-making.

Additionally, for the duration of the pandemic, the UC established and maintained a twice weekly (and then weekly) standing call with hospitals' Chief Medical Officers which provided incredibly valuable information on the status of strain on Colorado hospitals. This communication augmented the data obtained in EMResource and established an unprecedented level of collaboration.

More recently, CDPHE has modernized its disease surveillance systems to be interoperable with the Centers for Disease Control and Prevention (CDC). The Office of Information Technology and the Office of eHealth Innovation are also working on data interoperability and mapping initiatives.

Recommendations:

- CDPHE, working in conjunction with its healthcare partners, should review the established essential elements of information (EEIs) reported by the healthcare community in EMResource during COVID-19 and determine if any modifications are required, noting that EEIs may need to be customized to the nature of the emergency. CDPHE should also consider if the format of any data reported requires

modification to improve analysis (e.g., migrating from a free-form text response to a list of response options). CDPHE should then ensure that any additional data and data formats needed can be easily provided through an established, readily accessible platform, such as EMResource.

- CDPHE should provide healthcare partners clear and consistent messaging on expectations for reporting EEIs during a public health emergency, as well as technical assistance to troubleshoot any issues with the data platform(s).
- CDPHE should establish a permanent and regular (e.g., weekly) reporting mechanism for hospitals to provide their status to CDPHE. CDPHE should also work to make this reporting required. (This is a component of *Colorado's Next Chapter: Our Roadmap to Moving Forward* and Colorado has passed legislation that will require reporting in future incidents.)

Sample EEIs reported in EMResource:

- *Situation: crisis standards of care, emergency operations center activated, fatality case loads*
- *Space: bed shortage, negative pressure isolation availability, number of acute care beds*
- *Staff: staffing shortage, workforce safety*
- *Supplies: N95 respirators (number and burn rate), vents available*

- The state should continue efforts to understand and improve interoperability of data between response partners and state agencies.

Finding 39. The state did not have a cross-agency data management strategy, which led to siloed data analysis for operational and logistical needs and record keeping and resulted in challenges in maintaining an up-to-date common operating picture for some. New technology implemented during COVID-19 helped address some information gaps.

As discussed in Finding 3, data science and geographic information system (GIS) capabilities across CDPHE and DHSEM were not integrated, leading to duplication of effort and gaps in capabilities that could have been fulfilled by each other. For example, DHSEM GIS has tools and software that could have assisted in contact tracing efforts, but they were not engaged in planning to help appropriately design the data collection requirements needed for this type of analysis. Siloed systems (e.g., firewall issues between CDPHE and DHSEM staff and different data structures and architectures), lack of awareness of each agency's capabilities, and a lack of data sharing agreements further compounded data sharing challenges across agencies.

CDPHE, DHSEM, and OIT invested time and energy in some workarounds to share and better manage data in a few areas, but the extremely fast pace of COVID-19, especially early in the response, made it challenging to keep up with the demand. For example, standards for data sharing around common pandemic data sets (e.g., testing and contact tracing) do not exist on a national level. Colorado leveraged citizen software engineers sourced through the IRT to help develop some of the data structures and systems the state used for managing these data. In another example, given the magnitude of the pandemic and the need to monitor hospital capacity (e.g., beds, PPE and staffing levels) the state had to create a system to capture that information. This information was critical for the state's response (referred to as the "North Star" for how the state was faring during the response). As noted in Finding 38, CDPHE updated EMResource to capture those data. While it was a significant burden on healthcare facilities to enter the data, the information helped the state understand the impact the pandemic was having on healthcare capabilities and the effects state actions were having on improving outcomes. In other examples, during the pandemic, CDPHE, with the help of the IRT, quickly and effectively established a statewide contact tracing and case investigation system (Dr. Justina[50]), developed an exposure notification system, and modernized submission of lab test results so that all results would be electronically reported to CDPHE. As a result, many public health systems are now modernized. However, due to the fast pace of development, some systems failed to meet the intended needs and requirements of the end users.

Finally, DHSEM and CDPHE are understaffed to meet the needs of modern data and informatics capabilities. For DHSEM, the entire Situation Unit has other assigned duties, and data management and informatics represent only 10 percent of their time, which COVID-19 exposed as insufficient. CDPHE contracted for data collection and analysis support, which resulted in challenges getting the contractor access to data and databases.

In addition to the challenges integrating data functions across agencies and within the Planning and Situation Unit Sections (where data capabilities reside in the ICS structure), the state also experienced challenges sharing information with other partners, such as local public health authorities (see Finding 5). Despite these challenges, the UC and Governor's Policy Group effectively collected and organized data (e.g., epidemiologic data, testing data, modeling data, and bed capacity) from various state agencies and response partners (e.g., hospitals) to provide the data needed for state-level executive decision-making. The UC could have, however, benefited greatly from CDPHE and DHSEM appointing chief data officers, who would lead data efforts for each agency and coordinate them with each other and the Situation Unit, Documentation Unit, and UC. These individuals would understand the data each agency manages along with the data flow processes within their organizations and the origin and termination of each data pipeline. Without this structure, there was no one individual with sufficiently extensive knowledge of data and data sources across agencies to be able to engage the UC and lead

strategic and tactical planning and operations related to data needs and data sharing (e.g., identifying what data was needed, where it would come from, how it should be managed, what rules are needed for sharing data and maintaining privacy, how data would be exchanged across systems, and what data structures and system would be developed).

Recommendations:

- CDPHE and DHSEM should each appoint a chief data officer role to lead the organizations' data collection, management, and provision efforts during emergency operations. Part of the responsibilities of these positions should be to help identify and support data needs for emergency response operations. Similarly, CDPHE and DHSEM should consider appointing a technology officer to lead the modification to and development of any new emergency response technologies. The chief data and technology officers should also work closely together, and with the state's chief technology officer and Office of Information Technology, to improve data and capability sharing and system integration between the organizations. Additionally, large complex organizations often have permanent chief data officers; CDPHE and DHSEM should consider if having those as full-time positions would make sense for the organizations in the future.
- CDPHE and DHSEM should expand staff capacity (i.e., hire or otherwise source additional personnel) to improve data capacity and capabilities.
- The Office of Information Technology should continue, and state agencies should support, efforts to assess the health of the state's IT systems and work to understand state databases.

Finding 40. The COVID-19 pandemic revealed gaps in emergency procurement knowledge, executive authorities, procedures, systems, and contracts. Confusion about emergency procurement arose due to a conflict between regulatory rules and procurement law and the unfamiliarity of some regarding emergency procurement authorities. At times, this prevented the use of emergency procurement processes and delayed acquisition of needed resources.

COVID-19 significantly challenged the state's procurement processes, especially as the amount of funding required to respond to COVID-19 and the number of agencies involved in the response was magnitudes above any previous disaster (e.g., emergency procurements for CDPHE more than doubled the department's normal operating budget). DPA's procurement rules were established for discrete emergencies occurring over a restricted period of time (e.g., wildfires and floods). In those situations, when the governor declares an emergency, state agency procurement officials, with delegated controller authority, (e.g., the public safety procurement official) can also declare a procurement emergency and forgo typical procurement procedures (e.g., soliciting for

contractors through requests for proposals). Then the Office of the State Controller will set up the spending authority and identify the funding source. During a state declared emergency, the state can access the Disaster Emergency Fund (DEF) and do what is practical and necessary to respond. For longer-term efforts (e.g., post-incident recovery) that occur after the governor's emergency declaration, emergency procurement ends and agencies follow the standard procurement code.

Being involved in emergency responses, DHSEM and CDPHE were familiar with these processes and used emergency procurement authorities to respond to COVID-19. Some other state agencies, however, not having a significant role in response efforts previously (or not needing rapid emergency procurement) were unfamiliar with the emergency procurement process or not comfortable executing their procurement authorities. Even when procurement officials were familiar with emergency procurement procedures, some were hesitant to exercise their authority to make emergency procurements (possibly due to fear of criticism or a perception that the pandemic was not an emergency, even though an executive order was in place).

"Just because the governor declares an emergency doesn't mean it is an emergency for procurement."

Because of these concerns, some agencies sent bids to the Office of the State Controller for their review and feedback, which then put those procurements back into the normal procurement process. It also overwhelmed the State Purchasing and Contracts Office personnel as procurements dramatically increased with COVID-19. This created significant bottlenecks, as the standard procurement process takes weeks, compared to hours for emergency procurement. This also led to delays in some critical procurements.

A lack of awareness of or insufficient training on emergency procurement authorities by the Office of the State Controller State Purchasing and Contracts Office personnel may have also contributed to the emergency procurements going through the standard procurement process. Additionally, with the long duration of COVID-19, some disagreed about whether emergency procurement authorities should apply months and years into the response. Many different funding sources (e.g., State DEF; Coronavirus Aid, Relief, and Economic Security (CARES) Act; and Families First Coronavirus Response Act) and complex and changing federal funding guidelines and requirements further complicated emergency procurement.

COVID-19 also overwhelmed the state's ability to document and track resources and services obtained through emergency procurement. Emergency procurement processes allow WebEOC to be used in lieu of a purchase order, making it easier for DHSEM procurement to authorize logistics to make purchases. But there are several significant problems with this approach from a finance tracking perspective.

1. Financial expenses are tracked in a system called CORE that does not interact with WebEOC.
2. There is no consistent way to track resources in WebEOC to provide accountability and an audit trail for finance (to then enter into CORE). For example, one person might only note, "I sent port-a-potties to xyz location," without indicating how many and for how long.
3. Without purchase orders or other financial accountability, contract management suffered. For example, errors in billing where vendor invoices did not match the contract occurred, and there were times state officials did not catch the errors until after the vendor was paid.
4. Many local public health authorities and other entities did not use WebEOC (due to access, training, and usability limitations).

As a result, state agency personnel had to retroactively endeavor to understand what was purchased and document how it was used. Additionally, CDPHE did not have training in WebEOC, so it did not use it. Instead, it managed the data tracking for purchases with forms and spreadsheets, and data was retroactively entered into WebEOC. The DHSEM logistics team is currently trying to fill gaps and rectify remaining small dollar amounts, but it is possible that some of these expenses will remain unknown and therefore not eligible for FEMA reimbursement.

Finally, with the CORE system not being updated in real time, it was hard to encumber funds against a funding source, and the state lost visibility into the remaining funding in the DEF.

Recommendations:

- State procurement officials, agency financial personnel, DHSEM, and CDPHE should work together to develop a process and protocol for emergency procurement that is rapid but trackable. Then, all state agencies should be provided training on emergency procurement.
- The state should work to establish a common platform for purchase orders, resource requests (213RRs), and contracts.
- The state should consider developing a dashboard or other reporting system for DEF funding, so it can be better tracked in real time by those who have authority to use it as a funding source.
- DHSEM and the Office of State Planning and Budgeting (OSPB) should work with the legislature to allow emergency funds to be spent across fiscal years, to support cash advance (e.g., in anticipation of FEMA funding), to support delegated procurement authorities, and to provide non-categorical public health funding

(i.e., funding not linked to a specific disease or program). Some of these actions can also be done with executive orders; DHSEM should communicate these capabilities to executive leadership during training events.

Finding 41. Open and frequent information sharing within individual state agencies was a hallmark and highlight of state agencies' internal responses and greatly facilitated support of state personnel.

> *"The [agency's] ad hoc working group was a saving grace. It put us on the same page and know resources needed across the department. We could lean on each other and hear about resources we didn't know existed. We had calls multiple times a week. Huge win for us."*

While there were challenges with integration and information sharing across some response partners (e.g., those involved at the lower levels of the UC and between the state and local public health authorities), when asked about sharing within individual agencies, most noted frequent, helpful, and supportive information sharing from agency leadership to their staff. The engagement of state agency leadership in the Governor's Policy Group greatly facilitated this, as agency leadership received timely (usually daily) and relevant information from the policy group convenings that they could share with their staff. This was also enabled by the open and supportive approach taken by agency leadership and managers. For example, many state agencies held town halls and regular check-ins with their staff, which was especially helpful with many employees working virtually. State agency leadership also communicated about available state support for employees' mental health. Agency leadership also recognized the impacts of the pandemic on agency personnel; they shared stories and information on how the pandemic was impacting them on a personal level and encouraged staff to check in on each other, which helped overcome some of the feelings of mental and emotional exhaustion and isolation. Some agency leadership found creative and new ways to support their personnel. For example, the Department of Natural Resources (DNR) added a "wellness day" for staff to use to do things such as see a doctor or do something helpful for their mental state (e.g., see a friend), which was very

Screen captures of the video created by CDE about school nurses (Source: CDE)

positively received by DNR staff. In another example, CDE created a video of school nurses sharing their experience on what inspired them and kept them going.[51]

Recommendation:

- When an emergency or incident occurs, state agency personnel should maintain a connection to the UC and/or Governor's Policy Group, even if not directly involved in the response, to help stay current on critical information coming from the Governor's Office, Governor's Policy Group, and Incident Command/UC to share with their agency staff. DHSEM should establish the mechanism to enable this and document it in the *State Emergency Operations Plan*.

Continuity of Operations

Finding 42. Coordination across state agencies and with the private sector was crucial for examining potential critical infrastructure vulnerabilities resulting from the pandemic and developing contingency plans.

The Colorado Department of Agriculture (CDA) is accustomed to playing a role in the state's response to crises, since almost any crisis—regardless of cause—can have potential effects on agriculture. With COVID-19, it was important to understand quickly how certain public health response measures, such as shutting down a processing plant that may be the site of an outbreak, might have ripple effects that could compromise the state's food supply chain. To help assess risk and vulnerability, CDA coordinated a multiagency, government/industry initiative to map out the food supply chain in detail. This enabled the state to anticipate how disruptions to any aspect of the supply chain might impact other aspects of it. This information then informed contingency planning. In addition, CDA established a Food Security Task Force to promote regular, open, and collaborative communication with industry to help define barriers or enablers to maintaining food security across the state. With this information, the state could take proactive action, if necessary, to overcome barriers or facilitate the enablers of food security during the pandemic.

Additionally, the Vaccination Task Force led by CONG was tasked with identifying critical industries to determine which individuals should be offered the vaccine first. Because no list of critical industries existed prior to COVID-19, the task force worked together with policy experts in the Governor's Office, CDPHE (policy, epidemiology, immunization, and data modeling), and other SMEs to develop the list of critical industries. This assessment covered risks and services and examined the combination of critical industries and high-risk populations.

Recommendations:

- CDA should document the key players—in the public and private sectors—who were involved in mapping food supply chain vulnerabilities during COVID-19, as well as

those participating in the Food Security Task Force. CDA and DHSEM should identify opportunities to examine food supply vulnerability in future preparedness exercises to engage public sector and industry partners so that the institutional knowledge gained during the COVID-19 response is not lost.

- DHSEM should engage state agency partners to formalize the process to develop the list of critical industries for the state and include it in appropriate plans (e.g., COOP plans or an annex to the *State Emergency Operations Plan*). Notably, the list of critical industries may differ based on the incident, but some are likely to be included in all responses (e.g., schools and homeless shelters). This effort should be coordinated with the FEMA lifelines and critical infrastructure lists (e.g., as identified by the Cybersecurity and Infrastructure Security Agency (CISA)).

Finding 43. State agencies were able to quickly adapt and switch operations to remote/virtual work (for those positions that could), reducing COVID-19 exposure risks for staff and enabling the continuity of critical government functions.

Several state agencies had shifted to a telework model in recent years. The SEOC, in particular, was familiar with virtual operations and had made use of virtual collaboration platforms, given the limited full-time staff. For many other state agencies, staff already had laptops and support systems that enabled a shift to virtual operations. However, most state agencies had not considered virtual operations or telework in their operating or COOP plans.

Despite a lack of pre-existing plans, state agency personnel, enabled by the support of the Office of Information Technology (OIT), quickly shifted to virtual operations with limited technical difficulties. OIT was helpful in providing the technology needed to support the virtual workforce (e.g., providing laptops, increasing VPN) in just two weeks. This was a significant logistical challenge, as it was unclear if it could obtain enough laptop computers. Ultimately, it was able to provide sufficient equipment via secondary sources and by leveraging personal relationships. After the first two weeks, OIT worked to "right size" the network to support remote work based on network traffic used.

That said, it took a lot of support to maintain operations within the virtual setting because many people had not used virtual platforms before and experienced a learning curve with virtual meetings in the first few weeks. Impromptu meetings were an early casualty of virtual operations, which is what people missed the most initially, as staff could not walk down the hall to coordinate and ask questions. Additionally, state personnel were challenged to develop new ways for engaging employees, especially new hires. For example, they had to find opportunities for staff to ask questions and for more regular check in with all employees.

To help aid the virtual transitions, state agencies developed plans for which personnel could work in a virtual environment and how they would transition to virtual operations. Notably, DORA implemented an effective and pragmatic phased plan to get staff working from home as soon as possible while continuing business as usual to keep the state running to provide services to the public. They started this planning in February 2020, which set them up to transition to a virtual environment quickly and in an orderly and accountable way. The timing of switching each staff member to virtual operations depended on their need to provide in-person services along with considerations of technology requirements and availability.

"We were accounting for every person in our agency to make sure they were safe and protected."

Recommendations:

- State agencies are currently revising their work arrangements for employees based on the success of virtual options during COVID-19. When state agencies have finalized plans for virtual and in-person work for their employees moving forward, they should revisit their COOP plans and determine what plans and actions would be needed to shift everyone back to virtual work again.
- DORA should document their approach for transitioning to virtual operations and provide it to other state agencies' leadership to share lessons learned.
- DHSEM should solicit for other successes and challenges associated with the shift to virtual operations to share lessons learned across the state agencies as they work to modify their COOP plans.

Finding 44. The COVID-19 pandemic and ensuing large-scale shift to virtual work has fundamentally changed state agencies' thoughts and plans for COOP, remote/virtual work, and their physical footprint.

Prior to COVID-19, state agencies put a lot of time into their COOP plans, but COVID-19 revealed the plans lacked imagination related to the scenarios the state might experience that would require activation of the plan. For example, DHSEM's plan was predicated on a loss of their physical building, and the COOP plan details establishing the SEOC

"What we have done is reimagine state government. We have identified staff to work remote permanently. We are reducing our footprint at headquarters and will give up lease space."

Colorado reimagine logo (Source: Colorado Office of Operations)

in another physical location, with staff deploying to the alternate location. COOP plans did not consider the state having to operate on its own without support from the federal government. COOP plans also did not address having a dispersed, virtual workforce, nor did they address how to maintain technological requirements and communication workflows outside the backup facility. Those processes exist now. State agencies have shown they can be effective in a remote office. As a result, some state agencies have gotten rid of unneeded office space and are exploring new hybrid models and logistics for "hoteling" workspaces. This "reimagining" of state government can produce efficiencies, increase employee satisfaction, and save money. This effort focuses on six pillars: (1) increasing employee engagement, (2) providing safe custodial facilities (i.e., corrections, mental health institutes, youth services, veterans community living center, and regional centers), (3) reducing the physical footprint, (4) responsibly managing the state budget, (5) increasing access to virtual services, and (6) accomplishing more bold goals.[52] However, there are some remaining challenges as state agencies reenvision post-pandemic operations, including:

- Increasing data security and increasing technology use is an ongoing process.
- Behavioral health support and engagement with employees will require more concerted efforts and increased time.
- Effective and consistent tools are needed for document management, especially for those managing private and protected patient information.

Recommendations:

- State agencies should update their COOP plans based on lessons learned and new virtual capabilities developed during COVID-19. State agencies should also use scenario-based planning to inform their COOP plans. Agency COOP planners may benefit from a workshop where they walk through various scenarios and stress test their COOP plans against the scenarios. For example, COOP plans should address how the state will continue operations if there is a large-scale internet or power outage or without support from the federal government. DHSEM should lead these planning efforts and update the state's COOP plan using the same approach.
- The state should reexamine risk assessments for virtual and physical security, updating them as necessary to account for additional virtual communications and a more dispersed model for physical workspaces.
- DHSEM should consider reinstating the Colorado Virtual Operations Support Team (COVOST).[xviii]

[xviii] The COVOST was designed as a resource for the state and any local agency to engage and respond virtually, but this group officially deactivated in July 2019.

Finding 45. The approach some agencies' leadership took to separate pandemic and everyday responsibilities and assign them to different executive-level leadership was helpful in ensuring COOP.

In an effort to maintain normal operations while supporting COVID-19 response operations, the leadership of some agencies separated pandemic response and everyday responsibilities at the executive level. Not only did this action provide designated executive leadership to the response, which was critical for rapid decision-making, it also ensured that essential state and supporting functions were able to take place without major interruption. For example, CDE assigned the state school nurse and the executive director of field services to monitor and track COVID-19 regulations as well as district concerns and questions. By assigning these individuals and their teams with the responsibility of tracking COVID-19 questions, actions, and needs, others at CDE were able to maintain regular operations to provide some normalcy to those within the Colorado public school system. DFPC assigned specific personnel to be responsible for approving waivers for hospitals and monitoring fire safety, and supervising fire safety for construction of ACSs, while the rest of the division was able to focus on monitoring wildfires and other fire disasters that required immediate and intense attention. Similarly, within DHSEM and CDPHE one member of the executive staff led the COVID-19 response and a different member oversaw day-to-day operations. These actions allowed the State of Colorado to respond to the COVID-19 pandemic, other disasters, and day-to-day operations simultaneously with minimal disruptions.

Recommendations:

- State agencies should be required to designate leadership with decision-making authority during emergency responses that involve the resources their agencies can bring to bear. These individuals should either be the Emergency Response Coordinator (ERC) deployed to the SEOC for their agency or be closely integrated with the agency ERC.
- Each state agency should have a plan for backfilling the roles of the executive leadership designated to support the response efforts, which could be incorporated in their continuity of government plans. Those designated to temporarily step in for executive leadership should be trained on their roles and responsibilities in advance.

Finding 46. Politicization and other aspects of the COVID-19 pandemic made it difficult and at times dangerous for those involved in carrying out response activities.

Protests at vaccination sites, the refusal of some local elected law enforcement to support security operations because of political considerations and their local community's view on COVID-19 and vaccines, as well as threats to and doxing of public

health figures and public officials were some of the many challenges associated with the politicization of the COVID-19 pandemic. Protests were common, resulting in an increase in law enforcement manpower needs for security. Often, the number of requests for security were so great that it was more than CSP could manage with existing manpower. While DHSEM tried outsourcing the security requests to contractors, it was still a challenge, as contractors were hard to manage, and it was difficult to ensure they had provided the requested services. As a result of these limitations, some sites made false claims about threats at vaccination and testing sites so they would be prioritized for security support.

Beyond the security risks and the risk of the COVID-19 disease itself, other aspects of the COVID-19 pandemic made it dangerous for state agency personnel. Burnout and stress are major health challenges for the state moving forward (see Finding 55). Additionally, limited availability of medical supplies and rampant fraud presented financial and medical risks (e.g., if masks did not protect as advertised).

The Colorado Information Analysis Center (CIAC) (the state fusion center) played a key role in identifying threats and helping to mitigate many of the risks. For example, they identified and tracked intelligence related to threats against public health authorities and other public figures; monitored intelligence about protests at vaccination sites (including the vaccination buses); and shared intelligence and information with, provided tactical support to, and provided mitigation practice to local law enforcement to help mitigate threats. They also helped DHSEM identify requirements for additional contracted security and monitored those security contractors when deployed. The CIAC also used their intelligence networks to detect and verify medical supply vendors and identify fraudulent companies (see Finding 53).

CDLE also received many threats at their call centers and developed a threat response plan, which included a threat assessment and escalation process that was very helpful for the department.

Recommendations:

- CDPS (including CSP and DHSEM) should work to vet and identify possible security vendors for future incidents requiring support beyond the capacity of CSP.
- With the CIAC residing within DHSEM there is a close connection between the CIAC and DHSEM OEM, and they work together on notice and no-notice incidents (e.g., planned First Amendment events and active shooters, respectively). Other state agencies, especially CDPHE, can also benefit from close collaboration with the CIAC and should work to formalize the relationships developed during COVID-19.
- CDLE should share the threat response plan they developed during COVID-19 with other state agency leadership to determine if they could benefit from similar plans.

Medical Capacity and Surge

Finding 47. In response to the lack of adequate testing—a barrier early in the pandemic to track disease spread and confirm community transmission of the novel virus—the State of Colorado rose to the forefront of mass testing.

Several factors contributed to testing challenges during the early phase of the pandemic:

1. Prior to the rollout of PCR tests from the CDC to state labs, the only SARS-CoV-2 testing could be done by the CDC lab in Atlanta.
2. There was an insufficient supply of test kits, which led to overly strict criteria and limited throughput for testing by the CDC. Colorado was in competition with other states for testing support from the federal government.
3. The process for states to get approval to send a specimen to the CDC lab for testing was lengthy and difficult, and the CDC was slow to turn around test results.
4. The CDC was slow to develop a test that states could perform, then problems with the initial tests provided to states further delayed the rollout.
5. Supply chain disruptions and high global demand caused shortages in availability of PPE and other materials needed to conduct testing, such as nasal swabs or transport media. Colorado was in competition with others on the open market for these supplies.
6. The state lab was not designed or equipped to conduct high-throughput testing, which contributed to delays in reporting test results.

Despite challenges, the governor set a clear goal of providing free, easy, and quick COVID-19 testing to everyone in the state and worked with state agency personnel to overcome logistical barriers and push innovation to accomplish the testing goals. With the assistance of the IRT and DHSEM, the State of Colorado worked to address the challenges, such as identifying and procuring PPE, COVID-19 tests, and other materials in the competitive global marketplace. During COVID-19, the state procured and imported PPE and testing supplies from South Korea, which was the first time the state directly contracted with another country (and in a foreign currency). The state leveraged CONG resources and contractors to surge testing operations and establish the first mass testing drive-through sites in the nation. The state established these large-scale testing sites in mid-March 2020, about a week after the first confirmed COVID-19 case in Colorado. The demand for this was so high that the drive-through testing site shut down an entire neighborhood. They also had to address the challenge of how to notify people of their results because all systems assumed the ordering provider would do that. However, with the drive-through sites, there were no orders and no providers. To further their capacity and reduce test turnaround time, the state modernized equipment and automated processes within the state lab. Within one month (by April 2020), the state lab surged to three shifts to

provide 24-hour testing and 2,000 tests per day. By July 2020, the state lab was averaging 10,000 tests per day.

The state achieved many successes through its approach to mass and other COVID-19 testing. It was the first to provide evidence of community transmission. The state also identified asymptomatic spread of COVID-19 before the CDC. As testing capacity increased, the state's focus on genetic sequencing enabled it to be the first in the nation to detect a variant strain of the SARS-CoV-2 virus (the first variant, Alpha/B.1.1.7) and the third state to detect the Omicron variant. The state also provided testing support to some state agencies (e.g., CDOC), shelters for people experiencing homelessness, and the Afghan Resettlement Program. The state supported over 150 free community testing sites across Colorado (with 40 established by May of 2020).[53] Once at-home testing kits were available, the state was the first in the nation to establish an at-home testing program that delivered kits directly to Coloradans' homes. Through the Rapid At-Home Testing Program, the state partnered with Amazon to distribute over two million at-home test kits.[54] The program also served as a model for the federal test kit distribution program. In August 2020, the state lab—in collaboration with Colorado State University, Metropolitan State University, GT Molecular, and Colorado wastewater utilities—began testing (and sequencing) wastewater from over 20 systems (expanding to over 60 systems) for COVID-19 to better gauge community transmission and levels. This also serves as an early warning system for new variants, and the state publishes this data on a public dashboard.[55] Once at-home treatments were available, in March 2022 the state worked with the federal Test to Treat[56] program to establish and identify facilities where people can be tested for COVID-19, get a prescription for treatment (if the test is positive and treatment appropriate), and get the prescription filled at one location. People can also bring in a positive at-home COVID-10 test and get a prescription at these locations. In August 2022, the CDC designated CDPHE and the University of Denver as a National Wastewater Surveillance System Center of Excellence and will serve as SMEs to other public health entities starting wastewater monitoring programs.

Recommendations:

- The state lab should institutionalize new automated processes to help it quickly surge its response during a public health emergency, as well as cross-train staff to provide added capacity.
- The state should work to diversify its vendor pools for critical supplies (e.g., PPE) and services (e.g., testing) to support resiliency and redundancy in supply chains.

Finding 48. The state endeavored to find the right plan for adequately managing medical surge; a public-private partnership addressed the need with the Combined Hospital Transfer Center (CHTC).

As COVID-19 case numbers increased in Colorado and across the country, there was concern that cases requiring hospitalization would overwhelm the capacity of hospital systems. For years, states across the nation have planned to use former medical facilities, convention centers, or other large buildings to establish alternate care sites (ACSs) to supplement hospital capacity. However, ACSs were and should be viewed as an option of last resort as they are limited in the type of care they can provide and conditions are not ideal for critical care patients. However, the State of Colorado prepared for the worst, and in March 2020, in partnership with the United States Army Corps of Engineers (USACE), it began planning to establish ACSs in Colorado. In May 2020, the governor issued Executive Order D 2020 071, suspending certain statutes and thereby permitting ACSs to open in Colorado (subsequent executive orders amended and extended this order). DHSEM and USACE established the ACS Task Force and worked with the Centers for Medicare & Medicaid Services (CMS), CONG, DFPC, Office of the State Architect, and local partners (Denver Health Hospital Authority, UCHealth, and Veritas Management Group, LLC) to establish ACSs at five locations in Colorado.[xix] DHSEM provided oversight for these operations, with the plan for four of them to be open in June 2020 and one in July 2020, if needed.

"We considered, 'What does success look like for ACS?' and the answer was building them and never having to use them."

This effort to establish the ACSs was incredibly challenging and resource intensive, and the timeline to have them up and running was short. For example, ACS plans assumed that staff to run them would come from other parts of the state or country that were unaffected, but due to the widespread nature of the pandemic, staff were not readily available. In another example, identifying the facilities was a major effort. The SEOC Logistics Section identified the candidate facilities through coordination with local emergency management organizations. There were many communities that wanted a state-

Planned ACS capacity at launch:

Colorado Convention Center: 250 beds

The Ranch Events Complex: 200 beds

St. Anthony's North: 88 beds

St. Mary-Corwin: 120 beds

Western Slope Memory Care: 50 beds

[xix] The Ranch Events Complex in Loveland, Western Slope Memory Care in Grand Junction, the Colorado Convention Center in Denver, St. Anthony North Hospital in Westminster, and St. Mary-Corwin Hospital in Pueblo.

supported ACS in their area, some of which they had already started to establish, but many facilities did not meet the minimum requirements (e.g., for fire safety). To determine if the facility would meet the needs, a team of inspectors from USACE (electricians, plumbers, and structural engineers) and DFPC (healthcare and fire safety) would visit and assess each location. In the end, four of the facilities selected were private facilities (two of which were partially closed hospitals) and one was owned by a county (The Ranch).

The ACS Task Force worked effectively to overcome the challenges and have the ACSs ready in the desired time frame. Fortunately, the need for the ACSs did not materialize, partially due to the hospital and healthcare systems having and expanding capacity more than estimated, CMS waivers (e.g., waivers to allowing nontraditional patient rooms and temporary barriers), executive orders protecting hospital capacity (e.g., limiting elective procedures), efforts to mitigate the spread of COVID-19 (e.g., stay-at-home order), provision of medical staff to existing facilities (e.g., the Disaster Medical Assistance Team to Pueblo), and a better understanding of COVID-19 and a corresponding change in recommended medical treatment for COVID-19 patients. As a result, some ACSs never opened and some were barely used. In October 2020 the governor decommissioned two ACSs (The Ranch Events Complex and Western Slope Memory Care); in February 2021 the governor decommissioned a third ACSs (the Colorado Convention Center).

Workers setting up the ACS at the Colorado Convention Center on April 10, 2020. (Source: The Colorado Sun)

Part of the effort of the ACS site was to establish a call center/dispatch capability and emergency medical service (EMS) transportation center that would move patients from overwhelmed hospitals to the ACSs or other hospitals that had capacity. This presented multiple challenges as personnel attempted to establish these capabilities, including a lack of any state plans for such a capability, lack of qualified call takers and dispatchers, disagreements about their ability to use the radio frequencies reserved for disasters, internal communication challenges with the task force establishing the ACSs (which resulted in conflicting plans), lack of equipment and software, difficulty finding a facility for the call center and dispatch, disagreements about using a single or

multiple ambulance contracts, inability to use the FEMA ambulance contract, and an outdated EMResource system that lacked up-to-date information on hospitals and ambulance companies. In the end, the state elected to contract for these resources and stood up the dispatch and call center. They also updated EMResource with needed changes. However, as the ACSs were not used, neither was this capability.

As the pandemic progressed and additional waves of increasing COVID-19 cases stressed hospital capacity, the state applied some of the lessons learned from the ACSs and dispatch center to develop a new concept—the Combined Hospital Transfer Center (CHTC)—with the Colorado Hospital Association (CHA). The CHA has a direct connection to hospital executives and emergency managers, and the state leveraged this relationship to involve them in developing a way to move COVID-19 patients from overwhelmed hospitals or hospitals lacking capabilities needed to manage severe disease COVID-19 patients to hospitals that could offer appropriate care.

These partners developed the CHTC plans, which leveraged hospital transfer centers and ambulance providers to plan for and move patients around the state to different hospitals (in different networks) with bed availability (on a rotational basis) based on care needs. The state's role was to help CHA design and evolve the processes for the CHTC. Decisions about patient care remained with the healthcare providers at each hospital. This model was extremely successful for Colorado and has since garnered national attention as a new model for medical surge. The CHTC was activated multiple times and improved processes with each activation. For example, during the first activation, only COVID-19 patients were eligible for transfer, but this expanded to movement of any type of patient during the second round (so long as it was medically indicated). A key enabler of the success of the CHTC was the updates made to EMResource, which allowed real-time tracking of hospital and healthcare facility capacity. Other enablers were the executive orders that supported the CHTC's ability to transfer patients (e.g., the executive order allowing transfer without patient consent), and the direction from the DORA Division of Insurance that regulated payment for transfer and care services (e.g., requiring insurance coverage for telehealth and hospital transfer).

Recommendations:

- If the state desires to continue to plan for ACSs for future emergencies, a list of possible locations should be pre-identified. The state should establish agreements and exercise establishing an ACS with those facilities.
- The state should revisit plans for ACSs with the USACE based on lessons learned during COVID-19 and expand those plans to include a call center and dispatch capability if the state decides to continue with the ACS model.
- The state should formalize and officially document the plan for the CHTC with the CHA, including formalized agreements among partners to continue this capability.

The state should also work to carefully develop triggers and thresholds for activation of the CHTC.

- DHSEM and CDPHE should work with the CHA to develop a way to augment EMS capability to support the CHTC model.
- DHSEM should continue to work with FEMA to allow and streamline reimbursement for alternatives to an ACS (e.g., as was done for the improvements to the nursing home wing to increase capacity).

Finding 49. The Staffing Shortage Fusion Center (SSFC) provided a centralized mechanism for the state to receive, vet, and respond to critical COVID-19-related staffing gaps in healthcare organizations and positions, but there were limitations to their scope of assistance.

The concept of the SSFC did not exist prior to the COVID-19 pandemic. It arose out of necessity as the state grappled with a high volume of requests from healthcare facilities for support with staffing augmentation. It first activated from November 2020 to March 2021. The SSFC was critical for centralizing and streamlining requests for additional staff where staffing shortages were compromising patient care. As part of this effort, contracts for staffing ACSs (originally intended to be used for hospital overflow) were "repurposed" so staff could be used in any facility experiencing staff shortages, including residential care facilities, skilled nursing facilities, hospitals, and nursing homes. Within the first month of its activation, the SSFC received over 1,000 requests for staffing support. The SSFC was activated again on September 29, 2021, and remained active through April 1, 2022. In total, the SSFC received 780 requests for support and was able to fill 413 of those requests and deploy 1,384 staff to 340 unique facilities.

Table 2. Facility and staff support provided by the SSFC. *(Source: DHSEM and SSFC)*

Dates	# Requests Received	# Requests Resolved with SSFC	# Staff Deployed	# Unique Facilities Staffed
November 2020-March 2021	143	73	145	58
April 2021-September 2021	144	74	30	31
October 2021-March 2022	493	266	1,209	251
Total	780	413	1,384	340

As it was a novel construct, developed to respond to the emergent needs of the pandemic, there were no plans in place for the SSFC and there was ambiguity in its purpose and scope. Additionally, because the mission of the ACS was different than the SSFC, the scope of work of the staffing contracts did not always align with the work required. It also took some time to understand the landscape of existing staffing processes and partners, what was allowable and reimbursable under the contract, and what

credentialing and licensing was required from out-of-state workers. Over time, the SSFC developed a more streamlined approach for facilitating and triaging requests for support from the healthcare entities, and for reviewing and approving requests based on a set of predefined criteria, such as whether the request was specifically related to COVID-19, outbreak status, whether the facility had implemented crisis standards of care, plans to transfer patients due to staffing shortages, and whether the requesting facility had exhausted all other means to meet the need.

However, the SSFC was not intended to be a way to urgently fill staffing needs, as the process from approval to getting staff on site could take days, if not weeks in some instances. For example, even if a facility was approved for support through the SSFC, the agencies used by the SSFC allowed the contracted medical providers to choose the locations they wanted to support. This made it difficult to staff rural and "less desirable" locations and facilities. The SSFC used the CONG, volunteers from the Colorado Volunteer Mobilizer (CVM), and Healthcare Workforce Logistics to staff some of these requests.

Additionally, some departments could not take advantage of the surge support offered by the SSFC due to prior obligations and contractual conflicts. CDOC, for example, could not use the SSFC because of pre-existing contracts for clinical staff; going through the contracts set up by the SSFC would have been a purchasing violation. The CDOC could not acquire more staff through its existing contracts, though, because of pay rate escalations (i.e., it could not get anyone to agree to come work for the pre-COVID-19 rate). Instead, it had to renegotiate the contract for a higher rate.

Recommendations:

- A *Staffing Shortage Fusion Center Operations Guide* is in development to capture institutional knowledge and lessons learned about SSFC activation, deactivation, and operations, including roles and responsibilities for internal and external partners. DHSEM should finalize the *SSFC Operations Guide* and then provide training on the guide to appropriate state agency personnel and external partners.
- DHSEM should also exercise the SSFC within the context of other state agency exercises to train staff on its use during an emergency.
- CDPHE should review existing contracts, determine which ones can support the SSFC moving forward, and regularly maintain these contracts so they can be operationalized quickly. Additionally, and if needed, CDPHE should consider establishing new contracts if the existing ones are mismatched with the SSFC scope of work.

Finding 50. The Residential Care Strike Team was a multidisciplinary, collaborative effort that used both policy and operational levers to address the disproportionate impacts of COVID-19 on residents and staff in residential healthcare facilities.

With input from the Governor's Office, CDPHE formed a Residential Care Strike Team in the early months of the pandemic to address concerns about the disproportionate impacts of COVID-19 on those living and working in long-term care and other congregate, residential settings. The team brought together expertise from CDPHE, HCPF, Colorado Department of Human Services (CDHS), DORA, DPA, and the Governor's Office to reduce the spread and mitigate the impacts of COVID-19 in residential care facilities. One of the team's significant achievements was helping to develop public health order 20-20, which enacted specific requirements for residential care facilities related to COVID-19 testing, vaccination, and data reporting. The team also developed operational guidance on infection control and supported the procurement and distribution of PPE to these facilities, among other tasks. In addition, the team created a website that served as a one-stop shop for facility owners and staff to locate up-to-date guidance, data, recommendations, and technical assistance resources to support them in the fight against COVID-19.

Recommendations:

- CDPHE should document and incorporate lessons learned from the Residential Care Strike Team's work during COVID-19 into CDPHE preparedness plans, including potential triggers for future activation of the team during future public health crises.
- CDPHE and DHSEM should consider whether there are other key partners from government or industry that might be incorporated into the Residential Care Strike Team to support response to or recovery from major public health emergencies.

Finding 51. HCPF worked closely with providers across the state to implement waivers and allocate increased federal funding enacted under the federal government's public health emergency declaration.

The federal declaration of a public health emergency allowed for the implementation of several waivers to protect Coloradans, minimize the administrative burden on HCPF staff and providers, and enhance access to and delivery of healthcare services in the state. For example, under the federal public health emergency, people covered by Medicaid are granted continued coverage regardless of changes in eligibility. This reduced the administrative burden on HCPF staff, as they no longer had to unenroll or reenroll Medicaid beneficiaries and could focus their time instead on other pressing issues related to the response. In addition, waivers granted under the public health emergency

increased payment for telehealth services and made it easier for providers to be approved as a provider of telehealth services.

Notably, prior to COVID-19, the Office for eHealth Innovation in the Lieutenant Governor's Office had already begun to innovate and advocate for expansion and improvement of telehealth and telemedicine services across the state. This enabled them to help inform Executive Order D 2020-020[57] issued on April 1, 2020, which suspended certain statutes to expand the use of telehealth and work with the legislature to modify state laws (through Senate bill 20-212[58]) to decrease barriers to the adoption of telehealth. For example, these actions required insurance providers to cover telehealth, removed the need for a previous relationship with a provider, dictated the same rate for telehealth and in-person care, and provided funding for telehealth projects. As a result, telehealth visits increased by 600 percent.

To promote awareness of changes in federal and state regulations and the implications of those changes for providers in Colorado, HCPF established a robust internal incident management system that included multiple operations teams to support implementation of new policies or waivers. These teams developed communications for providers, conducted outreach to help providers navigate changes in telehealth requirements and reimbursement, and developed public messaging to ensure that Coloradans were kept informed about how these changes affected their access to health care during the pandemic. The primary challenges for HCPF were twofold: (1) learning how to interact with customers in a completely virtual environment since much of their routine business occurs in person (this challenge was most pronounced for regional staff); and (2) creating contingency plans to "undo" the considerable amount of work that has been done to implement waivers and new policies once the public health emergency ends.

Recommendations:

- HCPF should document the changes made to its internal business processes to respond to COVID-19 so those changes can be quickly reinstituted, if needed, in a future public health emergency.
- HCPF should build added redundancy into its staff with employees who are trained and equipped to serve in incident management roles at the state and regional levels, and budget for the ongoing costs associated with maintaining proficiency in those positions.
- DHSEM should work with HCPF to better integrate them into emergency operations. One aspect of this should be to capture their roles and responsibilities in the *State Emergency Operations Plan*.

Finding 52. Global competition for PPE, acute limitations of the SNS and state stockpiles, and a lack of pre-established contracts for emergency PPE procurement left state agencies and their partners with PPE shortages during the initial months of the COVID-19 pandemic. In response, the state set up a statewide PPE procurement to address the need, ease the burden on state agencies, ensure authenticity of the PPE provided, and avoid rampant fraud and is not modernizing the state stockpile.

In February and March of 2020, as fear of COVID-19 grew, medical and non-medical entities across the world engaged in a mad rush to acquire PPE, such as masks, gloves, face shields, and gowns. The supply of ventilators was also gravely insufficient. The limited domestic supply of PPE and ventilators was quickly depleted, and international producers restricted exports. When supply chains started to slowly adjust to increased demand, traditional suppliers of PPE prioritized distribution to the medical community. In this severely constrained environment, Colorado and many other states across the nation expected the federal government to provide them a short-term supply of PPE from the SNS. In the longer term, the federal government was to help with supply through increased production through the Defense Production Act. However, neither of these sufficiently materialized; when the state received its allocation of PPE through the SNS (which was also very delayed), it was a small fraction of the amount requested and anticipated. The state quickly realized it was on its own to find a source for PPE.

A few state agencies attempted to source their own PPE and some made their own masks (e.g., CDOC), but the efforts were very burdensome. Prior to COVID-19, DHSEM had sourced PPE a few times, but never on a mass scale, and did not have pre-established vendors or plans in place for such an effort. During the spring of 2020, DHSEM partnered with the IRT to find a source for PPE that all state agencies could use. Together, they established a team of personnel from state agencies and the private sector responsible for creating a program for sourcing PPE for the state and distributing it to end users.

"With masks, probably 50 percent of what we tested did not meet standards."

With traditional vendors already contracted to provide PPE for the medical community, a main challenge for the PPE team was to find a legitimate supplier. Price gouging and counterfeit PPE were rampant. Over 2,000 vendors applied to sell PPE to the state, many of which had never sold PPE prior to COVID-19. The state leveraged the IRT to help identify potential vendors. Then the state developed an intake form for potential vendors that laid out requirements for supplying the state with PPE, including agreeing to not getting paid until the state tested the equipment. As many vendors wanted payment up front and would not agree to some of the state's other terms, this helped narrow the pool of vendors. The state's fusion center, the CIAC, then investigated all suppliers that made the first cut, especially those that had not sold PPE before, to determine if they were legitimate. The Colorado Bureau of Investigation (CBI)

and US Customs and Border Patrol also helped with investigating vendors to ensure the state did not become a victim of fraud.

After selecting vendors, the PPE team developed a testing process to ensure the vendors' PPE was authentic and met the standards it claimed (e.g., 95 percent filtration for N95 masks). The state partnered with Colorado State University and the University of Colorado to conduct the tests. Once a vendor passed all tests and the state placed and received an order, the vendor could then be paid by the state. Notably, the governor also leveraged the elected official fiscal exemption to waive procurement rules to be able to purchase COVID-19 tests from abroad (South Korea) enabling the State of Colorado to have widespread testing in the spring of 2020.

> *"The main thing we did was never paid anyone until the product arrived, was tested, and approved. Other states told us we would never get PPE unless we were willing to take that risk, but we were not."*

The PPE team also developed a distribution and warehousing capability for the PPE. By September 2020, the PPE team had sourced over 30 million pieces of PPE. State agencies, hospitals, and local public health authorities could request PPE from this supply through a website run by CDPHE. The DHSEM Logistics Section determined how to transport the supplies to the requestor.

In *Colorado's Next Chapter: Our Roadmap to Moving Forward*, the governor called for critical reforms to improve readiness and the state's stockpile. The state is now engaged in efforts to maintain a stockpile (90- to 120-day supply) of critical PPE at the SEOC warehouse (to be managed by CDPHE and CDHS). State agencies have worked with the legislature to fund and enact law to require a warehouse that will be shared across agencies, signed a warehouse lease, and are developing processes to ensure the stockpiled supplies are refreshed on a regular basis.

Recommendations:

- The state should continue efforts to stockpile critical PPE. The state should assess if there are any other critical supplies that it should stockpile beyond those needed for the COVID-19 pandemic (e.g., potassium iodide for a nuclear incident).
- The state should work to identify and establish agreements with vendors that can supply critical and authentic PPE during a public health emergency and continue to leverage the CIAC to vet potential vendors. The state should also be careful to ensure these vendors do not establish conflicting agreements with others that could preclude their ability to fulfill Colorado's orders.
- The state should provide funding in future appropriations for the shared warehouse (as the funding appropriated was a one-time allotment).

- DHSEM and CDPHE should review critical supplies and identify what to include in the warehouse cache. DPA should also be included in this planning effort to help ensure critical supplies are available for the continuity of state agency operations.

Recovery

Finding 53. Colorado recognized the significant economic impact of the pandemic and implemented novel structures and strategies to manage the economic response and economic recovery. The state is now codifying these new recovery structures for future disasters.

As the state has never experienced an economic impact across all sectors simultaneously, with significant changes in the gross domestic product month to month, economic recovery from the COVID-19 pandemic did not mirror traditional post-disaster recovery processes. As detailed in Finding 8, prior to the availability of federal funding, the state implemented innovative approaches—such as the safety net response, council on economic stabilization and growth, and philanthropic COVID-19 relief funds—to support Coloradans through the economic impacts of the pandemic. The federal government sent the state an unprecedented amount of economic recovery funding; the American Rescue Plan Act (ARPA) alone provided the state over $3.8 billion in flexible funding coupled with billions of dollars for local governments. Rather than just increasing spending, the Governor's Office viewed the funding as an opportunity to spend in transformative ways that improve the way the government services, close accessibility gaps, and improve and drive equity improvements in the state. This led to several strategic questions—namely, how to direct the funding to drive change and help communities equitably, what recovery means for various groups of individuals, how to implement a fiscally responsible system that is efficient and quick without leaving the state with long-term operations and maintenance costs, how to develop performance metrics to monitor progress, and how to ensure proper record keeping and financial accountability that is responsive to federal grant requirements. To address these questions, the governor appointed a chief recovery officer housed in the Office of Economic Development and International Trade (OEDIT). The chief recovery officer implemented several actions to address the strategic questions above, including the following:

- Hiring a team of recovery officers and embedding them in the agencies that received recovery funds. The officers were responsible for helping the agencies spend the money, keep records, ensure compliance, and develop and report on performance metrics.
- Understanding US Treasury rules and monitoring requirements for federal recovery funds.

- Supporting local communities to increase their capacity to apply for ARPA grant funding and implement programs. In addition to working with DOLA, which has relationships at the local level, a roving recovery officer worked with local organizations, non-profits, and beneficiaries, such as the Colorado Municipal League; Colorado Counties, Inc.; and Colorado City & County Management Association.
- Conducting a listening tour with the legislature, treasury, and Governor's Office to better understand how to help people and drive change. Through this, they identified several main categories of funding: housing, workforce, behavioral health, student success, and stabilization and health care for pandemic-related activities, such as vaccinations, therapeutics, and testing. They then worked with the legislature to develop committees on these areas to develop recommendations, which have since been formally codified in legislation. The collaborative approach to economic recovery, involving legislature to inform use of pandemic relief funds, also considers the one-time availability of the recovery funding sources.

These economic recovery actions were coordinated with the COVID-19 public health response but managed outside of the UC structure due to the magnitude of the efforts. In addition to these actions, the state implemented its more traditional recovery structures. The *State Emergency Operations Plan* and recovery plan identify DOLA as the lead for long-term community recovery (formerly ESF #14), economic recovery, and housing recovery. During COVID-19, DOLA created a COVID-19 recovery webinar series and developed the COVID-19 peer to peer exchanges to help local governments connect on recovery issues. They also helped communities establish recovery programs and manage federal recovery funding. Additionally, DHSEM has a state recovery officer responsible for running the State Recovery Task Force, which consists of state and federal agencies involved in disaster recovery. The State Recovery Task Force stood up for the first few months of the COVID-19 pandemic response.

This approach has been effective for the state, greatly aiding and accelerating the economic recovery from COVID-19. Overall, the magnitude of economic impact, level of effort and actions required to address the economic impact, and the success of the efforts undertaken to date has led the state to reconsider its pre-COVID-19 approach to economic recovery and recovery more generally. In May 2022, the Colorado General Assembly passed Senate Bill 22-206 establishing standing preparedness and recovery structures and funds including the Disaster Resilience Rebuilding Program in DOLA's Division of Local Government, Disaster Resilience Rebuilding Program fund, the Sustainable Rebuilding Program in the Colorado Energy Office, Sustainable Rebuilding Program fund, and the Office of Climate Preparedness in the Governor's Office.[59] Moving forward, the state will work to implement and coordinate these new programs with existing recovery structures.

Efforts also remain to determine when to implement traditional recovery structures versus or in addition to the novel structures implemented for COVID-19 recovery.

Recommendations:

- The state should discuss and develop a framework for when economic recovery should activate under the incident command (e.g., as a Recovery Support Function (RSF)) and when the governor may want to convene a separate economic response/recovery structure or campaign to run parallel to an emergency response (but live outside of the incident command or UC). The framework should identify the potential economic structures executive leadership may want to implement and identify the governor, Governor's Office, and state agencies' roles and responsibilities in implementing the structure (including the new roles outlined in "SB22-206: Disaster Preparedness and Recovery Resources").
- DHSEM should update the *State Emergency Operations Plan*'s Recovery Annexes to clearly document the roles and responsibilities of the various organizations involved in disaster recovery efforts for the state. DHSEM should also socialize these plans with applicable state agency partners and executive leadership and include recovery in future pandemic and other emergency exercises to practice these roles and responsibilities.
- DHSEM should determine if the State Recovery Task Force should continue and, if so, develop SOPs for its activation and operation. DHSEM should also consider how new recovery-related roles and responsibilities fit in with the Recovery Section of the SEOC (which could also be responsible for the State Recovery Task Force) and adequately staff it and train assigned personnel. DHSEM should also ensure the Recovery Task Force or Recovery Section has the appropriate authority and sponsorship to execute their missions. DHSEM should also consider if the state could benefit from following the *National Disaster Recovery Framework* structure (and corresponding Recovery Support Functions)[60] in its approach to recovery in the SEOC.
- For each agency with a role in recovery, an agency representative with appropriate decision-making authority should deploy to the SEOC, UCC, Joint Field Office, and recovery task force when those structures are activated. DHSEM should work with these agencies to plan for them to staff these structures when activated and train the assigned staff on roles, responsibilities, and common response structures (NIMS/ICS).

Finding 54. The mental, physical, and behavioral health impacts of the pandemic and long-term recovery needs are only just beginning to be understood.

Stress, burnout, loss of loved ones, loss of friendships, physical and mental exhaustion, long COVID, delayed identification of other diseases, loss of employment, increase in homelessness, and spikes in illicit drug use are just a few of the many effects of the pandemic that are and will continue to take a mental, physical, and behavioral health toll on Coloradans. Recognizing the potentially severe behavioral health impacts of COVID-19, in April 2020, Governor Polis tasked the Behavioral Health Task Force[61] and the lieutenant governor with a special assignment to look at the behavioral health impacts of COVID-19 in the state, especially on vulnerable populations, and identify recommendations to strengthen Colorado's behavioral health system for future crises. The results of the committee's efforts are captured in the "COVID-19 Special Assignment Committee Report"[62] released on September 17, 2020, which identifies 25 recommendations covering behavioral telehealth, behavioral health services, outpatient services, residential/inpatient services, substance use disorder services, children and youth, equity, emergency response, and funding flexibility. In September 2020, the task force also released "Behavioral Health in Colorado: Putting People First,"[63] which outlines recommendations for how to reform the state's behavioral health system. Throughout the pandemic, state employees were offered services through several state programs. State agency leadership was supportive and shared information about resources available, offered opportunities for people to pursue resources, and created opportunities to talk about the stress and share their experiences to help create community and avoid isolation.

"I don't know how you quash politics in a pandemic, but it broke apart relationships. Friendships ripped apart. Very real and we need to be cognizant of it."

The state also took action to help all Coloradans, including state employees, deal with the mental health impacts of COVID-19. For example, the Colorado Spirit program provided free psychological support. Notably, the state and DNR kept state parks open through the entirety of the COVID-19 pandemic to enable outdoor recreation—a critical and positive action supporting mental health during the periods of shutdown. However, many state agency personnel were too overwhelmed with work and supporting the mission to pursue these opportunities. Additionally, the full impact of COVID-19 on Coloradans' mental, physical, and behavioral health will take years and decades to present and be fully understood. Following a recommendation from the Behavioral Health Task Force on April

"Continue to remember as much as this is a physical crisis this is a mental health crisis."

22, 2021, Governor Polis signed a bill establishing a new state Behavioral Health Administration within the Colorado Department of Human Services to coordinate and integrate state mental health and substance use programs and funding and to help implement recommended changes to behavioral health support in Colorado.[64]

The state has also initiated efforts to study the long-term impacts of COVID-19 and "long COVID." In January 2023, the lieutenant governor and the Colorado Office of Saving People Money on Health Care released their first annual report on long COVID.[65] The state also created a community of practice for clinicians and providers to discuss long COVID and how to manage care.

Recommendations:

- Similar to the approach the state is taking with health equity, the state should incorporate mental and behavioral health impacts of COVID-19 into all operations and activities moving forward. This should include and continue conducting research into the pandemic's full impacts, monitoring those impacts, flexing plans and policies as new issues present, and researching best practices for programs and efforts to encourage employees to seek assistance when needed.
- The Colorado Behavioral Health Administration should continue to work to implement the recommendations detailed in the Behavioral Health Committee's "COVID-19 Special Assignment Committee Report" and "Behavioral Health in Colorado: Putting People First" blueprint for reform.
- The state should ensure all state employees are aware of the behavioral health resources available to them and their families. The state should also identify and socialize any support available for volunteers who helped with the COVID-19 response and recovery efforts (e.g., AmeriCorps members).

Conclusion

While the public health and national disaster declarations are no longer in place for COVID-19, the State of Colorado's efforts to mitigate the impacts of COVID-19 and recover from the pandemic are by no means complete. As the state transitioned from a pandemic to an endemic response, engaging in this after-action analysis will help the State of Colorado further progress its public health and emergency preparedness and build upon key actions already started with *Colorado's Next Chapter: Our Roadmap to Moving Forward*, which identified four main lines of effort:

1. Establishing hospital readiness standards, surge planning, and normalizing COVID patient care in traditional medical settings;
2. Ensuring public health readiness and surge capacity;
3. Investing in health care workforce stabilization and expansion; and
4. Engaging the federal government in national endemic response, pandemic readiness, and needed reforms.

Since before the first case of COVID-19 arrived in Colorado, state agency personnel worked assiduously and determinedly to confront the pandemic and the challenges it presented to Coloradans. As the pandemic upended everyone's expectations for how (and for how long) a pandemic would impact the United States and the world, an innovative, flexible, and coordinated whole-of-state government response was needed and implemented in Colorado. To date, the state has made great strides in pandemic response and preparedness and has achieved many successes, such as being the first state to identify community spread of COVID-19. These actions protected Coloradans from some of the worst potential physical, mental, and economic impacts of the COVID-19 pandemic.

State agency personnel now have a vast amount of institutional knowledge about what worked well for the COVID-19 response and recovery efforts, but much of this still resides as institutional knowledge. A next major step for the state will be to codify modified and new plans and capabilities in state agency and overarching plans, policies, and procedures. There are also future planning, training, and exercise efforts required to ensure that the new structures and plans developed are applicable to a wide variety of emergencies. Care should be taken to not be overly prescriptive and too closely tied to what was enacted for the COVID-19 pandemic, as the next pandemic or emergency may have unique needs and considerations. Considering the magnitude of the COVID-19 response and recovery efforts, plans put in place for future efforts should be scalable and modular.

Additionally (and also on a national level), there is likely a strategic discussion merited about the emergency management structures and plans for protracted emergencies and

incidents. The COVID-19 pandemic has led many to wonder if emergency management should reimagine its role for long-duration events like pandemics, especially as disasters are becoming more frequent and severe. There are also long-term mental, behavioral, and physical impacts of the COVID-19 pandemic that are being studied by the state and will need to be addressed in state agency operations for years to come.

The State of Colorado agency personnel and leadership are well poised to take on these challenges and are committed to serving Coloradans. It will be imperative to ensure they are appropriately resourced and funded to continue this critical work.

Appendix A: Examples of State Agency COVID-19 Response and Recovery Activities

Organization/Department/Division		Role in the COVID-19 Response
Office of the Governor	Chief of Staff	• Advised the governor • Staffed the governor and liaison to key constituency groups • Lead the Governor's Policy Group • Oversaw daily progress of incident management • Oversaw all communications efforts • Oversaw recovery efforts • Supported creation and implementation of wildly important goals for the response • Supported creation and implementation of state stimulus legislative agenda • Initiated creation of the COVID Relief Fund • Initiated several task forces such as the Senior Strike force and back to school task force • Chair the Governor's Compliance and Cooperation Committee • Convened regional governor's chiefs of staffs weekly
	COVID Senior Advisors	• Supported the creation and implementation of social distancing policies and stakeholder engagement • Supported the vaccine campaign; set goals and strategies to increase uptake • Supported the creation of vaccine equity program • Supported the work of the Innovation Response Team • Supported the work of all task forces
	Deputy Chief of Staff	• Lead creation and daily operations of the COVID Relief Fund • Support Continuity of Operations of the Governor's Office • Supported operations of executive security team

Organization/Department/Division		Role in the COVID-19 Response
Office of the Governor	Communications Office	• Staffed, oversaw, and coordinated closely with the Joint Information Center • Held weekly press conferences to update the public on operations and progress • Provided guidance and information to the media and public • Supported vaccine equity work
	Office of Operations	• Coordinated rollout of universal policy on remote work and COVID-19 vaccinations and testing for state employees • Launched initiatives to protect the health of individuals in state custody, to maximize virtual services for residents, and to reduce the state's physical footprint • Supported the policy feedback systems and various task forces • Supported all state agencies on their agency level response and recovery
	Office of Legal Counsel	• Published Executive Orders related to the public health emergency and related actions to support the state's response • Supported compliance efforts and policy development • Advised the governor
	Office of Legislative and Policy	• Coordinated with the legislative branch • Supported policy task forces such as Back to School task force • Coordinate engagement with the federal government especially focused on engagement with the federal funding packages and policies to support impacted Colorado businesses • Coordinated State Stimulus Policy Proposals in partnership with the Governor, Office of State Planning and Budgeting, and General Assembly • Designated liaison to National Governor Association
	Office of Boards and Commissions	• Supported the COVID Relief Fund • Ensured continuity of operations for boards and commissions

Organization/Department/Division		Role in the COVID-19 Response
Office of the Governor	Office of Economic Development and International Trade	• Led economic recovery efforts • Partnered with Office of State Planning and Budgeting on Recovery investments
	Office of State Planning and Budgeting	• Ensured the COVID-19 response always had the resources it needed • Partnered with DHSEM to maximize FEMA resources and manage the disaster emergency fund • Created and Implemented State Stimulus Programs • Created overall budget strategy, federal fund strategy, and legislative budget strategy
	Office of Information Technology	• Assisted in transitioning all offices/departments to virtual work • Provided infrastructure support • Helped modify systems to support epidemiological data collection and sharing
Office of the Lieutenant Governor	Commission of Indian Affairs	• Worked with tribal entities to understand the impacts of COVID-19 on Native Americans in Colorado • Worked to connect tribes with resources and supplies to help with COVID-19 response and recovery efforts for Native Americans
	Colorado Space Coalition	• Continued work critical to national security • Repurposed technology to print 3D face shields and other supplies
	Office of eHealth Innovation	• Progressed and expanded availability of telehealth and telemedicine in Colorado
	Office of Saving People Money on Healthcare	• Studied (and continues to study) the long-term impacts of COVID-19

Organization/Department/Division		Role in the COVID-19 Response
Office of the Lieutenant Governor	Serve Colorado	• Established COVID-19 Containment Response Corps program with AmeriCorps to provide statewide contact tracing, case investigation, information on resources, test tracking, isolation and quarantine monitoring, and vaccine education outreach • Created a Tutoring Corps initiative for students experiencing learning loss due to COVID-19
Department of Agriculture		• Developed the internal Food Security Task Force to examine the impact on the food/agriculture supply chain • Provided guidance on outbreaks, testing, and vaccinations • Identified relief funding and recovery information for the food/agriculture industry
Department of Corrections	Division of Prisons	• Partnered with incident command to implement a first in the country rapid testing program of staff and residents • Implemented social distancing protocols • Supported vaccine distribution to inmate population • Made and distributed three-layer cloth masks via Colorado Correctional Industries Garment Factory • Contracted to provide CDOC residents with virtual visits from friends and family and to create other virtual programs
	Division of Parole	• Ensured staff and parolees were informed as necessary of changes to protocols and executive orders • Helped staff DOC facilities • Managed release programs

Organization/Department/Division	Role in the COVID-19 Response
Department of Early Childhood	• Stabilized child care sector to continue operating during the pandemic, including launching emergency child care for essential workers • Transitioned early intervention, home visiting and early childhood mental health programs to virtual platforms to ensure families with young children had seamless support • Supported families in securing basic needs including financial assistance for emergency needs, food, gas, technology, and baby supplies through family resource centers and home visiting programs • Coordinated with DHSEM to ensure families had diapers and baby formula during crisis supply shortages
Department of Education	• Shared information with schools, districts, superintendents, and school nurses • Created and managed a system to distribute federal funding to school districts • Worked with the Colorado Department of Public Health and Environment to inform guidance on safely restarting in-person learning • Created a distribution system for PPE within schools

Organization/Department/Division	Role in the COVID-19 Response
Department of Health Care Policy & Financing	• Deployed residential strike team for all group settings serving older adults and people with disabilities • By transitioning more than 550,000 Coloradans impacted by the COVID-induced economic downturn onto Medicaid, HCPF helped mitigate an increase in the uninsured rate and related financial impacts to Coloradans and care providers, while facilitating access to affordable care that protects health and well being • Increased the vaccination rate of members with disabilities and achieved our goal to reduce the vaccination rate disparity between members of color and white members to three percent or less • Leveraged one-time American Rescue Plan Act funding toward projects that will have historic, transformational impacts on Coloradans who seek home and community-based services and behavioral health services • Provided across-the-board reimbursement rate increases to health providers of 3% FY23-24, 2% FY22-23, and 2.5% FY21-22
Department of Higher Education	• Developed several grants and scholarships to assist those affected by COVID-19 • Partnered universities with CDPHE to assist with research and data analysis • Offered increased funding for counseling services

Organization/Department/Division		Role in the COVID-19 Response
Department of Human Services		• Developed and implemented the Pandemic EBT Program and SNAP Max Allotment • Supported the Office of Early Childhood to stabilize the child care sector to continue operating during the pandemic, including launching emergency child care for essential workers • Stood up virtual services including visitation for CDHS residents/patients/youth, providing virtual support/training to stakeholders (counties, providers, contractors), and providing therapies • Implemented social distancing and best practices in human services congregate settings • Implemented regular testing, social distancing in state congregate settings • Supported vaccine clinics in state congregate settings
Colorado Department of Labor and Employment		• Managed unemployment claims • Managed federal and state benefits • Established call centers to provide information to localities and individuals
Department of Local Affairs		• Regional managers shared information between the state and localities • Developed interagency communications group, an economic recovery group, and a delegation around policy issues and funding from the federal government • Provided emergency housing assistance
Department of Military and Veterans Affairs	Colorado National Guard	• Provided support to the Alternate Care Sites (ACSs) • Supported mass testing and vaccination • Led the Vaccination Task Force • Provided personnel to staff medical facilities experiencing shortages

Organization/Department/Division		Role in the COVID-19 Response
Department of Natural Resources		• Ensured parks stayed open to encourage outdoor recreational activity • Modified park hours to reduce capacity • Developed plans to use parks for vaccine distribution or testing
Department of Personnel & Administration		• Provided direct support for ACS including leasing, constructing, and maintaining certain facilities • Adapted state warehouses to store and distribute PPE • Tracked Federal Emergency Management Agency-reimbursable expenses • Streamlined and supported emergency expenditures, procurements, and grants • Implemented consistent guidance and tracking for state and federal COVID-19 response and stimulus funding • Distributed information and guidance to agency human resource departments
Colorado Department of Public Health & Environment	Executive Director	• Advised the governor and chief of staff • Chaired the Governor's Expert Emergency Epidemic Response Committee (GEEERC) • Hired key emergency response leaders and restructured response division • Managed CDPHE emergency response leaders • Provided leadership to the Governor's Policy Group • Signed public health orders • Ensured all relevant communications were distributed to internal partners and the public • Revamped the emergency preparedness and response regional support system • Participated in press conferences and public information campaigns • Assisted CDPHE staff with governor briefings, public health strategies, and policy papers

Organization/Department/Division		Role in the COVID-19 Response
Colorado Department of Public Health & Environment	Chief Medical Officer	• Advised the Governor and Chief of Staff • Provided leadership to the Governor's Policy Group • Provided leadership to the Governor's Expert Emergency Epidemic Response Committee (GEEERC) • Participated in press conferences and public information campaigns • Led an advisory committee to draft crisis standards of care
	Administrative Division	• Maintained necessary licenses and certificates • Hired/onboarded new staff for surge capacity • Facilitated IT needs for surge capacity • Oversaw procurement process
	Office of Communications	• Staffed the Joint Information Center • Held weekly press conferences to update the public on operations and progress • Coordinated public information campaigns • Managed CORA requests
	Division of Disease Control and Public Health Response (DCPHR)	• Division director was joint incident commander of response • Helped lead COVID-19 response for the state including disease control, contact tracing, epidemiology, immunizations, laboratory testing and identification of variants, staffing fusion center, and combined hospital transfer center • Division director facilitated stakeholder meetings with local public health directors and hospital chief medical officers • Division director participated in press conference and was a department spokesperson
	DCPHR's Office of Emergency Preparedness and Response	• Ran the CDPHE Department Operations Center • Assisted with logistics • Assisted with mobile clinics to distribute therapeutics • Served as liaisons for local public health authorities

Organization/Department/Division		Role in the COVID-19 Response
Colorado Department of Public Health & Environment Rick Pascoe served as a member whil	DCPHR's Communicable Disease Branch	• Led by the state epidemiologist who coordinated the department's epidemiological response, participated in press conferences and public information campaigns; advised the department on the latest CDC guidance; advised the governor • Led contract tracing to follow the progress of the virus and prevent unnecessary infection • Identified who should be classified in the priority and high-risk groups • Managed case data and reported to the federal government • Provided data analysis to support decision making and communication • Tracked current and most effective COVID-19 treatments
	DCPHR's Health Equity Branch	• Created during COVID-19 to address disparities in SARS-CoV-2 vaccination rates among vulnerable populations • Assisted in the development of equity clinics to ensure fair distribution of the vaccines • Assisted in the development and staffing of mobile testing, therapeutics, and vaccination clinics statewide, with an emphasis on areas with high social vulnerability • Built relationships with community-based organizations to host vaccine and testing clinics • Launched the COVID-19 Health Disparities and Immunization grant program

Organization/Department/Division		Role in the COVID-19 Response
	DCPHR's Immunization Branch	• Ran the COVID-19 Vaccination Program, including enrolling providers, ordering and managing vaccines, and ensuring compliance with requirements • Developed a weekly statewide vaccination allocation strategy • Led COVID-19 Vaccine Community of Practice calls with local public health agencies and providers • Supported multiple community vaccination sites, mobile vaccine units, and equity pop-up clinics • Developed and implemented four separate phases of statewide media and outreach campaigns • Sent direct texts and emails to individuals about COVID-19 vaccines, including when they were overdue for their next dose • Assisted in vaccine distribution • Managed vaccine data systems including Colorado Immunization Information System, PrepMod, and Colorado Public Health Reporting Portal • Launched the Champions for Vaccine Equity Program • Tracked vaccination data used for planning • Supported Comeback Cash Lottery
	State Lab (in the DCPHR Division)	• Operated a 24/7 site to process tests, including for Colorado's most vulnerable in congregate settings • Performed genomic testing to understand variants in Colorado • Vetted vaccines prior to distribution • Tested and tracked swabs for COVID-19 from hospitals and testing centers • Assisted in the creation of drive-through testing sites

Organization/Department/Division		Role in the COVID-19 Response
Colorado Department of Public Health & Environment	Health Facilities and Emergency Medical Services Division	• Provided regulatory oversight for hospitals • Helped lead the Residential Care Strike Team • Worked to protect those in long-term care and other health facilities and helped with COVID-19-related facility restrictions, requirements (e.g., testing and reporting), and waivers • Helped implement COVID-19 mitigation measures for emergency medical services (EMS), including crisis standards of care and temporary changes to statutes and licensing for emergency medical services • Helped identify course of action for hospitals and emergency departments that had reached capacity with decisions to transfer or cease patient admission
	Volunteer Services	• Managed, trained, and tracked volunteers • Coordinated positions for entities such as vaccination clinics, Medical Reserve Corps, Spark the Change, and more
Department of Public Safety	Colorado Bureau of Investigation	• Continued operations necessary for the state (background checks, fingerprinting) • Assisted with fraud checks for PPE vendors
	Colorado State Patrol	• Staffed COVID-19 call center • Provided security and patrol at critical infrastructure locations (e.g., grocery stores) • Provided security and traffic control for testing and vaccination sites • Provided emergency transports of supplies across the state

Organization/Department/Division		Role in the COVID-19 Response
Department of Public Safety	Division of Homeland Security and Emergency Management (DHSEM)	• Ran the COVID Unified Command Center • Managed and staffed the Joint Information Center • Lead COVID-19 response for the state through the Governor's Policy Group • Provided resource support to localities • Sourced and delivered testing materials • Delivered PPE to Schools • Sourced PPE for all state agencies • Built and managed alternative care sites • Managed large community vaccine sites • Managed mass testing sites • Worked with all municipalities, public health agencies, and nonprofit organizations in the state to provide $2.2 billion in FEMA Public Assistance for COVID response effort
	DHSEM, Colorado Information Analysis Center	• Conducted threat assessments for testing and vaccination sites • Assisted with security and coordinating security contractors for vaccine sites • Examined supply chains and vendors for PPE and other supplies (e.g., helping identify fake testing kits)
	Division of Fire Prevention & Control	• Helped identify spaces for ACSs and ensured they met fire code and requirements for healthcare facilities • Approved physical changes to hospitals to accommodate more patients • Participated in the ambulance and patient movement coordination task force
Department of Regulatory Agencies		• Helped establish public health orders for modifications to licensing to increase availability of medical staff • Provided guidance to licensed individuals to understand the executive orders

Organization/Department/Division	Role in the COVID-19 Response
Department of Revenue	• Shifted all services (e.g., registration renewal) to be available online • Developed special protocols and regulatory waivers to account for the circumstances • Led Comeback Cash Lottery
Department of Transportation	• Ensured continuation of maintenance and construction operations (e.g., road work, snowplows, debris removal) • Developed a system for anonymous concerns to be voiced

Appendix B: Organizational Charts

Figure 12. A sample organizational chart for the Colorado COVID-19 Unified Command Center (*Source: DHSEM*).

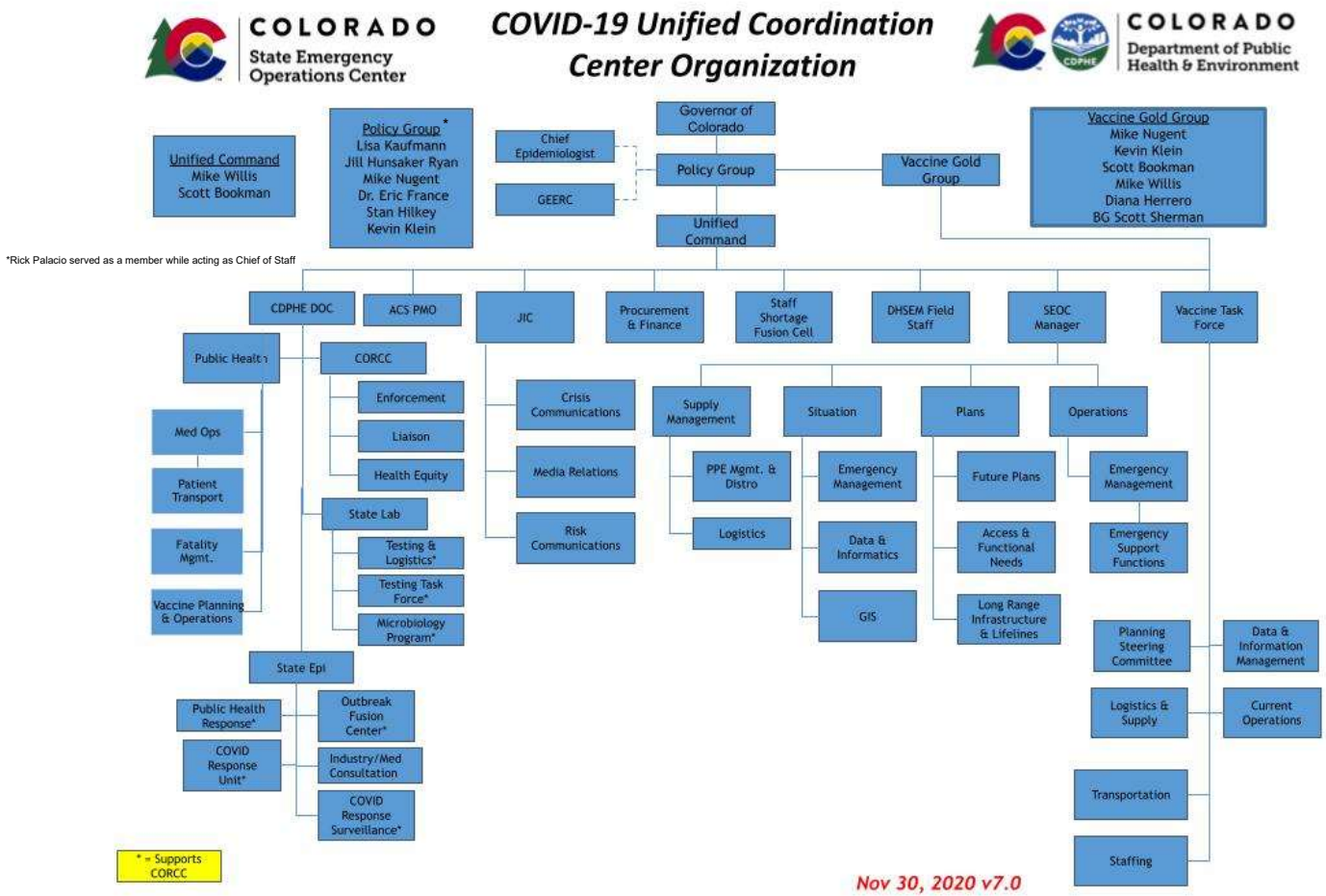
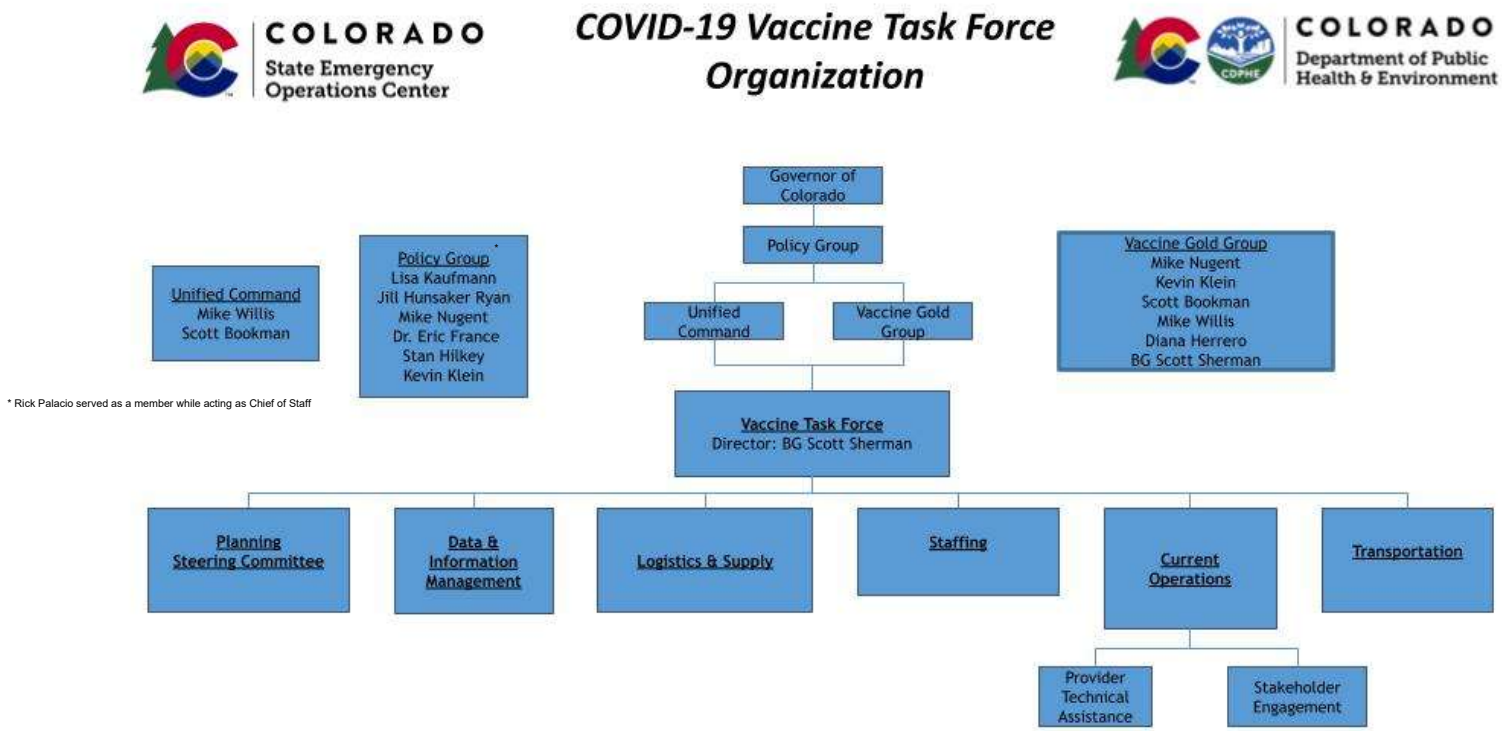


Figure 13. A sample organizational chart for the Colorado COVID-19 Vaccine Task Force (*Source: DHSEM*).



Appendix C: Timeline

Provided below is a timeline of activities and events related to the COVID-19 pandemic for the State of Colorado.[xx]

Date	Category	Activity/Event
12/31/2019	COVID-19 events	Wuhan Municipal Health Commission reports the first cases of an unknown viral pneumonia in Wuhan, Hubei Province, China
1/9/2020	COVID-19 events	The World Health Organization (WHO) announces mysterious Coronavirus-related pneumonia-like cases in Wuhan
1/9/2020	Colorado Response	The Colorado Department of Public Health and Environment (CDPHE) forwards its first CDC COVID-19 Health Alert Network broadcast to medical providers
1/12/2020	COVID-19 events	China publicly shares the genetic sequence of Severe Acute Respiratory System Coronavirus 2 (SARS-CoV-2)
1/13/2020	COVID-19 events	First confirmed case of COVID-19 outside of China in Thailand
1/19/2020	COVID-19 events	First confirmed case of COVID-19 found in the United States in Washington State
1/22/2020	COVID-19 events	The WHO confirms human-to-human transmission of the novel SARS-CoV-2
1/28/2020	Colorado Response	CDPHE stands up incident command structure
1/28/2020	Colorado Response	The Colorado State Lab began COVID-19 sampling for SARS-CoV-2 testing
1/29/2020	COVID-19 events	Washington State identifies COVID-19 outbreak in the United States and reports first death from COVID-19 in the United States
1/30/2020	COVID-19 events	The WHO declares COVID-19 a Public Health Emergency of International Concern

[xx] This timeline presents the first executive order and public health order related to a specific topic; the full list of amendments and extensions to executive orders is available here: https://leg.colorado.gov/sites/default/files/r21-1739_update_covid_executive_order_memo.pdf and public health orders is available here: https://covid19.colorado.gov/public-health-orders-and-executive-orders.

Date	Category	Activity/Event
1/31/2020	Federal Response	The Secretary of the U.S. Department of Health and Human services declares COVID-19 a Public Health Emergency (retroactive to January 27)
2/28/2020	Colorado Response	The Colorado Division of Homeland Security and Emergency Management (DHSEM) State Emergency Operations Center (SEOC) and Colorado Department of Public Health and Environment (CDPHE) Department Operations Center (DOC) activate to level 3
3/2/2020	Colorado Response	CDPHE and DHSEM begin daily briefings with the governor on COVID-19
3/2/2020	Colorado Response	The CDPHE State Laboratory develops ability to test for SARS-CoV-2
3/3/2020	Colorado Response	The governor directs all state agencies to implement the *State Emergency Operations Plan*
3/3/2020	Colorado Response	The Colorado SEOC and CDPHE DOC activate to level 2
3/3/2020	Colorado Response	Governor Polis and state public health and emergency officials hold a press conference about activation of Colorado's response plans and structures
3/5/2020	COVID-19 events	CDPHE public health laboratory confirms first COVID-19 case in Colorado in Summit County
3/9/2020	Federal Response	Colorado participates in a call with the White House and other states regarding federal support to the COVID-19 response
3/10/2020	Colorado Response	Governor Polis verbally declares a state of disaster emergency due to the presence of COVID-19 in Colorado and authorizes the employment of the Colorado National Guard for the response
3/10/2020	Colorado Response	Governor Polis, CDPHE, and DHSEM decide a unified command is necessary to respond to COVID-19
3/11/2020	Colorado Response	Governor Polis signs executive order D 2020-003 declaring a state of disaster emergency due to the presence of COVID-19 in Colorado and authorizing the employment of the Colorado National Guard for the response
3/11/2020	COVID-19 events	The WHO declares the COVID-19 outbreak a pandemic
3/11/2020	Colorado Response	Colorado opens one of the first community drive-through testing sites in the country at CDPHE's Lab Services Building in Lowry

Date	Category	Activity/Event
3/11/2020	Colorado Response	CDPHE confirms evidence of community spread of COVID-19
3/11/2020	Federal Response	The United States bans all travel from 26 European countries
3/11/2020	Colorado Response	Colorado state personnel begin convening the school working group
3/12/2020	Colorado Response	Public health order 20-20 restricts visitors at Colorado skilled nursing, assisted living, and intermediate care facilities and establishes infection control protocols
3/13/2020	COVID-19 events	First death from COVID-19 in Colorado confirmed in El Paso County
3/13/2020	Federal Response	President Trump declares COVID-19 a National Emergency
3/13/2020	Colorado Response	The Colorado Department of Health Care Policy and Financing (HCPF) submits the state's first request for Medicaid flexibility in the form of an 1115 Waiver
3/13/2020	Colorado Response	CDPHE recommends that all large gatherings with over 250 people should be canceled or postponed
3/13/2020	Colorado Response	Governor Polis directs DORA to take steps to expand health care system workforce capacity by implementing reciprocal licensing for medical professionals from other states
3/14/2020	Colorado Response	CDPHE and DHSEM establish Unified Command
3/14/2020	Colorado Response	The Colorado General Assembly shuts down
3/14/2020	Colorado Response	Governor's executive order D 2020-004 closes downhill skiing resorts
3/15/2020	Federal Response	The Center for Disease Control and Prevention (CDC) warns against mass gatherings
3/15/2020	Colorado Response	CDPHE recommends canceling or postponing in-person events including 50 or more people, following CDC's recommendations
3/15/2020	Colorado Response	The governor and the response leadership establish the Leader’s Intent, with the priority to protect hospital capacity
3/16/2020	Colorado Response	Public health order 20-22 closes bars, restaurants, theaters, casinos, gyms, nonessential personal services facilities, and betting facilities in Colorado

Date	Category	Activity/Event
3/16/2020	Colorado Response	The UCC moves to level 1 activation
3/16/2020	Colorado Response	The governor's Expert Emergency Epidemic Response Committee activates
3/17/2020	COVID-19 events	The Colorado Department of Labor and Employment (CDLE) calls the surge of unemployment claims "unprecedented"
3/17/2020	COVID-19 events	COVID-19 cases confirmed in all 50 states
3/17/2020	Colorado Response	The state launches the Colorado COVID-19 website covid19.colorado.gov
3/18/2020	Colorado Response	The state activates the Unified Command Center at the SEOC and state agency personnel deploy to the SEOC
3/18/2020	Colorado Response	Governor's executive order D 2020-007 closes all public and private elementary and secondary schools from March 23 through April 17 (later extended to April 30 and then the end of the 2019-2020 school year)
3/18/2020	Colorado Response	Colorado creates statewide COVID-19 relief fund
3/18/2020	Federal Response	President Trump invokes the Defense Production Act
3/18/2020	Colorado Response	The Colorado State Capitol closes to the public
3/18/2020	Colorado Response	CDPHE begins effort to send testing resources to areas without a testing capability
3/18/2020	Colorado Response	San Miguel County issues stay-at-home orders, the first in the state
3/19/2020	Colorado Response	Governor's executive order D 2020-009 suspends all elective and non-essential surgeries and medical procedures
3/19/2020	Colorado Response	The Colorado Department of Agriculture (CDA) creates the Food Security Task Force
3/19/2020	Federal Response	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
3/20/2020	Colorado Response	Governor's executive order D 2020-012 order limiting evictions, foreclosures, and public utility disconnections and expediting unemployment insurance claims

Date	Category	Activity/Event
3/20/2020	Colorado Response	Governor Polis establishes the Governor's Economic Stabilization and Growth Council
3/20/2020	Colorado Response	Public health order 20-23 implementing social distancing measures
3/20/2020	COVID-19 events	Colorado welcomes home 39 Coloradans from the quarantined Grand Princess cruise ship
3/22/2020	Colorado Response	The Governor of Colorado establishes the Innovation Response Team (IRT)
3/22/2020	Colorado Response	Governor's executive order D 2020-013 reducing in-person workforce for state agencies by 50 percent
3/23/2020	Colorado Response	Public health order 20-24 implementing 50 percent reduction in nonessential business in-person work and increasing social distancing
3/23/2020	Federal Response	Colorado receives and distributes first allotment of resources from the Strategic National Stockpile including masks, gowns, face shields, and gloves
3/24/2020	Colorado Response	HCPF submits a request for Medicaid flexibility in the form of an 1135 Waiver
3/25/2020	Colorado Response	Governor Polis requests the President of the United States declare a Major Disaster for the State of Colorado, pursuant to the Stafford Act
3/25/2020	Colorado Response	Governor's executive order D 2020-017 implements a statewide stay at home order
3/25/2020	Colorado Response	Governor's executive order D 2020-015 authorizes certain state agencies to extend expiration date of licenses and other documents
3/25/2020	Colorado Response	Governor's executive order D 2020-016 provides the Colorado Department of Corrections (CDOC) with the discretion necessary to combat the spread of COVID-19 in State prisons and protect our correctional officers and staff from infection
3/25/2020	Federal Response	Colorado receives second allotment from the Strategic National Stockpile
3/26/2020	Federal Response	The Centers for Medicare and Medicaid Services partially approves Colorado's 1115 and 1135 waiver requests
3/26/2020	Colorado Response	Public health order 20-24 implementing stay at home requirements

Date	Category	Activity/Event
3/26/2020	Colorado Response	The SEOC activates 2-1-1 Colorado to help Coloradans access human service resources
3/27/2020	COVID-19 events	COVID-19 outbreak at JBS meatpacking facility reaches its peak
3/27/2020	Federal Response	President Trump signs the $2.2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020 into law
3/27/2020	Colorado Response	The state develops the COVID-19 CO-COEM-1070 UCC State Support Plan
3/27/2020	Colorado Response	Colorado releases first COVID-19 modeling results from the Colorado School of Public Health
3/28/2020	Federal Response	President Trump approves Colorado's Major Disaster Declaration
3/30/2020	Federal Response	The U.S. Food and Drug Administration (FDA) issues an emergency use authorization (EUA) for the malaria drug hydroxychloroquine for the treatment of COVID-19
3/31/2020	Colorado Response	The Colorado State Patrol (CSP) publishes a video warning of police impersonators and how to identify them
Late March 2020	Colorado Response	The state, through the Innovation Response Team, begins the mask program to source bulk quantities of masks and other PPE for the state
4/1/2020	Colorado Response	Governor's executive order D 2020-020 suspends certain statutes to expand the use of telehealth services
4/3/2020	Colorado Response	Governor Polis asks people to wear face masks in public
4/3/2020	Federal Response	CDC recommends use of face masks in public settings
4/3/2020	Federal Response	Colorado receives third allotment from the Strategic National Stockpile
4/4/2020	COVID-19 events	A member of the UC working at the UCC tests positive for COVID-19 prompting a shift to virtual operations for many in the UCC
4/5/2020	Colorado Response	The Governor's Expert Emergency Epidemic Response Committee (GEEERC) votes to update the crisis standards of care guidelines for COVID-19
4/6/2020	Colorado Response	Colorado begins construction of the Alternate Care Sites at the Colorado Convention Center and The Ranch
4/8/2020	Colorado Response	The UC signs leases for two Alternate care Sites

Date	Category	Activity/Event
4/10/2020	Colorado Response	Colorado activates new crisis standards of care for emergency medical services and personal protective equipment (PPE)
4/10/2020	Colorado Response	The UC purchases over $46.2 million in medical supplies to distribute throughout Colorado
4/13/2020	COVID-19 events	JBS meatpacking facility closes for two weeks due to COVID-19 outbreak
4/14/2020	Colorado Response	Colorado issues a community testing playbook to help local agencies plan testing sites
4/14/2020	Colorado Response	The UC signs leases for three additional Alternate Care Sites
4/15/2020	Colorado Response	Governor's executive order D-2020-203 temporarily suspends statutes and rules to expand the healthcare workforce
4/15/2020	Colorado Response	Public health order 20-38 reduces restrictions for individuals and businesses and reporting requirements for hospitals
4/17/2020	Colorado Response	Governor's executive order D 2020-039 requires critical businesses and government functions to wear non-medical face coverings
4/17/2020	Federal Response	100 ventilators from the Strategic National Stockpile distributed to Colorado hospitals
4/18/2020	Colorado Response	Governor's executive order 2020 032 temporarily waives procurement statutes for purchases involving response activities related to COVID-19
4/19/2020	Colorado Response	The UC initiates testing at long-term care facilities
4/21/2020	Colorado Response	Public health order 20-27 requires hospital to report capacity and COVID-19 data
4/22/2020	Colorado Response	Public health order 20-26 requires face coverings for critical businesses
4/23/2020	Federal Response	Colorado receives Battelle System used for decontamination of N95 respirators for reuse
4/26/2020	Colorado Response	Governor's executive order B 2020-002 establishes the bipartisan Governor's Advisory Committee for Cooperation and Implementation

* Rick Palacio served as a member until

Date	Category	Activity/Event
4/26/2020	Colorado Response	Governor's executive order D 2020-044 "Safer at Home" allows businesses and offices not previously designated as essential to reopen
4/26/2020	Colorado Response	Public health order 20-28 "Safer at Home" provides limits on personal gatherings
4/26/2020	Colorado Response	Governor's executive order D 2020-045 permits limited recommencement of voluntary or elective surgeries and procedures
4/28/2020	Federal Response	Colorado receives $10.3 million in federal funding for COVID-19 epidemiological work and testing as part of the CARES Act
4/29/2020	Colorado Response	The UC establishes public-private partnerships to increase testing capacity in Colorado and sends testing supplies to 42 community testing sites operated by local public health agencies
4/30/2020	Colorado Response	Governor's executive order D 2020-054 directs HCPF to provide additional funds to nursing homes and other congregate care facilities
5/1/2020	Colorado Response	Governor Polis shares that the state received shipments of COVID-19 tests from a bulk order contract with South Korea to support mass testing in Colorado
5/1/2020	Federal Response	FDA issues an EUA for remdesivir for the treatment of COVID-19
5/2/2020	Federal Response	Colorado receives a second Battelle System used for decontamination of N95 respirators for reuse from the US Department of Health and Human Services
5/2/2020	Colorado Response	Colorado launches Spanish language social media pages to provide COVID-19 information to Spanish speakers
5/5/2020	Federal Response	FDA announces increased oversight of COVID-19 antibody tests, requiring them to meet standards of other molecular tests
5/6/2020	Colorado Response	Colorado announces the COVID-19 Residential Outbreak Task Force
5/13/2020	Federal Response	Colorado receives the first shipment of the experimental anti-viral drug remdesivir from the U.S. Department of Health and Human Services and the Strategic National Stockpile (doses treat 100 patient)

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5/16/2020	Colorado Response	Governor's executive order D2020-068 temporarily suspends statutes to maintain eligibility for Medicaid and Children's Basic Health Plan enrollees
5/18/2020	Colorado Response	Governor issues executive order D 2020-070 and signs the CARES Act and directs expenditure of and disburses federal funds for COVID-19 relief
5/20/2020	Colorado Response	Governor's executive order D 2020-071 allows operation of Alternate Care Sites in Colorado
5/20/2020	COVID-19 events	Three children in Colorado experience new inflammatory illness (MIS-C) linked to COVID-19
5/20/2020	Federal Response	Colorado receives a second shipment including 1,720 doses of the experimental anti-viral drug remdesivir from the U.S. Department of Health and Human Services and the Strategic National Stockpile
5/21/2020	Colorado Response	Colorado State University agrees to help test asymptomatic healthcare workers and nursing home residents (an effort coordinated by the Residential Care Task Force)
5/22/2020	Colorado Response	Governor's executive order D 2020-077 suspends certain statutes to increase Medicaid home health workforce and eliminate cost sharing for COVID-19 testing and treatment for Medicaid enrollees
5/25/2020	COVID-19 Events	George Floyd is killed in Minneapolis; mass protests and civil unrest ensues across the nation
5/27/2020	Colorado Response	Colorado restaurants resume in-person dining services
5/27/2020	Colorado Response	The UC distributes PPE to local emergency management offices, local public health agencies, election offices, and the Colorado Department of Corrections
5/28/2020	Federal Response	Colorado receives resources from the Strategic National Stockpile and the FEMA resource ordering system (e.g., masks, gowns, gloves, face shields)
6/1/2020	Colorado Response	Governor's executive order D 2020-091 "Safter at Home and in the Vast, Great Outdoors" allows many Coloradans to return to work and recreate outside
6/4/2020	Colorado Response	CDPHE releases guidance for personal and outdoor recreation following the "Safer at Home and in the Vast, Great Outdoors" executive order

Date	Category	Activity/Event
6/8/2020	Federal Response	Colorado receives a fourth shipment including 974 vials of the experimental anti-viral drug remdesivir from the U.S. Department of Health and Human Services and the Strategic National Stockpile
6/11/2020	Colorado Response	HCPF launches the "Here for YOU, Colorado!" (#hereforyouCO) campaign to publicize the expanded eligibility for health insurance through Health First Colorado (Colorado's Medicaid program) and Child Health Plan Plus (CHP+)
6/12/2020	Colorado Response	Governor's executive order D 2020-098 provides relief to public utility customers affected by COVID-19
6/13/2020	Colorado Response	Governor's executive order D 2020-099 provides housing assistance and relief to Coloradans affected by COVID-19
6/13/2020	Colorado Response	Governor's executive order D 2020-101 temporarily limits certain evictions
6/13/2020	Colorado Response	Governor's executive order D 2020-100 expedites unemployment insurance claim processing
6/18/2020	Colorado Response	The GEEERC votes to update the crisis standards of care guidelines for palliative care and hospice services
6/19/2020	Federal Response	Colorado receives funding from FEMA to fund the Colorado Spirit Counseling Assistance and Training Program
6/20/2020	Federal Response	The National Institute of Health halts trials of hydroxychloroquine, showing no benefit of the drug for COVID-19 patients
6/24/2020	Colorado Response	CDPHE begins allowing outdoor visitation at residential care facilities
6/27/2020	Colorado Response	Governor's executive order D 2020-120 directs Colorado Department of Human Services (CDHS) to access federal funds for childcare services
6/30/2020	Colorado Response	Governor's executive order D 2020-123 closes bars and nightclubs (for a second time)
6/30/2020	Colorado Response	Public health order 20-31 requires face coverings for critical businesses and mass transportation
6/30/2020	Colorado Response	CDPHE releases "Protect-our-Neighbors" roadmap

Date	Category	Activity/Event
7/6/2020	Federal Response	Colorado receives a fifth shipment of 1,742 vials of the experimental antiviral drug remdesivir that will treat 290 patients from the U.S. Department of Health and Human Services and the Strategic National Stockpile
7/9/2020	COVID-19 events	The WHO announces COVID-19 can be airborne
7/9/2020	Colorado Response	Governor's executive order D 2020-127 "Protect Our Neighbors" allows communities to create flexible plans based on COIVD-19 metrics (established by CDPHE)
7/10/2020	Colorado Response	Public health order 20-32 "Protect our Neighbors"
7/16/2020	Colorado Response	Governor's executive order D2020-138 implements a statewide mask mandate in public settings
7/20/2020	Colorado Response	CDPHE in partnership with the Colorado Department of Education (CDE) releases guidance for the reopening of schools for the 2020-2021 school year
7/23/2020	COVID-19 events	Two children's' deaths linked to multisystem inflammatory syndrome in children (MIS-C) in Colorado
7/29/2020	Federal Response	FDA grants EUA for COVID-19 rapid antibody test
8/7/2020	Colorado Response	Colorado receives award for a top government website for its COVID-19 website from the Association of Marketing and Communication Professionals
8/2/2020	Colorado Response	Colorado's state lab begins testing for SARS-CoV-2 in wastewater samples in partnership with Colorado State University, Metropolitan State University, and Colorado wastewater utilities
8/17/2020	Colorado Response	Colorado launches program to provide free medical grade masks to schools
8/23/2020	Federal Response	FDA grants EUA for convalescent plasma from recovered COVID-19 patients as a therapy for COVID-19
8/28/2020	Colorado Response	Colorado launches the county-level COVID-19 Dial system
8/28/2020	COVID-19 events	First known case of COVID-19 reinfection reported in the United States in Nevada
9/10/2020	Colorado Response	Colorado establishes the Temporary Special Eviction Prevention Task Force established within the Department of Local Affairs

Date	Category	Activity/Event
9/10/2020	Colorado Response	Colorado launches an outbreak map on the COVID-19 website
9/15/2020	Colorado Response	Public health order 20-35 implements the Safer at Home Dial program
9/15/2020	Colorado Response	CDPHE releases the Dial Framework for Protect Our Neighbors, Safer at Home, and Stay at Home
9/16/2020	Federal Response	The federal government releases the US Vaccine Distribution Plan
9/17/2020	Colorado Response	Lt. Governor Primavera and the Colorado Behavioral Task Force release the "COVID-19 Special Assignment Committee Report" detailing recommendations for improving the Colorado behavioral health system and in preparation for future crises
9/21/2020	Federal Response	CDC removes COVID-19 guidance from its website saying that the transmission of COVID-19 is airborne
9/23/2020	Colorado Response	Governor's executive order D 2020-203 declares insufficient revenues available for expenditures and orders mandatory furloughs for certain state employees
9/23/2020	Colorado Response	Governor Polis, Lt. Governor Primavera, and the Colorado Behavioral Task Force release "Behavioral Health in Colorado: Putting People First," a blueprint for reforming the state's behavioral health system
9/28/2020	Colorado Response	Colorado Spirit Crisis Counseling and Training Program expands free COVID-19 assistance
9/10/2022	Colorado Response	Governor's executive order suspends statute to facilitate learning pods
10/6/2020	Colorado Response	Colorado submits COVID-19 vaccination plan to the CDC
10/6/2020	Colorado Response	Colorado begins deconstruction of two Alternate Care Sites
10/8/2020	Colorado Response	The SEOC delivers over 1.6 million KN95 masks to Colorado schools (over a 10-week period)
10/20/2020	Colorado Response	CDPHE launches the "Step Up Colorado" community-based information campaign to reduce the spread of COVID-19
10/20/2020	Federal Response	FDA approves Remdesivir as the first COVID-19 drug treatment
10/25/2020	Colorado Response	Colorado launches a state-wide COVID-19 exposure notification system

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10/28/2020	Colorado Response	Governor's executive order D 2020-230 directs the Colorado Department of Labor and Employment (CDLE) to make one-time stimulus payments to qualifying Coloradans experiencing economic hardships
10/30/2020	Colorado Response	Governor's executive order D 2020-235 establishes directives for the COVID-19 Dial Framework
11/2/2020	Colorado Response	Public health order 20-36 activates the COVID-19 Dial Program
11/6/2020	Colorado Response	Colorado launches COVID-19 testing kiosks across the state
11/9/2020	Federal Response	FDA issues an EUA for bamlanivimab monoclonal antibody treatment for COVID-19
11/13/2020	Colorado Response	Over 1,000,000 Coloradans enable COVID-19 exposure notifications through the state-wide COVID-19 exposure notification system
11/19/2020	Colorado Response	Governor's executive order D 2020-259 calls for a special legislative session of the General Assembly beginning November 30th to discuss COVID-19 relief measures
11/20/2020	Colorado Response	The Colorado State Patrol (CSP) activates a call center to assist with answering calls from the general public for information or assistance related to the COVID-19 pandemic
11/20/2020	Colorado Response	DHSEM releases COVID-19 PPE Request Guidance
11/20/2020	Colorado Response	Colorado deploys vans for mobile COVID-19 community testing program
11/20/2020	Colorado Response	Colorado creates the Staffing Shortage Fusion Center (SSFC) to provide staffing assistance for residential living facilities, long-term care facilities, and hospitals
11/23/2020	COVID-19 events	Governor's executive order D 2020-260 authorizes CDPHE to order hospitals and emergency departments to transfer or cease the admissions of patients
11/23/2020	Federal Response	Colorado participates in CDC's Operation Warp Speed pilot test of the end-to-end logistics of COVID-19 vaccine distribution.
12/1/2020	Colorado Response	Public health order 20-33 requires anyone performing a COVID-19 test to report the results to CDPHE
12/1/2020	Colorado Response	Colorado activates the Joint Vaccine Task Force

Date	Category	Activity/Event
12/2/2020	Federal Response	CDC publishes options to reduce quarantine length
12/4/2020	Colorado Response	CDPHE places the state's first order for a COVID-19 vaccine in anticipation of the FDA Emergency Use Authorization of the Pfizer-BioNTech vaccine
12/7/2020	Colorado Response	Governor Polis signs the Small Business Relief Program into law providing $57 million in direct aid, grants, and annual fee waivers
12/9/2020	Colorado Response	Colorado reveals plan for vaccine distribution
12/11/2020	Colorado Response	CDPHE prepares to distribute first shipment of COVID-19 vaccines to healthcare facilities
12/11/2020	Federal Response	FDA grants EUA for Pfizer-BioNTech COVID-19 vaccine for adults
12/14/2020	Colorado Response	Colorado receives the first delivery of the COVID-19 vaccine (Pfizer-BioNTech)
12/14/2020	Colorado Response	First responders, healthcare professionals, and residents and staff of nursing homes begin receiving COVID-19 vaccinations as part of Phase 1A of the vaccination plan
12/15/2020	Colorado Response	Colorado Issues "Roadmap to In-Person Learning"
12/16/2020	Colorado Response	Colorado launches 5-star variance program, which allows businesses to expand operations if they demonstrate prioritization of COVID-19 mitigation efforts
12/18/2020	Colorado Response	CDPHE launches a public data dashboard to track COVID-19 vaccination in Colorado
12/18/2020	Federal Response	FDA grants EUA for Moderna adult COVID-19 vaccine for adults
12/21/2020	Colorado Response	Colorado receives first shipment of Moderna COVID-19 vaccines
12/21/2020	COVID-19 events	The UK announces that a new strain of the SARS-CoV-2 virus, B.1.1.7 (alpha variant) is spreading across the country
12/22/2020	Colorado Response	Colorado deploys a public wastewater COVID-19 monitoring dashboard
12/23/2020	COVID-19 events	Colorado requests a Presidential Disaster Declaration for a major disaster or emergency related to the Colorado wildfires (East Troublesome fires)

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12/29/2020	Colorado Response	Colorado detects first US case of the B.1.1.7 (alpha) COVID-19 variant
12/30/2020	Colorado Response	Vaccination eligibility expands to any Coloradan 70 and older
12/31/2020	COVID-19 events	Colorado hospitals report highest number of MISC-C cases in children since the beginning of the COVID-19 pandemic
1/6/2021	Colorado Response	Colorado launches BinaxNOW rapid home testing program for Colorado schools
1/15/2021	Colorado Response	Executive Order D 2020-016 directs the Colorado Division of Insurance to promulgate a rule regarding rates for the COVID-19 vaccine
1/15/2021	Colorado Response	CDPHE opens "COVID Results" call center for testing and containment results through Connect for Health Colorado
1/18/2021	Colorado Response	CDPHE launches COVID-19 information campaign "Get the COVID-19 Vaccine Facts"
1/19/2021	Colorado Response	Colorado begins decommissioning the Colorado Convention Center Alternate Care Site
1/20/2021	Federal Response	President Biden issues Executive Order on Protecting the Federal Workforce and Requiring Mask-Wearing
1/21/2021	Federal Response	President Biden issues Executive Order on a Sustainable Public Health Supply Chain, authorizing the use of the Defense Production Act to maintain supplies
1/21/2021	Federal Response	President Biden issues Executive Order on Promoting COVID-19 Safety in Domestic and International Travel
1/21/2021	Federal Response	President Biden issues Executive Order on Supporting the Reopening and Continuing Operation of Schools and Early Childhood Education Providers
1/21/2021	Federal Response	The Biden administration releases National Strategy for the COVID-19 Response and Pandemic Preparedness
1/22/2021	COVID-19 events	Emergence of the Delta variant in Colorado
1/25/2021	Colorado Response	Colorado launches COVID-19 vaccine help line 1-877-CO VAX CO
1/30/2021	Federal Response	The CDC requires the wearing of face masks while on public transportation and at transportation hubs
1/31/2021	Federal Response	TSA announces implementation of the executive order requiring face masks at airport security checkpoints and throughout the transportation network

Date	Category	Activity/Event
2/1/2021	Colorado Response	Colorado delivers COVID-19 tests directly to select educators, staff, and students for the At-home Testing Program
2/5/2021	Colorado Response	Public health order 21-01 requires vaccine providers to ensure accessible vaccination for all Coloradans
2/5/2021	Colorado Response	CDPHE released updated COVID-19 Dial Framework: Dial 2.0
2/8/2021	Colorado Response	Vaccination eligibility expands to educators and those 65 and older
2/11/2021	Colorado Response	Colorado deactivates crisis standards of care for healthcare system staffing and emergency medical services
2/27/2021	Federal Response	FDA grants Emergency Use Authorization for J&J COVID-19 vaccine
3/2/2021	Colorado Response	Executive orders (extensions and amendments) allowing ACSs in Colorado expires
3/2/2021	Federal Response	Colorado receives first allotment of the Janssen COVID-19 vaccine
3/2/2021	Colorado Response	Governor Polis announces that the state achieved its goal of having 70 percent of Coloradans age 70 and over vaccinated against COVID-19
3/8/2021	Federal Response	The CDC issues guidance about what people can do when they are fully vaccinated, two weeks after their final vaccine dose.
3/10/2021	Colorado Response	Governor Polis and the legislature reveal the Colorado Recovery Plan, including over a $700 million stimulus package funded from higher-than-expected income tax revenues
3/11/2021	Federal Response	The U.S. Congress passes the American Rescue Plan Act
3/16/2021	Colorado Response	CDPHE expands at-home COVID-19 testing program to restaurant workers
3/17/2021	Colorado Response	The state opens the first of multiple mass vaccination sites
3/23/2021	Colorado Response	CDPHE releases updated COVID-19 Dial Framework: Dial 3.0
4/1/2021	Colorado Response	The state launches mobile vaccine buses to reach underserved communities

Date	Category	Activity/Event
4/1/2021	Colorado Response	Over 1,000,000 Coloradans are fully vaccinated
4/2/2021	Federal Response	The CDC updates its domestic travel guidance for fully vaccinated people, lifting certain testing and self-quarantine requirements and recommending precautions such as wearing a mask and avoiding crowds
4/7/2021	Colorado Response	CDPHE expands at-home COVID-19 testing program to all public-facing employees
4/9/2021	Colorado Response	CDPHE launches "Power the Comeback" campaign
4/13/2021	Federal Response	CDC recommends pausing using of Johnson & Johnson COVID-19 vaccine
4/13/2021	Colorado Response	Colorado pauses use of Johnson & Johnson COVID-19 vaccine after concerns about rare blood clotting issues
4/21/2021	Colorado Response	Governor Polis signs bill establishing the Behavioral Health Administration responsible for transforming Colorado's behavioral health system
4/23/2021	Federal Response	The FDA and CDC lifts the recommended pause on the use of the Johnson & Johnson COVID-19 vaccine following a thorough safety review
4/23/2021	Colorado Response	Colorado resumes use of Johnson & Johnson COVID-19 vaccine
4/28/2021	Federal Response	The CDC updates mask guidance for the outdoors, allowing vaccinated people to go without masks outside when social distancing could be maintained
5/10/2021	Federal Response	Pfizer-BioNTech receives EUA approval for adolescents ages 12 through 15
5/19/2021	Colorado Response	Governor's executive order D 2021-104 creates the Colorado Jumpstart program, offering payments to individuals who return to full-time employment between May 16 and June 26, 2021
5/25/2021	Colorado Response	Colorado launches the Colorado Comeback Cash lottery incentives to encourage vaccination
6/1/2021	Colorado Response	CDPHE changes its standard for COVID-19 outbreaks in most setting, identifying 5 cases as an outbreak in most settings, with the exception of two positive cases within a 14-day period for residential healthcare and correctional settings

Date	Category	Activity/Event
6/1/2021	Colorado Response	Executive orders requiring face covering for workers in critical businesses and government functions expires
6/28/2021	Colorado Response	Colorado transitions its six community vaccination sites to local providers
6/30/2021	Colorado Response	Colorado deactivates crisis standards of care for PPE
7/2/2021	Colorado Response	The Colorado State Capitol reopens for public guided tours
7/8/2021	Colorado Response	Governor Polis releases the Colorado COVID-19 Disaster Recovery Order, D 2020-122 and rescinding some existing orders and authorizing the continued employment of the Colorado National Guard to support recovery efforts
7/20/2021	Colorado Response	CDPHE releases practical guide for operationalizing CDC's back-to-school guidance for 2021-2022 school year
7/21/2021	Colorado response	Colorado launches the Colorado Comeback Cash Gift Card Giveaway to incentivize Coloradans to get vaccinated ahead of the school year
7/27/2021	Federal Response	The CDC announces a reversal on the mask mandate loosening, recommending that even fully vaccinated people wear masks in public, indoor spaces in areas with high transmission rates. In addition, teachers, students, and visitors in K-12 schools should wear masks in schools.
8/1/2021	Colorado Response	CDOC, CDHS, and CDPHE staff members and other state employees that interact with vulnerable populations and living in congregate care facilities are required to get COVID-19 vaccination
8/3/2021	Colorado Response	CDPHE requires masks for all staff, visitors, and residents in residential care facilities (regardless of vaccination status), based on updated CDC guidance
8/13/2021	Federal Response	CDC recommends a third dose of a Pfizer or Moderna vaccine for immunocompromised individuals
8/23/2021	Federal Response	FDA gives full approval for the Pfizer-BioNTech COVID-19 vaccine for ages 16 and up
8/30/2021	Colorado Response	The State Board of health approves emergency ruling requiring COVID-19 vaccination for staff in licensed healthcare settings.
9/10/2021	Colorado Response	75 percent of eligible Coloradans ages 12 and older have received at least one dose of the COVID-19 vaccine

Date	Category	Activity/Event
9/14/2021	Colorado Response	Colorado Comeback gift card incentives ends
9/20/2021	Colorado Response	The Colorado Department of Personnel and Administration (DPA) issues guidance that all Colorado State employees must either be fully vaccinated against COVID-19 or participate in twice-weekly testing
9/20/2021	COVID-19 events	Afghan resettle mission begins
9/23/2021	Federal Response	FDA authorizes booster shot for individuals 65 and older, and younger adults at risk of severe COVID-19 or whose jobs increase exposure
9/24/2021	Federal Response	CDC approves Pfizer-BioNTech booster for at-risk individuals
9/29/2021	Colorado Response	Colorado reactivates the SSFC
10/21/2021	Federal Response	CDC authorizes "mix and match" for COVID-19 boosters and boosters for those who received Moderna and Johnson & Johnson vaccines
10/29/2021	Federal Response	FDA authorized Pfizer-BioNTech vaccine for children ages 5 to 11 years old
10/31/2021	Colorado Response	CDOC requires all visitors to be fully vaccinated
10/31/2021	Colorado Response	Governor's executive order D 2021-135 authorizes CDPHE to order hospitals and emergency departments to transfer or cease the admissions of patients (for second time)
10/31/2021	Colorado Response	Public health order 21-02 implements restrictions on elective procedures, and authorizing transfer of patients from hospitals
11/2/2021	Federal Response	CDC authorizes Pfizer COVID-19 vaccine for 5- to 11-year-old children
11/2/2021	Colorado Response	CDPHE launches a COVID-19 vaccination data dashboard sharing staff vaccination information for all licensed healthcare facilities, including hospitals, nursing homes and other long term care facilities.
11/9/2021	Colorado Response	Colorado activates crisis standards of care for healthcare system staffing

Date	Category	Activity/Event
11/10/2021	Colorado Response	Governor's executive order D 2021-137 declares Colorado high-risk for COVID-19 exposure or transmission for COVID-19 booster eligibility
11/18/2021	Colorado Response	CDPHE assumes responsibility for outbreak investigation at residential care facilities to standardize the response and lessen the burden on local public health authorities
11/19/2021	Federal Response	FDA approves COVID-19 booster for all adults
12/2/2021	COVID-19 events	First U.S. case of the Omicron variant
12/2/2021	Colorado Response	The state lab detected its first case of the Omicron variant (the third state in the country to do so)
12/8/2021	Colorado Response	The state introduces a public-facing wastewater monitoring dashboard
12/10/2021	Federal Response	FDA endorses Pfizer-BioNTech booster shots for adolescents ages 16 to 17
12/15/2021	Colorado Response	The State Board of Health extends the emergency ruling requiring healthcare workers be vaccinated against COVID-19
12/21/2021	Federal Response	Federal government begins free at-home COVID-19 test program
12/27/2021	Colorado Response	CDPHE updates COVID-19 quarantine and isolation guidance, in accordance with new CDC recommendation
12/29/2021	Colorado Response	Governor's executive order D 2020-292 allows telehealth services for veterinarians
12/30/2021	COVID-19 events	Colorado requests a Presidential Disaster Declaration for a major disaster or emergency related to the Colorado wildfires (Marshall fire and straight-line winds)
1/3/2022	Colorado Response	Colorado National Guard Members activated to support the Marshall Fire response and COVID-19 testing
1/3/2022	Colorado Response	CDPHE release a report, developed with the Colorado School of Public Health, aimed to help better understand vaccine equity data
1/5/2022	Federal Response	CDC recommends thirds dose of Pfizer-BioNTech COVID-19 vaccine for 12 to 15-year-old children
1/6/2022	Colorado Response	Governor's Executive Order D 2022-001 temporarily suspends certain regulatory statues regarding juvenile justice due to COVID-19

Date	Category	Activity/Event
1/7/2022	Colorado Response	Colorado activates crisis standards of care for emergency medical services
1/7/2022	Colorado Response	CDPHE updates isolation and quarantine guidance for schools
1/13/2022	Colorado Response	Colorado transitions the eight monoclonal antibody therapy buses to mobile testing sites due to the limited supply of monoclonal antibody treatments
1/31/2022	Federal Response	FDA gives full approval for Moderna's COVID-19 vaccine for people 18 and older
2/1/2022	Colorado Response	CDPHE launches the Test to Stay school testing program
2/8/2022	Colorado Response	CDPHE launches a Class-to-Clinic tool to help Coloradans locate and schedule an appointment with a COVID-19 vaccine provider closest to their school of interest
2/11/2022	Colorado Response	CDPHE releases an updated Practical Guide for Operationalizing CDC's School Guidance to transition to routine public health response
2/17/2022	Colorado Response	Colorado deactivates crisis standards of care for healthcare system staffing and emergency medical services
2/22/2022	Colorado Response	Colorado expands the Rapid At-Home testing program to include distribution at community locations (e.g., libraries, fire stations)
2/25/2022	Colorado Response	Colorado issues "Colorado's Next Chapter: Our Roadmap to Moving Forward"
2/28/2022	Colorado Response	Mandatory serial testing is no longer required for most government employees; new-hire employees must continue to attest to their vaccination status as they are onboarded
3/10/2022	Colorado Response	Colorado ends the Rapid At-Home Testing program, shifting to the federal at-home testing program
3/14/2022	Colorado Response	CDOC resumes in-person visiting at 75 percent capacity and vaccination no longer required for visitation
3/15/2022	Colorado Response	Colorado begins the transition from offering COVID-19 vaccine from state-run community vaccination sites to traditional healthcare settings
3/23/2022	Colorado Response	Masks no longer required for those inside CDOC Facilities

Date	Category	Activity/Event
3/29/2022	Federal Response	CDC recommends fourth Pfizer and Moderna COVID-19 dose for those over fifty and a fifth dose for immunocompromised individuals
4/12/2022	Colorado Response	Colorado launches a tool to help Coloradans determine the number of COVID-19 vaccines recommended for them
4/20/2022	Colorado Response	Public health order 22-01 prohibits COVID-19 test providers administering tests provided at no-cost from the state from charging a testing fee and provides eligibility for COVID-19 patient access to antivirals
4/29/2022	COVID-19 events	The Governor of Colorado verbally declares a state of emergency to response to an outbreak of a highly pathogenic avian influenza (HPAI)
4/29/2022	Colorado Response	CDA and DHSEM establish a unified command group to respond to HPAI
5/6/2022	Federal Response	FDA limits use of Johnson & Johnson vaccine due to rare blood clots
5/18/2023	Colorado Response	Governor Polis signs HB22-1298 implementing some of the recommendations from Our Roadmap to Moving Forward aimed at improving health care readiness and investing in the health care workforce
5/18/2023	Colorado Response	Governor Polis signs HB22-1352 enabling the state to maintain critical supplies of PPE for the public and private sectors
5/19/2022	Federal Response	CDC approves additional dose of Pfizer-BioNTech COVID-19 vaccine for 5 to 11-year-old children
6/17/2022	Federal Response	FDA grants EUA approval for Moderna and Pfizer-BioNTech vaccines for children ages 6 months to five years
6/24/2022	Colorado Response	Colorado community vaccination clinics begin offering vaccines for children ages five and under and CDPHE partners with the Children's Hospital Colorado to bring mobile vaccine clinics to locations
6/24/2022	Federal Response	The CDC approves the Moderna COVID-19 vaccine for children between the ages of 6 and 17
7/19/2022	Federal Response	CDC approves Novavax vaccine (first protein-based COVID-19 vaccine)

Date	Category	Activity/Event
7/20/2022	Colorado Response	CDPHE Health Equity Branch launches the COVID-19 Health Equity and Immunization Fund to help provide COVID-19 resources, information and support to Coloradans, especially those at risk and underserved populations.
8/2/2022	Colorado Response	CDPHE releases under 5 Care-to-Clinic Locator to help Coloradans find vaccine providers for children under 5 years old
8/5/2022	Colorado Response	CDPHE identifies BA.2.75 variant in Colorado through the wastewater surveillance program
8/8/2022	Colorado Response	The CDC designates CDPHE and the University of Denver a National Wastewater Surveillance System Center of Excellence.
8/10/2022	Colorado Response	The state resumes free school testing program
8/10/2022	Colorado Response	CDPHE releases 2022-2023 COVID-19 school guidance
8/31/2022	Federal Response	FDA authorizes COVID-19 booster vaccine that targets the Omicron BA.4 and BA.5 subvariants
9/15/2022	Colorado Response	Executive order D 2022-038 amends and extends the COVID-19 disaster declaration in Colorado, allowing state agencies to continue to access state and federal emergency funding
9/29/2022	COVID-19 events	Disaster declaration due to highly pathogenic avian influenza in Colorado
10/14/2022	Colorado Response	Governor's Executive Order D 2022-040 to maximize federal benefits and secure healthcare staffing
12/10/2022	Colorado Response	Executive Order 2022-001 rescinds Executive Orders D 2020-002 and 2020-003, decommissioning the Governor's Advisory Committee for Cooperation and Implementation
1/8/2023	Colorado Response	Executive order D 2023 001 Colorado COVID-19 Disaster Recovery Order
2/6/2023	Colorado Response	Executive order D 2023 005 Extending the Colorado COVID-19 Disaster Recovery Order
3/5/2023	COVID-19 Events	The WHO declares an end to the global COVID-19 pandemic
4/11/2023	Federal Response	President Biden ends the COVID-19 National Emergency
5/11/2023	Federal Response	The COVID-19 Public Health Emergency declaration ends in the United States

Appendix D: Acronyms

ACRONYM	MEANING
AAR	After-Action Report
ACS	Alternate Care Site
AFN	Access and Functional Needs
ARPA	America Rescue Plan Act
ASL	American Sign Language
BEOC	Business Emergency Operations Center
CARES	Coronavirus Aid, Relief, and Economic Security
CBI	Colorado Bureau of Investigation
CDA	Colorado Department of Agriculture
CDC	Centers for Disease Control and Prevention
CDE	Colorado Department of Education
CDHS	Colorado Department of Human Services
CDLE	Colorado Department of Labor and Employment
CDOC	Colorado Department of Corrections
CDOR	Colorado Department of Revenue
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Department of Public Safety
CHA	Colorado Hospital Association
CHTC	Combined Hospital Transfer Center
CIAC	Colorado Information Analysis Center
CISA	Cybersecurity and Infrastructure Security Agency
CLIMBER	Colorado Loans to Increase Mainstreet Business Economic Recovery
CMS	Centers for Medicare & Medicaid Services
CONG	Colorado National Guard
COOP	Continuity of Operations
CORA	Colorado Open Records Act
COVID-19	Coronavirus infectious disease of 2019
COVOST	Colorado Virtual Operations Support Team
CSEAP	Colorado State Employee Assistance Program
CSP	Colorado State Patrol
CST	Civil Support Team
CVM	Colorado Volunteer Mobilizer
DCPHR	Disease Control and Public Health Response
DEF	Disaster Emergency Fund
DFPC	Division of Fire Prevention and Control
DHSEM	Division of Homeland Security and Emergency Management

DNR	Department of Natural Resources
DOC	Department Operations Center
DOLA	Department of Local Affairs
DORA	Department of Regulatory Agencies
DPA	Department of Personnel and Administration
EEI	Essential Element of Information
EIDL	Economic Injury Disaster Loan Emergency Advance
EMS	Emergency Medical Service
ERC	Emergency Response Coordinator
ESF	Emergency Support Function
EUA	Emergency Use Authorization
FAQ	Frequently Asked Question
FDA	US Food and Drug Administration
FEMA	Federal Emergency Management Agency
GEEERC	Governor's Expert Emergency Epidemic Response Committee
GIS	Geographic Information System
HCC	Health Care Coalition
HCPF	Department of Health Care Policy and Financing
HIPAA	Health Insurance Portability and Accountability Act
HPAI	highly pathogenic avian influenza
HR	Human Resources
ICS	Incident Command System
IRT	Innovation Response Team
IT	Information Technology
JIC	Joint Information Center
LPHA	Local Public Health Authority
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NIMS	National Incident Management System
OEDIT	Office of Economic Development and International Trade
OEM	Office of Emergency Management
OEPR	Office of Emergency Preparedness and Response
OIT	Office of Information Technology
OSPB	Office of State Planning and Budgeting
PHEP	Public Health Emergency Preparedness
PHI	Public Health Information
PIO	Public Information Officer
PPE	Personal Protective Equipment
PPP	Paycheck Protection Program
RSF	Recovery Support Function

SARS-COV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SBA	Small Business Administration
SEOC	State Emergency Operations Center
SME	Subject Matter Expert
SNS	Strategic National Stockpile
SOP	Standard Operating Procedure
SSFC	Staffing Shortage Fusion Center
TABOR	Taxpayer Bill of Rights
UC	Unified Command
UCC	Unified Command Center
USACE	United States Army Corps of Engineers
WHO	World Health Organization

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