CONSTANT ASSOCIATES

COUNTY OF SAN MATEO CALIFORNIA

SAN MATEO COUNTY

COVID-19 PANDEMIC RESPONSE

AFTER ACTION REPORT

Final Version- December 13, 2022

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EXECUTIVE SUMMARY

Heroism in the COVID-19 Response

Without the dedication of all San Mateo County (SMC) government personnel, healthcare staff, first responders, community and faith-based organizations, private agencies, and countless others who contributed to the Coronavirus Disease 2019 (COVID-19) response, the loss of life and economic and social impact of COVID-19 could have been far greater. As such, this document acknowledges the countless hours dedicated by these individuals to help the community to the best of their ability during a disaster whose impacts have been felt by SMC and around the world.

An Unprecedented Incident

In 2019, when news of the detection and spreading of a novel virus in Wuhan, China circulated, no one could have predicted that this localized outbreak would soon turn into a global pandemic. California was quickly impacted by high rates of COVID-19 infection. As of May 9, 2022, California had 9,288,293 COVID-19 cases, far more cases than the State with the next highest case count, Texas, with 6,848,369 COVID-19 cases.[1] Despite the unprecedented nature of COVID-19, SMC rose to the occasion to carry out an immense public health response to the novel virus. On March 2, 2020, SMC officially activated its Emergency Operations Center (EOC) to begin coordinating the enormous response operations which COVID-19 necessitated. These operations spanned numerous levels of government, County departments, private entities, and community-based and non-profit organizations.

In addition to COVID-19, SMC experienced its largest wildfire in county history. The CZU Lightning Complex Fire started on August 16, 2020, and was not fully contained until September 22, 2020. In total, the fire consumed 86,509 acres, of which 22,755 were in SMC.[2] The CZU Lightning Complex Fire resulted in evacuations, road closures, and more complications that impacted not only response to the wildfires but also response to COVID-19. With severe resource limitations already present as part of the COVID-19 response, resources became even more scarce, and support by the California Department of Forestry and Fire Protection (CAL FIRE) within the SMC EOC was no longer possible given the need to respond to several very large fires in Northern California. Further, the charged political environment in 2020 led to civil unrest across the United States and within the State of California, including SMC, bringing crowds of protestors together in a time where social distancing was paramount to the pandemic response. Ultimately, these “disasters within a disaster” further complicated the COVID-19 response, as already scarce resources were committed to address the wildfires and civil unrest.

1 Statista. Total Number of Coronavirus (COVID-19) cases in the United States as Of May 9, 2022. https://www.statista.com/statistics/1102807/coronavirus-covid19-cases-number-us-americans-by-state/
2 Climate Online Redwood City. CZU Lightning Complex Largest Fire in San Mateo County History. September 15, 2020. https://climaterwc.com/2020/09/15/czu-lightning-complex-largest-fire-in-san-mateo-county-history/

Overall, 2020 proved challenging, for the world, the United States, California, and SMC as simultaneous disasters tested response infrastructures, led to immense resource scarcity, and demanded collaboration between typical and non-traditional response partners at a level never before experienced. SMC was at the forefront of these efforts for their community, finding solutions to challenges as they arose and never once giving up when adversity was faced. SMC has and continues to exhibit extraordinary leadership, dedication, and sacrifice during a time of great uncertainty.

The COVID-19 After Action Report

As a testament to the mission of SMC to serve its community, the SMC Department of Emergency Management (DEM) and response partners have committed to an After Action Report (AAR) process to assess the County's performance throughout COVID-19. These findings can inform the sustained response to COVID-19 and help to improve future disaster responses. As such, SMC contracted a third-party public health and crisis management consultancy, Constant Associates, Inc. (CONSTANT), to assess their response to COVID-19 thus far and document those findings in an AAR and Improvement Plan (IP).

The purpose of the AAR is to provide an account of how SMC responded to COVID-19 and to take note of best practices, lessons learned, and innovations that will better situate SMC to respond to crisis events going forward. To accomplish that goal, the AAR seeks to outline what elements of the response went well and what areas of the response remain as areas for improvement. The AAR also includes recommendations crafted into an IP for potential implementation by SMC moving forward within the COVID-19 response and beyond, given the necessary resources (e.g., personnel, monetary, etc.) that are available.

Data Collection and Assessment Development Methodology

This AAR was developed through a multi-faceted data collection process. This included online surveys, individual and group stakeholder interviews, and incident debriefings with key responders. Stakeholder interviews and surveys were conducted not only with SMC personnel but also with SMC partners. In addition, a thorough documentation review was conducted of SMC plans and procedures, incident documentation, open-source data, and public communications issued by SMC DEM and other County departments that contributed to operations throughout the response period. Collectively, from these data sources, themes emerged (e.g., EOC Operations and Internal Communications, Continuity of Operations, Resource Management, etc.), which serve as the organizational foundation for this report.

The "Analysis of Findings" section within this report consists of a summary, strengths, areas for improvement, and recommendations. The report recommendations are further organized in a separate document for ease of viewing and tracking the IP. This assessment was developed with the understanding that COVID-19 remains an active response. As such, continual data collection and evaluation and further reporting of findings will be necessary as the response continues and may warrant further evaluation if SMC deems it appropriate and feasible.

Findings Overview

A sampling of some of the most significant strengths and areas for improvement within each report theme that SMC exhibited during the response to COVID-19 are provided below. Further explanation of each finding and additional strengths and areas for improvement can be found in the Analysis of Findings section.

Table #1. List of Key Findings.

Theme	Strength	Area for Improvement
EOC Operations and Communications	A focused and disciplined Incident Command successfully identified and executed major objectives throughout the COVID-19 pandemic. The Incident Command provided a clear and forward-thinking pathway to response.	Despite a high level of experience within the EOC, there was confusion and disconnect about roles and responsibilities between the EOC and the Health DOC.
State, Local, and County Coordination and Communications	Most of the state, local, and county actors have an understanding of the National Incident Management System (NIMS) and the National Response Framework (NRF) in addition to prior training and practice on the Incident Command System (ICS) from complex incidents such as past wildfires.	Information sharing between local, county, and state levels was inconsistent at times, limiting proactive planning and implementation of necessary mitigative actions, including the ability to assure equitable access and the provision of safety net services for the community.
Public Information & Messaging	The Joint Information Center (JIC) produced a massive amount of content rapidly while maintaining positive information delivery to the public.	The Health DOC relied on the JIC to create health-specific public messaging with minimal health expertise.
Medical and Health Operations	Early activation of the Health DOC supported communicable disease surveillance and healthcare operations.	Medical and health operations faced supply chain challenges while implementing health equity strategies to support at-risk populations.
Vaccine Management	Mass vaccination events and clinics were efficacious in delivering vaccines to SMC residents.	During the early stages of vaccine distribution there was a lack of equity impacting distribution to at-risk communities and historically underserved populations. These inequities began at the federal and state level and affected residents within SMC's community.
Testing Operations	The established partnership with Verily supported a well-run testing operation with a high throughput at the San Mateo Event Center.	A lack of staffing resources resulted in staff burnout.

Theme	Strength	Area for Improvement
Resource Management	Many of the processes related to resource management were built as the pandemic progressed. While the response would have benefited from more advanced planning in this area, the development of a resource management process during the response underscored the adaptability of staff.	The lack of staffing caused long-term challenges for testing, vaccination, logistics and finance sections.
Continuity of Operations	SMC staff felt that their departments implemented successful safety protocols, including teleworking throughout the initial COVID-19 response and subsequent operations.	Overwhelmingly, staff across County departments/DOCs and the EOC continue to report burnout and unsustainable workloads, which may impact long-term retention.

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INTRODUCTION

Thanks and Acknowledgements

SMC would like to extend its heartfelt gratitude to its staff who have exhibited unprecedented dedication to the organization through their work in responding to the COVID-19 pandemic thus far. The county, alongside first responders, partner organizations, and local jurisdictions, received an immense outpouring of support throughout the response. The COVID-19 pandemic continues to require a Whole Community response engaging the private and nonprofit sectors, healthcare facilities and organizations, social services organizations, faith-based communities, businesses, school systems, academia, and county residents. Each of these partners have been instrumental in supporting vulnerable populations and they have been working together to slow the spread of COVID-19 within the county.

Despite the ongoing pandemic and complexity of the outbreak, response efforts highlight the unity necessary to help overcome the challenges presented by COVID-19. For this, the county would like to thank everyone who contributed to the development of the report by completing surveys, identifying potential interviewees, participating in interviews, participating in debriefings, preparing incident documentation, and validating key input.

A special thanks is due to the Project Planning Team for providing ongoing project oversight and feedback on the report. The Planning Team has been listed within the Appendices, along with other key contributors to this report.

Scope

This AAR was written with the intent to comprehensively identify best practices and lessons learned exhibited by the SMC DEM during the COVID-19 response period of January 2020 to August 2021. The purpose of the AAR is to strengthen the capabilities of the county and address key challenges faced during this timeframe to situate the organization to better respond to future surges of COVID-19 and other public health emergencies.

It is the hope of the authors of this document that this AAR and the associated IP will provide a roadmap for further improvement of COVID-19 response efforts by SMC DEM.

Methodology

This AAR assesses the capabilities of the county's response efforts through a comprehensive and data-driven process which allowed relevant partners and stakeholders to share their observations and experiences. Because the COVID-19 pandemic response is ongoing, special attention was paid to both emerging practices that have benefitted the pandemic response which should be continued or enhanced as response continues and ongoing challenges that could be improved moving forward.

Data Collection Methods

Documentation Review

CONSTANT collected and reviewed response documents along with established policies and procedures as part of the documentation review. A sampling of those documents includes:

- SMC DEM Emergency Operations Plan (EOP)
- SMC DEM EOC Incident Action Plans (IAPs)
- SMC DEM EOC Situation Status (SitStat) Reports

Online Surveys

Three online surveys were developed and distributed to collect individual respondent feedback from internal and external stakeholders. The three surveys were tailored for three separate audiences including Command Staff, Disaster Service Workers (DSWs), and an External Partners survey. This data was analyzed to determine if any of the issues that were identified required further inquiry. Survey participants were asked to share what they observed as strengths of the response as well as specific recommendations for improvement. Survey data provided a detailed view of the response and used to identify data gaps filled through individual or small group stakeholder interviews, open-source research, and incident documentation review.

Stakeholder Interviews

Small group interviews were conducted to review major response actions to determine critical strengths and opportunities for success related to the response and recovery efforts. The county identified interviewees as key stakeholders during the COVID-19 pandemic response. Interviews allowed participants to outline critical preparedness activities that occurred prior to the pandemic and list self-identified key strengths and areas for improvement relating to response efforts and recommendations for future implementation.

Members of county staff and leadership were contacted for additional individual interviews. In total, 11 interviews were conducted engaging EOC staff, JIC staff, Health DOC staff, Human Services Agency (HSA) staff, and other external organizations.

Organization of the Report

The AAR aims to provide readers with an overview of SMC DEM's response and recovery efforts during the ongoing COVID-19 pandemic by describing the conditions, events, and factors that occurred.

The report was organized to include an Incident Overview, COVID-19 Summary Timeline, Analysis of Key Findings, and detailed write-ups about the major elements of the county response and recovery efforts. Given the length and breadth of the pandemic and the unprecedented scope of the response efforts for SMC DEM, this report is not meant to be a comprehensive description of all activities conducted in response to the pandemic. Instead, this report is meant to focus on major strengths and areas for improvement noted by multiple stakeholders to identify corrective actions that are feasible and will have maximum impact on the ongoing pandemic as well as future public health and other emergency responses.

Although the COVID-19 pandemic continues to affect the county at the time this AAR was developed, the contents will be limited to response efforts occurring during January 2020 to August 2021 timeframe.

INCIDENT OVERVIEW

Overview of the COVID-19 Pandemic

In December 2019, health officials identified cases of an unknown viral pneumonia beginning in Wuhan, a metropolitan city in the Hubei Province of the People's Republic of China.[3] The most common symptoms manifested in the upper respiratory system and included fever, dry cough, and trouble breathing. As cases began to cluster, the World Health Organization (WHO) launched an investigation that confirmed the existence of a novel coronavirus, SARS-CoV-2. The virus causes a disease known by the global community as COVID-19 (**Co**rona**vi**rus **D**isease – 20**19**). As China instituted public health measures to contain the virus, officials found evidence of communal spread in surrounding countries. On January 30, 2020, the WHO declared a Public Health Emergency of International Concern. Countries implemented travel restrictions, stay-at-home orders, and controlled screenings for the virus. Health officials have recorded over 430 million cases of COVID-19 worldwide, with the highest numbers in the United States, India, and Brazil.[4]

COVID-19 presents several challenges to responders across all sectors, including a high level of transmissibility, an extended incubation period before symptoms develop, and asymptomatic carriers that may not show any symptoms at all. [5] Leaders in public health, emergency management, public safety, education, and other sectors have often sacrificed their health and safety to protect the well-being of the public. Physical distancing, masks, and hygiene have been key mitigation strategies throughout the pandemic. More targeted interventions like testing, contact tracing, isolation, quarantine, treatment, and vaccines have reduced transmission and hospitalization rates, empowering gradual returns to normalcy in many areas. Alongside signs of improvement, the global health community continues to address the ongoing threat presented by COVID-19 and its emerging variants.

COVID-19 Response in the United States

As of May 24, 2022, the United States recorded a total of 83,493,005 confirmed cases of COVID-19 since the start of the pandemic. Of those cases, 1,002,709 individuals have died.[6] The United States has faced multiple waves of COVID-19 cases, characterized by surges and declines in case numbers. Notable surges included the winter and spring of 2020, fall and winter of 2020-21, and the delta and omicron variants in 2021 and 2022.[7] Like the rest of the global community, the United States has faced significant economic impacts during the pandemic, including historic unemployment and a decrease in overall economic activity. Public, private, and nonprofit organizations have worked to mitigate the impact of COVID-19 on essential functions through remote work and other business continuity strategies.

3 World Health Organization. *Timeline of WHO's Response to COVID-19*. https://www.who.int/news-room/detail/29-06-2020-covidtimeline
4 Coronavirus Resource Center. *COVID-19 Dashboard as of May 24, 2022.* Johns Hopkins University. https://coronavirus.jhu.edu/map.html
5 Centers for Disease Control. *How to Protect Yourself and Others.* Accessed August 4, 2020. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention-H.pdf
6 Coronavirus Resource Center. *COVID-19 Dashboard as of May 24, 2022.* Johns Hopkins University. https://coronavirus.jhu.edu/map.html
7 Maragakis. Lisa. What Causes a COVID-19 Surge? Johns Hopkins Medicine. Accessed February 26, 2022. https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/first-and-second-waves-of-coronavirus.

Early community responses focused on non-pharmaceutical interventions like masks, physical distancing, and handwashing to reduce the exponential person-to-person spread of the virus— i.e., "flatten the curve." Current research indicates that the virus is most often transmitted through respiratory droplets produced when an infected person coughs, sneezes, or talks. These particles can reach up to six feet and remain suspended in the air for long periods of time. Masks reduce the distance droplets travel, while respirators like N95s can also mitigate the risk of the wearer inhaling aerosolized particles. Physical distancing measures decrease the concentration of individuals in a given area, further lessening the risk of spread. States that were early hotspots for COVID-19, such as Washington, California, and New York, responded to initial surges by increasing public information while implementing strict stay-at-home, public masking, and physical distancing orders. Non-pharmaceutical interventions have remained a key pillar of the global response to the pandemic.

State and local governments worked to further flatten the curve by requiring isolation of infected individuals and quarantine of close contacts who may have been exposed. Effective isolation and quarantine programs require robust testing and contact tracing infrastructure—an early and ongoing issue for many municipalities. Local communities have also needed to address inequities in the ability to isolate or quarantine, leading to differential impacts, especially among vulnerable and historically excluded populations. Federal funding, coordination among state, local, tribal, and territorial stakeholders, and partnerships with private sector, nonprofit, and higher education institutions have been critical to expanding testing, contact tracing, isolation, and quarantine capabilities.

Asymptomatic cases and the long incubation period of the virus also presented challenges to testing and contact tracing efforts. Since many testing programs required the presentation of symptoms, cases were often not identified until up to two weeks after initial infection, or not at all. Many jurisdictions invested in access to proactive testing resources, while communal environments such as educational institutions and public venues began to require surveillance testing to identify cases earlier and more reliably. At-home tests are now widely available commercially or through federal, state, and local programs. In January of 2022, the Biden Administration created an executive order to purchase half a billion at-home COVID-19 tests and provide them to American families free of charge.

Despite the importance of non-pharmaceutical interventions in mitigating COVID-19's impact, public health experts knew that vaccines would be critical for widespread containment. Multiple COVID-19 vaccines received Emergency Use Authorization (EUA) approval in the winter of 2020 and early spring of 2021. States were faced with the monumental logistical task of planning and executing a historic vaccination campaign as quickly as possible to limit the number of cases and fatalities. Federal, state, and local governments have needed to distribute doses rapidly while prioritizing access for vulnerable populations. As of the writing of this assessment, the United States has achieved a 70% vaccination rate for individuals over the age of 5. [8]Challenges remain in combatting vaccine hesitancy and addressing inequities among historically excluded populations.

While communities have worked to contain the spread of COVID-19, severe cases have placed historic demand on hospitals and other healthcare facilities. By April 2020, supplies of personal protective equipment (PPE) in the Strategic National Stockpile were depleted by roughly 90 percent.[9] Many areas faced shortages of ventilators, staffing, and in-patient and intensive care unit (ICU) beds, jeopardizing regional response capabilities, and sometimes leading to a suspension of non-emergency procedures. As a result, hospitalization rates have been a key metric driving public policy decision-making. The Federal Emergency Management Agency (FEMA) continues

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8 Centers for Disease Control and Prevention. COVID Data Tracker. Accessed April 25, 2022. https://covid.cdc.gov/covid-data-tracker/#vaccinations_vacc-total-admin-rate-total.
9 Department of Health and Human Services. *Public Health Emergency.* Accessed August 5, 2020. https://www.phe.gov/emergency/events/COVID19/SNS/Pages/FAQ.aspx#sns-depleted

to lead the federal response for PPE requests, distributing N95 respirators, surgical masks, face shields, surgical gowns, and gloves to 53 states and territories. Additionally, the Defense Production Act was used to boost the acquisition of N95 masks and the production of ventilators. Companies such as Ford Motor Company and General Motors pivoted from their regular activities to manufacture critically needed resources, including face shields and ventilators.[10]

Public information and perception have been a significant challenge across all phases and aspects of the COVID-19 response. Public officials have been faced with early skepticism on the severity of the virus, evolving and complex guidance from the scientific community, resistance to restrictive public health measures, vaccine hesitancy, and mis-/disinformation. Public information and communications lessons learned will be a critical asset for future all-hazards response.

The potential for further surges in cases has presented an ongoing dilemma to pandemic recovery and economic relief initiatives. Public leaders are tasked with finding a balance between economic recovery and physical distancing strategies that reduce the risk of increasing COVID-19 spread. Continued vaccination efforts, testing, and responsive decision-making will remain critical going forward.

San Mateo County Response

The first case of COVID-19 in California was identified on January 25, 2020. The patient had recently returned from travel in Wuhan, China. As of May 11, 2022, California recorded a total of 8,687,626 cases of COVID-19 and 89,957 deaths. SMC has recorded over 128,821 confirmed cases of COVID-19 and 711 deaths. The hardest hit counties in the state include Los Angeles (2,761,410 cases), Riverside (597,302 cases), and Orange (556,265 cases).[11]

While many of the staff initially activated had prior emergency response experience, the COVID-19 pandemic was vastly different from previous emergencies. The invisible and unprecedented nature of the virus played a significant role in the challenges that affected coordination for the County and counties across the country. The County Manager and DEM began to consult on the pandemic in February to discuss EOC response. The EOC was activated on March 2, 2020, and on March 16, 2020, six Bay Area counties, including SMC, declared shelter in place orders effective the following day. The team quickly adjusted to a hybrid virtual work environment, with the core EOC staff working on-site while implementing social distancing rules. During the early months of the response, SMC often had to be reactive rather than proactive as they needed to adjust to changing courses of action regarding public health mandates, restrictions, and broadening disease criteria.

10 Ford Motor Company. *Personal Protection Equipment Product Information*. http://corporate.ford.com/social-impact/coronavirus/ppe.html
General Motors. *General Motors Commitment.* https://www.gm.com/our-stories/commitment/face-masks-covid-production.html
11 California for All. Tracking COVID-19 in California. Accessed May 11, 2022. https://covid19.ca.gov/state-dashboard/

COVID-19 Summary Timeline

The following timeline summarizes key milestones in the COVID-19 pandemic period covered by this AAR, for reference in the analysis of findings section.

Table 2. County of San Mateo Department of Emergency Management COVID-19 Response Timeline.

Date	Event
December 31, 2019	The WHO picks up a media statement by the Wuhan Municipal Health Commission regarding cases of "viral pneumonia" in Wuhan, Hubei Province, People's Republic of China.
January 9, 2020	Ongoing WHO investigations confirm that the outbreak is caused by a novel coronavirus.
January 25, 2020	California confirms the first positive case of COVID-19 in Orange County, a traveler who recently returned from Wuhan, China.
January 31, 2020	The U.S. Health and Human Services (HHS) Secretary declares a public health emergency for the United States. The County Manager's Office (CMO) begins holding regular meetings with leadership to assess the need to escalate response.
February 15, 2020	CMO initiates first phone conference for a COVID-19 county briefing and situation update.
February 29, 2020	The United States reports the first death believed to be caused by COVID-19.
March 2, 2020	The SMC EOC is officially activated.
March 3, 2020	The SMC CMO issues its first Public Health Emergency Proclamation to reduce the spread of COVID-19.
March 4, 2020	SMC establishes a COVID-19 public call center for COVID-19 questions exclusive of medical advice.
March 5, 2020	Two confirmed cases of COVID-19 are identified in SMC and both individuals are placed in medical isolation.
March 9, 2020	21 people on board the Grand Princess cruise ship outside the San Francisco Bay test positive for COVID-19.

Date	Event
March 11, 2020	The WHO declares COVID-19 a global pandemic. Governor Newsom sets statewide restrictions on gatherings greater than 250 people and extends family leave and disability benefits.
March 11, 2020	The SMC Health Officer issues a health order prohibiting unauthorized visitors and non-essential personnel to enter licensed skilled nursing facilities.
March 11, 2020	Passengers of the Grand Princess cruise ship with mild or no COVID-19 symptoms are temporarily housed in a hotel in San Carlos within SMC.
March 13, 2020	President Donald J. Trump issues an emergency declaration for all states tribes, territories, and the District of Colombia under the Stafford Act.
March 13, 2020	The SMC Health Officer issues a School Operations Modification Order, dismissing students from regular school attendance and encouraging school districts to develop and adopt remote learning techniques as feasible.
March 16, 2020	The SMC Health Officer issues a shelter-in-place order for county residents. This order does not apply to persons leaving their residence to support “Essential Infrastructure.” The order’s original effective end date is April 7, 2020.
March 17, 2020	SMC issues a shelter-in-place order limiting activity, travel and business functions to all but the most essential needs.
March 17, 2020	The California legislature passes a $1.1 billion emergency coronavirus funding measure for ventilators, hospital beds, and hotels.
March 24, 2020	The SMC Board of Supervisors approves the usage of $3 million to emergency relief for local non-profits, small businesses, and community members.
March 27, 2020	The COVID-19 attributed death toll in California passes 100.
March 31, 2020	The SMC shelter-in-place order is extended through May 3, 2020.
April 6, 2020	The SMC Health Officer issues a health order directing those diagnosed with COVID-19 to self-isolate.
April 17, 2020	A joint statement from seven Bay Area Health Officers (including SMC) includes an order requiring individuals to wear a face-covering when leaving their home.

Date	Event
April 24, 2020	The Office of the Governor announces the Great Plates Delivered program, a meal delivery service for adults aged 65 and older and for adults aged 60-64 who are at high-risk.
April 28, 2020	The United States reaches 1 million total confirmed cases of COVID-19 and over 50,00 deaths.
April 29, 2020	The SMC shelter-in-place order is extended through May 31, 2020.
May 18, 2020	The EOC transitions to provide oversight on pop-up testing sites throughout the County in equity neighborhoods.
May 25, 2020	California breaks its previous one-day record for new coronavirus cases with 2,565 new cases announced on Memorial Day.
June 2020	The San Mateo Event Center Federal Medical Station (FMS) was opened.
June 1, 2020	The SMC Health Officer modifies the previous shelter-in-place order to include new language on essential businesses and permitted activities.
June 17, 2020	The SMC Health Officer updates the existing shelter-in-place orders and reduces restrictions on certain non-essential activities. Additionally, social distancing guidelines and face mask requirements are issued in a health order.
June 18, 2020	Governor Newsom orders a statewide mask mandate due to rising numbers of COVID-19 cases and deaths, requiring masks or other coverings in most public spaces with a few exceptions. Many local governments had previously dropped mandatory mask-wearing measures.
August 2, 2020	SMC is placed on the Governor's Watch List, which is comprised of counties at higher risk for COVID-19 transmission and existing infection.
October 29, 2020	The SMC Health Officer issues a health order directing individuals to isolate if they have contracted COVID-19 or are in sustained close contact with someone who has contracted COVID-19.
October 30, 2020	A new state testing lab opens in Santa Clarita, which is expected to double state COVID-19 testing capacity by March 2021.
Early December 2020	SMC begins planning for COVID-19 mass vaccination.

Date	Event
December 7, 2020	California unveils a COVID-19 app called CA Notify that notifies users when they have come into contact with a person who has tested positive for COVID-19.
December 14, 2020	Portions of California's initial allotment of COVID-19 vaccines arrive at health care facilities, with shipments continuing throughout the week.
December 29, 2020	With over 2 million coronavirus cases statewide, regions with stay-at-home orders set to expire are extended indefinitely.
December 30, 2020	A new strain of the virus is discovered with a greater rate of transmitting infections.
January 4, 2020	A drive-thru mass vaccination site opens at the SMC Event Center.
January 6, 2021	California sets the goal to vaccinate a million people in ten days.
February 12, 2021	State officials announce that those with high-risk medical conditions would once again be eligible to receive the vaccine.
February 24, 2021	California becomes the first state to cross the 50,000 death threshold for deaths attributed to COVID-19.
March 12, 2021	California administers its two millionth vaccine dose to underserved communities.
April 13, 2021	California halts Johnson & Johnson vaccine doses temporarily due to reports of blood clots.
April 15, 2021	California announces that everyone over the age of 16 will be eligible to receive the COVID-19 vaccine.
May 11, 2021	The SMC Health Officer rescinds the June 17, 2020 health order on social distancing and face mask requirements.
July 4, 2021	The highly contagious delta variant becomes the most common strain of COVID-19, accounting for just over 35% of new cases in California.
July 9, 2021	The Great Plates Delivered program ends.
August 2, 2021	The SMC Health Officer issues a health order requiring all individuals to wear face coverings within indoor workplaces and public settings.

Date	Event
August 5, 2021	California becomes the first state in the U.S. to require vaccinations for health care workers.
August 31, 2021	80% of Californians eligible for the vaccine have received at least one dose.

ANALYSIS OF FINDINGS

This section organizes the major findings into separate themes. In each of the themes, strengths and areas for improvement are shared that resulted from the data collection process. Recommendations for improvement are included at the conclusion of each theme.

EOC Operations and Internal Communications

Summary

Both the SMC EOC and the Health DOC began an immense undertaking when they activated in response to COVID-19. Initiating emergency operations for the pandemic would require more resources and last far longer than anyone originally anticipated. EOC operations were led by strong, capable leaders in the Command Staff and each of the sections. Department heads served as mentors, which fostered a collaborative environment based on mutual respect. Section leaders and EOC personnel capitalized on existing relationships built on years of trust, which informed operations and aided inter-departmental cooperation.

However, SMC also faced many challenges in carrying out EOC operations. SMC struggled with gaps in Incident Command System (ICS) training, availability of staff to support a long-term response, and staff trained in resource procurement. For instance, some confusion existed within the EOC's activation process, which may be attributed to confusion on the role of the EOC and Health DOC for a pandemic response. In addition, some roles, responsibilities, and coordination pathways were not clearly defined within the ICS structure, especially with regard to the Health DOC. For example, confusion arose over the level of responsibility and ICS implementation that the Health DOC should have taken on in responding to the pandemic. Furthermore, a lack of emergency management software and problems activating DSWs for additional support staffing made managing challenges even more difficult.

Strengths

STRENGTH 1: A focused and disciplined Incident Command successfully identified and executed major objectives throughout the COVID-19 Pandemic.

IAPs, SitReps, surveys, and interviews underscored that the clear guidance and forward-thinking posture of Incident Command was a strength and served as the primary reason for the coordinated command structure within the SMC response. Incident Command within the EOC was described as providing "substantial support" in mobilizing and sustaining county-wide response operations.[12] A clear chain of command supported the delegation of duties through ICS principles. This forward-leaning approach supported teams in "building the plane, as they were flying it,"[13] something necessary given the flexibility and innovation required for a successful response to this unprecedented incident.

12 Online Survey Data
13 Online Survey Data

The Incident Commander received high praise, and her "leadership and clear direction" provided personnel with a "guidepost" in goal setting and decision-making, especially early on in the COVID-19 response.[14] The Incident Commander was also a necessary source of "calm and focused leadership" during the early response to the crisis, and personnel credited her with advancing relationships and early needs.[15] This leadership was interpreted as the "driving force' of the response that "set the stage for everything" despite a chaotic beginning.[16]

STRENGTH 2: Assigning senior department administrators as EOC section leaders provided a firm foundation and existing knowledge base of County operations for the response.

Upon activation of the EOC, department leads including department directors, were assigned to various section leadership roles. Having senior-level staff within the EOC provided strong leadership from personnel who were intimately familiar with SMC's organizational structure, departmental capacities, policies, and existing resources. This allowed "lots of buy-in" from departments about what resources could be committed to the EOC and the COVID-19 response.[17] Having "significant players within the county" active in the COVID-19 response allowed the EOC to wield a "necessary level of responsibility" that could "get ahead" of the COVID-19 pandemic.[18]

These department heads and managers assigned to dedicated EOC positions were in a unique position to support operations. Since they "knew the county" and were familiar with various staffing and purchasing pathways, these leaders strengthened the response capacity.[19] One interviewee stated that the people assigned to the EOC were "the right group" who were "there for the right reasons" and sought to cooperate on the strenuous task of guiding response to a pandemic with so little initial information.[20] For example, the Department of Public Works was sourced to support the EOC in logistical needs and planning.

Relationships were constantly mentioned in interviews and survey responses as the most important aspect of the COVID-19 response. Senior leaders assigned as EOC section leaders were able to leverage existing relationships within the County to foster a collaborative environment. These relationships may have lessened tensions within the EOC, especially during the long work hours required in the pandemic's first year. There was "not a lot of chest-banging or inflated egos" but an "understanding that there was a big mission ahead" that set the tone of the response. "Even when emotions ran high," personnel were noted to be respectful and civil.[21]

STRENGTH 3: SMC's Information System Department (ISD) supported the county's transition to a telework environment and helped support physical distancing measures within the EOC to protect the health and safety of responders.

Despite early concerns, implementing a remote work environment supported by ISD was a success and able to rapidly yet comprehensively transition employees. The ISD was instrumental to continuity of operations and the sustained emergency response providing the added flexibility and access to programs for operations within the County. ISD developed new, customized engineering tools to ensure remote information technology (IT) support was available for the EOC and for teleworking employees, ensuring the necessary structures were in place to

14 Online Survey Data
15 Online Survey Data
16 Stakeholder Interview – Command
17 Stakeholder Interview – Operations
18 Stakeholder Interview – Operations
19 Stakeholder Interview – Logistics
20 Stakeholder Interview – Operations
21 Stakeholder Interview – Logistics

support steady-state government and emergency operations. In addition, ISD employees developed a redesign of the EOC floor plan to comply with changing COVID-19 guidelines and support social distancing.

Interviewees noted that personnel "seamlessly" moved into virtual spaces.[22] Although people "missed the day-to-day" experiences with other ICS staff,[23] this shift allowed for a virtual, hybrid telework environment, although some response staff were still physically on the county campus. The importance and early ubiquity of telework also allowed departments to provide "or even improve" service to clients.[24] This was supported by "an uptick in creative thinking and flexibility and a tolerance for change that didn't exist before."[25] For example, a Microsoft Teams platform was built to support a virtual EOC that was based on the City of Ventura's EOC. This platform allowed personnel to pivot easily to telework if there was a COVID-19 exposure to maintain safety of responders within the EOC.

Areas for Improvement

IMPROVEMENT 1: There is not a standardized process for notification of activation for the EOC and personnel to staff the EOC within SMC.

Interview participants widely noted that an informal process was followed regarding the activation of the EOC and the activation of staff to positions within the EOC. For instance, most staff were activated to their positions through their superiors, emailing or calling them to alert them of their assignment, or through meetings where EOC activation was discussed. [26] [27] [28] While this process was sufficient, it was noted that greater certainty surrounding the length of an activation to a position would have been helpful and added to the personal preparedness of staff to be able to fully transition themselves to an EOC staff position away from their regular desk. More information and the creation of job aids to identify the location of reporting and detail tasks, roles, and responsibilities of the actual position entailed would have been useful to staff. Given the uncertainty of the incident overall, some of this information was not available, but through a more formal activation process, some of these challenges could have been addressed and led to a smoother transition for EOC activation and staffing.

IMPROVEMENT 2: Despite a high level of experience within the EOC, there was confusion and disconnect about roles and responsibilities between the EOC and the Health DOC.

Interviewees and survey respondents expressed concern that there was not a clear delineation of roles and responsibilities between the EOC and the Health DOC. There was frustration and confusion about whether SMC Health was "responsible" for coordinating the response, given that it was a public health emergency.[29] One survey respondent stated that they were unsure whether "Health were the experts or if Health isn't the experts." Data collected from interviews and surveys reflected concern that the Health DOC was not a part of the critical decision-making processes in COVID-19 operations.[30] It was unclear who was the lead over the response due to lack of understanding of the subordinate relationship a DOC has to the EOC's wider response structure. Additionally, due to the nature and high complexity of the response, jurisdictional codes and policy also had to be aligned accurately

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22 Stakeholder Interview – JIC
23 Stakeholder Interview – JIC
24 Online Survey Data
25 Online Survey Data
26 Stakeholder Interview – Operations
27 Stakeholder Interview – Logistics
28 Stakeholder Interview – JIC
29 Stakeholder Interview – Health DOC
30 Online Survey Data

to ensure that decision-making included all necessary parties located within both the EOC and Health DOC in order to move forward in response actions properly.

The high level of uncertainty experienced during the COVID-19 pandemic introduced additional ambiguities with regard to roles and responsibilities. Priorities would change based on the best available information that was accessible from federal, state, and local authorities to all stakeholders. However, this switching of priorities would occasionally occur without the alignment of resources, creating logistical inefficiencies that would then confuse personnel about whose responsibility it was.[31] For example, at one point, bathroom facilities needed to be delivered to a homeless encampment, but it was never determined which County entity had the capacity or the responsibility for the delivery of resources to shelter partners.

IMPROVEMENT 3: Due to the fluidity of the unprecedented pandemic, the scaling of the response was difficult for the EOC to effectively demobilize in a timely manner.

Surges in COVID-19 were mirrored in the scale of the EOC and Health DOC activity. Personnel from both centers stated that operations "ended too quickly" despite concerns from the Health DOC that COVID-19 would surge again. [32] [33] Resources that were committed to the operation were scaled back, which required additional investment when the need inevitably rose again. Survey respondents remarked that it felt as if the EOC was "playing catch-up" with demand,[34] which led to a reactive stance toward COVID-19 rather than a proactive one given that resource investment was based on immediate need. Health DOC leadership was concerned that the "up/down intensity" would lead to under-commitment of resources during the next surge or changing needs of the response. [35] This led to the Health DOC and EOC "continually waiting for the next thing to happen," which was exacerbated by the inherent uncertainty of COVID-19. [36]

A policy group was established by two Board of Supervisors, the County CEO, and other county representatives, but did not include the MHOAC or Incident Commander. This reactive posture, as opposed to a more deliberate, pre-planned position towards the response, may have been caused by a lack of responder representation within the Policy Group. This group did not set strategic priorities, state senior-level expectations, or provide intel leading to more proactive long-term planning and forecasting for operational coordination.

IMPROVEMENT 4: A lack of a standardized EOC staffing rotation system led to feelings of staff burnout which was further compounded by personnel still serving in their normal job capacities while staffing the pandemic response.

Interviewees described a huge need for implementing a standardized process for staffing rotation into the EOC's staffing plan and structure. In the words of one participant, "we have a really stellar A team," but that "A team" was the extent of staff who could serve those positions.[37] For example, the Incident Command positions within the EOC and the Health DOC were within their respective roles for years. This reflects a structural problem, as even the most engaged leaders and staff cannot continuously work throughout the whole response. Lack of a formalized rotation led to less efficient handoffs between incoming and outgoing staff to the EOC positions. This

31 Stakeholder Interview – Logistics
32 Stakeholder Interview – Health DOC
33 Stakeholder Interview – Logistics
34 Online Survey Data
35 Stakeholder Interview – Health DOC
36 Stakeholder Interview – Health DOC
37 Stakeholder Interview – Command

could have had significant implications, causing critical staff to miss key actions and responsibilities of each EOC position such as reporting and coordination that needed to be regularly maintained throughout the response.

Exacerbating this issue is the stress of maintaining "day jobs" and activated roles simultaneously.[38] When personnel were deployed to the EOC – especially section leaders – they still maintained their original, steady-state roles, as department heads and operational personnel. For example, this significantly impacted the Department of Public Works as they needed to continue to provide essential services to SMC and were simultaneously tasked to provide response support. In the words of one interviewee, the "need does not stop because COVID exists".[39] Personnel reporting to the EOC felt "stretched very thin" even as back-ups and some rotation schedules were implemented further into the response.[40]

In the beginning of the COVID-19 response, one of many uncertainties was the duration of the pandemic. Longevity of staffing was less of a priority than activating a comprehensive and coordinated response. Later in the response, it was recognized that working "16 hours a day for long periods of time" precipitates the need for sustainable staffing schedules to reduce "strain on the system."[41] According to an interviewee, the EOC "tried to develop 3 or 4 levels deep within the ICS, but eventually defaulted back to the A Team".[42]

IMPROVEMENT 5: Inconsistent expectations for DSWs experienced by both individuals and the EOC led to gaps in staffing plans that were intensified by a hiring freeze.

DSWs include any public employee in the State of California who is called upon to respond to an emergency by their jurisdiction. DSWs are a large and important part of the response workforce, given that they include all departments within a jurisdiction. The functions of DSWs are not always in line with normal scope of duties, though placement in a response function generally aligns with their experience.

Activation of DSWs faced severe problems in the COVID-19 response. The most salient issue was the uncertainty of COVID-19. DSWs did not want to be in an environment where they could potentially catch a deadly infectious disease of which there was little information. This fear pervaded much of the initial response, in which people were "scared, anxious, and angry" at their DSW activation.[43] Telling personnel that they needed to "be back and work with the public" was "problematic" in sourcing consistent, engaged staff.[44]

DSWs also felt that they were given inconsistent information regarding quarantine and isolation. In this context, DSWs were confused about being called into volunteer for emergency operations given that they also felt that quarantining was a priority. As one interviewee stated, "sending everybody home" was a "nightmare" since DSWs and other personnel thought they were "finished" and not supposed "to be out there helping" with the response.[45]

While the State of California mandates that when DSWs are called to respond, they must respond, "not everybody actually responds" due to a variety of reasons.[46] This led to unrealistic expectations about the number of personnel available to staff operations. As one respondent stated, "you think you have 800 staff in your DOC who are all

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38 Stakeholder Interview – Command
39 Stakeholder Interview – Logistics
40 Online Survey Data
41 Stakeholder Interview – Command
42 Stakeholder Interview – Command
43 Stakeholder Interview – Planning
44 Stakeholder Interview – Health DOC
45 Stakeholder Interview – Planning
46 Stakeholder Interview – HSA

trained, but that's not true".[47] This was especially relevant in the initial response period, in which an interviewee stated they were "begging people" to participate in the response while balancing ongoing operations.[48]

Due to the lack of DSWs, at one point in the pandemic response, one person served as both the Planning and Logistics Section Chiefs for several weeks. This individual was charged with managing a centralized inbox where all planning and logistics related items would be received and the immense influx of emails and requests became unmanageable for a single person.

DSWs also experienced difficulties with the ICS structure. DSWs were not cohesively trained on ICS principles. For example, DSWs that were activated within the JIC were not previously informed how the JIC fit into the broader response organization, or how the ICS structure ensured chain of command and information flow. Given that DSW roles and responsibilities "were not heavily emphasized" by the County, some personnel felt as if they were "grinding teeth" to work through ICS principles and support DSWs in working within the EOC structure.[49]

IMPROVEMENT 6: The EOC required a robust emergency management software and customization that fit the requirements of SMC's infrastructure and the resource requirements of COVID-19.

While the County has WebEOC and has trained select individuals, the level of training was insufficient for the incident management needs of the COVID-19 response. This led to recurrent technological challenges in information sharing and resource procurement. Despite the agility of the EOC's organization and attention to detail, the lack of emergency management software and available customized boards that were required for enhanced coordination and interconnectivity between systems decreased the ability of the EOC to document needs and maintain accountability throughout the response. Due to the lack of appropriate boards and integrations necessary, the EOC resorted to physical copies of documentation and handwritten forms since the WebEOC software was not being utilized, nor was it robust enough to handle the needs and extremes of the pandemic.[50]

The lack of training in the electronic emergency management software caused delays in the processing of 213 Resource Requests (RRs) and limited ability for resource requestors to quickly and easily view the status of their resource request. The lack of software also had further implications, such as delays in reimbursement approvals due to a lack of a centralized system for documentation. Resource request and tracking systems were created "on the fly" and were ultimately successfully implemented.[51] However, these processes were insufficient for the needs of the incident, leading to delays and frustration and challenged documentation management.

IMPROVEMENT 7: Finance seemed as if it were an afterthought in operations. This oversight had consequences for a real-world response of this size, scale, and severity and posed future challenges for long-term recovery of SMC.

Stakeholders noted that the planning element of the response for items such as COVID-19 testing was carried out extremely effectively. Finance, logistics, and procurement worked diligently to meet the specific needs of the FEMA response and SMC was one of the first counties in the country to submit for federal assistance. However, it was questioned if the finance and administrative elements of the response were considered at this stage or if response staff understood the importance of what the Finance Section Chief needed in order to be able to seek

47 Stakeholder Interview – HSA
48 Stakeholder Interview – HSA
49 Stakeholder Interview – Planning
50 Stakeholder Interview – Logistics
51 Stakeholder Interview – Logistics

reimbursement. As more Requests for Information (RFIs) began to come from FEMA regarding reimbursement, the need for strategic finance planning was realized and leadership was credited with "doing a very good job of emphasizing the importance of the entire process."

A potential cause for this lack of prioritization of financial infrastructure early on in the pandemic may be that, historically, exercises conducted by the County have most frequently had a tertiary focus on finance noting a perception that it was "difficult to test finance functions in a meaningful way". Overall, the mindset has been that Finance comes in after the response to reconcile payments and organize documents, but as exhibited during the COVID-19 response, the Finance and Administration function needs to have a more proactive role. As the Finance function is something that is not fully being addressed in exercises and training, a future need for building out this capability exists as the institutional knowledge gained through the pandemic response will be lost as staff who responded in this capacity transition to other positions or retire.

Recommendations

Recommendation 1: Develop a formal activation process to alert staff of EOC activation status and of assignments to EOC positions.

- Within this process, ensure that on-site Job Aids and an onboarding "packet" is included to provide information on what to expect during an EOC activation, expectations of assigned roles, an overview of critical ICS principles, and important contact numbers for EOC staff.

Recommendation 2: Begin to develop "depth of bench" within EOC staffing by rolling out ICS training to all County employees.

- Conduct exercises with at least one specific objective aimed at activating DSWs. This will help to both train County staff in ICS practices and support identification of new leaders for future EOC activations.
- As a county, hold a DSW workshop engaging senior leaders and subject matter experts from Human Resources, and other relevant partners to ensure that the roles and responsibilities of DSWs are clearly understood, communicated, and a training plan is developed for countywide employees for future response.

Recommendation 3: Explore system upgrades and further customization of WebEOC or vendors to support the appropriate crisis management software that meets the needs of a large-scale incident and integrations with other critical County operation systems.

- Ensure all EOC staff are regularly trained on the system and look for ways of implementing the system into steady-state operations to normalize and build proficiency in the use of the system.
- Develop JIT training for crisis management systems for additional EOC staff supplementation during a response.

Recommendation 4: Document IT processes and expand technological infrastructure which was established as part of the EOC response to support telework and virtual operations in the future. Ensure these systems and processes are secure and socialized with County staff.

Recommendation 5: Document procedures, such as distancing worktables, sanitization, PPE policies, etc. for implementation within the physical EOC that can be easily implemented during infectious disease events in which in-person operations remain feasible.

Recommendation 6: Develop a formal Policy Group for utilization in an emergency response. Consider:

- Triggers for activation
- Critical Policy Group members, including elected officials, CEO, MHOAC, EOC Representation, and identified response command staff including their roles and responsibilities.
- Ensure the inclusion of long-term, strategic thinking

Recommendation 7: Make a concerted effort to integrate finance components into training and exercises to build capability and refine processes. Ensure finance best practices developed during the response are documented and incorporated into relevant plans and procedures.

Recommendation 8: Create visual process charts and workflows illustrating how resource requests and information should flow through the EOC. Share these graphics with partner entities, DOCs, and within the EOC. Resources could be added as Job Aids for each EOC position.

Recommendation 9: Convene EOC, Health DOC, and other relevant Incident Command staff from countywide departments to workshop ICS organization structure and coordination and for all-hazard emergency events.

Recommendation 10: Consider engaging primary COOP and COG representatives to ensure inter-agency infrastructure aligns with essential functions and roles/responsibilities of departments from across the county.

Local, County, and State Coordination

Summary

The pandemic response relied on heavy information-sharing, communications, and coordination between local, County, and state partners. Seasoned SMC responders played a significant role in the successful coordination and cooperation of multi-level government partners, supporting agencies, and other key interest stakeholders. Personnel exercised existing relationships built on years of trust within the County. This also extended to relationships SMC had with incident management personnel at multiple levels of government.

However, unlike the observable wildfire, the invisible nature and novelty of COVID-19 played a significant role in the challenges in coordination of efforts among and between multi-level jurisdictions. The fact that this virus had not previously been seen in humans and initially lacked a case definition and epidemiologic linkage led to differences in management of the virus.

Confusion between strategies for incident management and inconsistent implementation of response operations including mitigative measures between levels of government, became a series of hurdles for SMC, especially in the early months of the response. Often, SMC had to be reactive to new courses of action impacting the jurisdiction including execution of public health mandates, restrictions, and broadening disease criteria.

Strengths

STRENGTH 1: The majority of state, local, and County actors have an understanding of the NIMS and the NRF in addition to prior training on the ICS and application during complex incidents such as past wildfires.

Throughout the IAPs, surveys, and interviews, the clear understanding of foundational response frameworks by key individuals at multiple levels of government engaged in early incident coordination was demonstrated and shared. During early response to COVID-19, many familiar staff that had helped to support previous complex incidents such as wildfires supported early decision-making and implementation of response operations.

However, as the pandemic transitioned to more of a localized impact and the operational footprint expanded, necessitating more incident management staff to manage the response at all levels of government, many of the individuals brought into the expanded response did not have prior ICS knowledge, experience, or awareness. At times, this delayed decision-making or created challenges to preserve the tenants of ICS application and efficient operations.

Many of the early incident management staff had the necessary tools and knowledge of ICS to maintain the response structure from previous in-person or online training, engagement in previous complex incidents such as wildfires, participation in all-hazard regional exercises, and/or requirements as part of their positions to be trained in ICS. This suggests that infrastructure exists between levels of local, County, and state government to further expand existing programs to better prepare an expanded list of incident management personnel for prolonged and complex all-hazard incidents in the future.

STRENGTH 2: Forward planning for recovery by the CMO's office partnered with strong command presence from the EOC helped to clearly define SMC priorities and presented a path forward to reaching recovery goals. This aided communication and coordination within multiple levels of government.

Best practices for incident management prescribe that recovery planning and initial implementation begins during the disruption and stabilization phases. SMC applied this best practice during the pandemic which helped to further communications of response priorities and decision making, enabling enhanced coordination between varying levels of government. As a stakeholder remarked, "the fact the CMO's office immediately began planning for recovery, rather than waiting for when the pandemic was over was helpful.[52]"

The early action taken by the CMO's office also helped to identify critical recovery activities and sequence objectives necessary between each level of government to reach desired recovery outcomes. For SMC, this was a critical step in maintaining the County's basic lifeline services and to reach a stabilization point even if that meant non-permanent solutions to critical lifeline services. Using this methodology, SMC was in a position to more readily identify additional resources required, initiate requests for support from County and state entities, and engage in negotiation to support effective response coordination.

Areas for Improvement

IMPROVEMENT 1: Information sharing between local, county, and state levels was inconsistent at times, limiting proactive planning and implementation of necessary mitigative actions, including the ability to assure equitable access and the provision of safety net services for the community.

As the pandemic continued, SMC relied on regular information sharing and proactive decision-making with local, county, and state partners. The EOC had a subcommittee tasked with policy group work but was not directly tied to the Incident Commander. There was a disconnect in information sharing and decision-making, creating a lag when operationalizing key decisions. [53] As strategies were implemented for key population groups and partners in areas such as vaccine allocation and distribution, there was consternation that more information was not proactively shared from multiple levels of government. This feeling was especially present as new guidance was created that applied to populations' ability to access critical vaccines, necessitating further organizational communications or individual action.

Information sharing on key pandemic response operations that required significant coordination between local, county, and state governments proved challenging at times, leaving SMC to adjust their response strategies. This cost time and funds and eradicated valuable trust in the community. In the case of vaccination allocation, this also meant that resources needed to be redirected to align with state mandates and strategies. SMC also often needed to redirect messaging to align with key partners or clarify confusing guidance and terminology, such as state reopening strategies to build public confidence and collaboratively move toward goals.

Critical resources were allocated by the federal and state government, leaving the County to work with the resources allocated to them. Without a Policy Group directly linked to the Incident Commander, decision-making did not align among SMC departments which caused further detrimental effects on community trust. As examples,

52 Stakeholder Interview
53 Stakeholder Interview- Health DOC

resources for sheltering, commodity planning, and vaccine distribution had to be redirected to meet community demand, leaving SMC to be reactive and rapidly flex to ensure incident stabilization and public safety.

IMPROVEMENT 2: Contact lists had to be built from scratch for the response as the number of key local, County, and state contacts grew to ensure successful coordination.

As the understanding of the pandemic and impact to jurisdictions grew, an increasing number of contacts at the local, County, and state levels were engaged. Communications lists were key to ensure information, situational awareness, and reporting flowed with ease. As remarked by one stakeholder, "it was difficult figuring out whom to communicate with. It was everyone in the County from partners, council members, city managers, community-based organizations, and more. Lists were not available so they had to be built from scratch." [54]

Many of the SMC contact lists that exist today were built from scratch. These lists had to be frequently amended as contacts changed over the course of the COVID-19 response. The contact lists were shared between responders in multiple modes, including handwritten lists. Contact lists have evolved over time as some lists are now available in electronic format located on incident management platforms used by the EOC which are far easier to read and share.

While key external supporting and coordinating entities noted they felt San Mateo communications were "smooth and adequate," entities did share that the amount of information was overwhelming.[55] While information shared was important, sometimes it was not tailored toward their direct client groups, stakeholders, resources available, or communities they served.

Recommendations

Recommendation 1: Expand ICS position training requirements and participation in regular intergovernmental exercises to positions across SMC, rolling up strategies to other County and state partners.

Recommendation 2: Continue to exercise (e.g., tabletops, drills) regularly and often, focusing on themes of information sharing and reporting with intergovernmental partners for all-hazard incidents to strengthen communications and understanding of priorities for threats within the response continuum.

Recommendation 3: Codify contact lists used for pandemic response and maintain these contact lists using a primary and secondary method for continuity purposes. This can be implemented for all-hazard emergencies and other high likelihood threats for San Mateo.

54 Stakeholder Interview
55 Stakeholder Interview

Public Information and Messaging

Summary

The SMC JIC was established immediately after the County announced the mobilization of the EOC. The JIC staff included a core group who had been trained and had previous experience with JIC operations and public communications during a disaster. The core group quickly developed a strong rapport and smoothly transitioned the JIC from in-person to virtual due to the demands of the rapidly changing pandemic procedures. The JIC's decision to move into the virtual environment allowed them to maintain prompt dissemination of messaging to the public in the early days of pandemic response. However, the lack of public health expertise within the JIC Team slowed the progress on customized local health information and messaging to the public. The JIC provided timely and accurate information to the local community utilizing WHO, Centers for Disease Control and Prevention (CDC), and California Department of Public Health (CDPH) guidance.

Strengths

STRENGTH 1: The transition to a Virtual JIC was seamless due to strong relationships and pre-established communication channels.

It quickly became apparent that for the health and safety of the staff that it was necessary to move all JIC operations virtual. Staff noted that the transition was seamless. During their time working in-person, the JIC staff established strong working relationships that created a high level of trust and camaraderie that assisted in the smooth transition. The team established communication channels for regular meetings and check-ins using Zoom and phone calls. The staff possessed self-motivation and proactive communication that supported the smooth transition to the virtual environment. Staff noted that in the physical JIC, the team was located right at the front of the EOC and they often had people enter their space to hang out, take a break, or pop in with questions and ideas. By moving to the virtual environment, they were able to eliminate some of the distractions that these interactions caused.

While this eliminated some distractions, it hindered communications with Command Staff in the virtual JIC and EOC. To resolve these communication issues, the staff took a proactive approach by joining optional meetings when they were able to, such as the daily news briefings provided by the EOC. As expected, some of the day-to-day aspects took time to transition. However, once those matters were solved and everyone was able to conduct their duties from home, operations began to return to a normal workflow. It became a bigger lift for the JIC staff when they could not be on-site for some side discussions, but this did not impact the JIC team's ability to provide public messaging and communications to residents.

STRENGTH 2: The JIC produced a massive amount of content rapidly while maintaining positive information delivery to the public.

At the height of pandemic response, press briefings were conducted multiple times a week, often daily, for several months. Given the demand for information and the ever-changing nature of response, the JIC team needed to create social media updates and press releases multiple times per day. Coordination calls with local elected and non-elected staff, state, federal, and first responder partners were coordinated by the Legislative Affairs Officer and the JIC. The sheer volume of content and resources created by the JIC was unprecedented, but the need to keep the public informed was the driving force behind this effort.

The JIC worked hard to develop communications strategies that set and maintained a positive tone and environment. For example, in March 2020, when the Grand Princess cruise ship came into the port of SMC, the JIC team used messaging that welcomed the passengers of the ship into the community despite the COVID-19 concerns. This unified messaging of positivity set a tone for both the cruise ship passengers and the community to mitigate any negative reactions. Press Briefings were structured as a question-and-answer forum allowing for partners and community members to be heard.

Areas for Improvement

IMPROVEMENT 1: The Health DOC relied on the JIC to create health-specific public messaging with minimal health expertise.

In the early stages of response, the Health DOC was quickly overwhelmed with its operations and communications between the DOC and the JIC broke down. Within two weeks of the activation of the JIC, a representative from the Health DOC was appointed as the Health PIO. While this role served as a representative from the Health DOC, the appointee was not the key decision-maker and all decisions needed to be approved by other Health DOC staff, which led to major delays in the release of communications.

The Health DOC did not want to give out inaccurate information, leading to "information paralysis," forcing the JIC to develop health messaging without local health expertise[56]. JIC staff faced pressure from elected officials and school districts requiring health information messaging, but the staff did feel supported by the health experts. Health messaging was developed in the JIC by non-health experts utilizing information from the WHO, CDC, or CDPH, creating a void of information on the local level.

Recommendations

Recommendation 1: Ensure information sharing is aligned with the EOC utilizing the proper chain of command outside of the EOC. Incorporate a tool to maintain situational awareness of regularly scheduled meetings. Include these in SMC Communication Plans, as appropriate.

Recommendation 2: Provide trained health educators to the JIC during activation to provide public information and messaging health expertise for the duration of the response.

Recommendation 3: When the JIC is activated, agree upon a standard vetting process for materials considering elements such as type of document, timeline, hazard-threat, language, and publication resource/location.

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56 Stakeholder Interview

Medical and Health Operations

Summary

During the pandemic the Health DOC supported overall medical and health operations, including, but not limited to the implementation of the Medical Health Operational Area Coordinator (MHOAC) program for SMC. The Health DOC faced and overcame substantial challenges in the COVID-19 response, beginning with their proactive activation of the Health DOC in January 2020. This early activation substantially supported early situational awareness of the pandemic and laid the groundwork for coordinated and collaborative medical and health operations. Notably, the Health DOC operated based on the best available information, with the idea that "over-response was better than under-response" regarding a novel infectious disease.[57] This also facilitated strong regional health policies and the implementation of Health Orders to support inter-County policy coordination.

Given the magnitude of the COVID-19 pandemic, medical and health operations, including the Health DOC and MHOAC, experienced significant strains that highlighted structural and systemic issues. Health equity was and remains a concern throughout all stages of the response with the supply constraints. SMC operationalized health equity strategies to support equity neighborhoods by providing transportation to testing and mass vaccination sites. Once the supply chain opened up, mobile pop-up testing and vaccination clinics were set up in these communities. The Health DOC also experienced overarching organizational problems due to a lack of strong implementation and consistent adherence to ICS, which caused inefficiencies throughout communications, command and control, and supply chains.

During recovery and in preparation for future responses to either the COVID-19 pandemic or other infectious disease outbreaks, medical and health operations will shift their focus to developing holistic health metrics. The sheer enormity of data produced challenged medical and health operations. Shifting the focus to data trends and interpretation may support future health operations in developing capacities in public health messaging and inter-departmental decision-making.

Contact tracing efforts are not included in this report and will be addressed in the SMC Health Department's AAR.

Strengths

STRENGTH 1: Early activation of the Health DOC supported communicable disease surveillance and healthcare operations.

The Health DOC was activated on January 17, 2020 – a month and a half before the County EOC.[58] This early activation significantly supported both early health response efforts and larger-scale operations. The Health DOC established leadership and chains of command early on, although not always in a pure ICS framework, and developed early plans for epidemiology, communicable disease surveillance, and information gathering.

Interviewees and survey respondents felt that activating in January 2020 was "the best decision" for the County.[59] [60] SMC Health's commitment to proactive public health operations and commitment to forward-thinking healthcare policy enabled the establishment and operationalization of the Health DOC. Notably, the Health DOC

57 Stakeholder Interview – Health DOC
58 Stakeholder Interview – Health DOC
59 Stakeholder Interview – Health DOC
60 Online Survey Data

did so with limited information and guidance from state and federal health agencies. The Health DOC activated without "perfect information" yet was confident in the decision to activate and risk a strong response that would later be shown as unnecessary rather than potentially have a more serious crisis in a shorter timeframe.[61]

STRENGTH 2: Regional coordination supported strategic health decisions such as health orders and policies and encouraged a consistent response with neighboring counties.

SMC's coordination with other San Francisco Bay Area counties and the Association of Bay Area Health Officials (ABAHO) region greatly supported a collaborative, integrated, and policy-driven approach to medical and health concerns. The SMC Health Officer implemented several important health orders to ensure life safety and decrease morbidities.[62] The Health Officer's proactive concerns toward human life and reducing the spread of infectious disease before the WHO declared COVID-19 as a Pandemic positioned SMC as a leader in public health response.

This preemptive approach to health policy mirrors the Health DOC's January activation in the importance of early and timely activation of the emergency process to support both life and quality of life within SMC. Alignment with other Bay Area Health Officers demonstrated a commitment to collaboration with other jurisdictions to ensure that neighboring locations were on the same page in the response. This reduced area-wide ambiguities in the response while also providing Bay Area residents an impression of a unified effort toward a medical and health response.

STRENGTH 3: The Health DOC developed comprehensive public health messaging and community engagement tactics.

The COVID-19 pandemic initiated massive changes in how departments and County personnel interact with the general public. This is especially true for public health. Through the two years of the response, various aspects of medical and health operations contributed directly to firm public health messaging and community engagement. Collaborations between PIOs and the Health DOC supported the ability for either function to gather necessary data and distribute responsible health messaging. As one survey respondent said, "every part" of SMC health became a part of the public health response.[63]

Given the focus of the COVID-19 pandemic as a public health disaster, SMC Health had significantly more interaction with the community than in previous disasters or normal operations. The Health DOC maintained online and offline resources related to public health guidance and dashboards for the public.[64] These resources were developed with the best available information on hand, despite data collection and interpretation issues.

The Health DOC's engagement with stakeholders and the media reflects positively on the changing role of SMC Health during the COVID-19 Pandemic. This collaboration should be sustained for future response and recovery operations concerning the COVID-19 pandemic and other crises. Additionally, the COVID-19 pandemic has demonstrated that public health messaging and community engagement on behalf of SMC Health and the Health DOC are necessary components of responding to an emergency.

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61 Stakeholder Interview – Health DOC
62 Incident Action Plan, March 17, 2020
63 Online Survey Data
64 Stakeholder Interview – Health DOC

STRENGTH 4: The Medical Health Branch and Medical Health Operational Area Coordinator (MHOAC) maintained consistent communication with, effectively coordinated and extensively supported continuity of operations of the prehospital 911 emergency medical services system, acute care hospitals, and health care facilities.

Prior to the pandemic, the San Mateo County Healthcare Coalition (SMCHC) was created to prepare healthcare facilities for disaster. This group includes hospitals, skilled nursing facilities, congregate care facilities, clinics, dental facilities, and dialysis facilities. The MHOAC maintained consistent and active communication with healthcare facilities, 911 system first responders, ambulance transport services, County Public Safety Communications (PSC), EOC Command Staff, and the JIC. Timely binary information sharing at the leadership and operational levels across this spectrum led to forward-leaning surge preparedness and response.

The MHOAC, via the County Emergency Medical Services Agency, issued timely guidance and implemented pandemic medical response policies, procedures and protocols, provided necessary resources, and maintained 24/7 situational awareness which enabled continuity of emergency operations within the prehospital, acute care hospital, and PSC settings, as well as protected the health and safety of first responders.

The MHOAC actively and regularly collected facility specific data and developed Healthcare Facility Dashboards, allowing for real-time monitoring of healthcare facility outbreaks, bed availability, and census throughout the duration of the pandemic. ReddiNet was effectively leveraged as a communications platform for healthcare facilities to provide status updates and request resources, as well as to track resources provided. The MHOAC successfully coordinated and directed healthcare facility level loading to prevent and mitigate overload situations and preserve access for patients to all levels of medical care, including emergency and specialty trauma, stroke, cardiac, and pediatric services.

Working with the Health Plan of San Mateo, the MHOAC and Health DOC leveraged existing partnerships within the SMCHC and created Centers of COVID Excellence. These Centers were skilled nursing facilities that with support of the MHOAC, increased their capacity to care for COVID-19 patients, freeing hospital beds for acute patients.

The Medical Health Branch and MHOAC effectively supported the prehospital system, hospitals, and healthcare facilities in preparing for and responding to surges. In doing so, the MHOAC accessed and coordinated the allocation of scarce resources within the local, regional, and state-level medical health disaster response system.

STRENGTH 5: The Medical Health Branch and MHOAC's proactive and progressive approach assured adequate healthcare capacity within the County while simultaneously positioning the County to serve as a resource to the region and state.

Leveraging existing relationships with local healthcare facilities as well as the regional and state level medical health mutual aid and disaster response system, consistent with EOC direction, the MHOAC was able to effectively create and resource additional COVID-specific medical care capacity in a timely manner. The MHOAC coordinated access to this capacity and oversaw the safe delivery of clinical care in non-traditional settings.

Although SMC did not volunteer, they did support statewide efforts including providing supplemental medical capacity through coordination with local hospitals to assure access to a higher level of care for passengers housed at the Federal Alternative Care Site which received patients from the Grand Princess cruise early in the pandemic and acceptance of the majority of ill inmates from the state's mission at San Quentin with care delivered by Seton Medical Center. Other significant examples include clinical operations of the County's Alternative Care Site in Burlingame, the establishment of the Federal Medical Station (FMS) at the San Mateo County Event Center, and

the creation and operation of up to twenty (20) supplemental intensive care beds at Sequoia Hospital. The Medical Health Branch and MHOAC successfully facilitated the receipt, care, and repatriation of COVID patients from locations as distant as Imperial County.

Areas for Improvement

IMPROVEMENT 1: Medical and health operations faced supply chain challenges while implementing health equity strategies to support at-risk populations.

Interviewees and survey respondents demonstrated significant concern about the reality of health equity within SMC's COVID-19 response. Interviewees reflected that the medical system on which personnel and leadership relied for health resources "abdicated their responsibility"[65] despite expectations in previous plans that areas of private and public sectors would actively and willingly engage in infectious disease response. Technology was another barrier to health equity. Personnel reflected that vaccine sites were "biased toward those with an Internet connection" based on how information on vaccine sites was distributed to the community.[66] A lack of structure for outreach in non-English speaking communities reduced the capacity for SMC's COVID-19 response to reach communities who may have less ability to engage with County health resources and public messaging.

Leadership broadly expressed intentions toward racial and social equity in decision-making. These good intentions highlight issues that impact true equity within medical and health operations statewide. SMC lacked a Multiagency Coordination (MAC) Group that could explore tactics for mitigating health inequities. There were difficulties implementing health equity in many facets of the response, including large-scale testing and vaccinations.

There were limited allocations of testing and vaccine supplies allocated from the federal and state government. Initially, the state only allotted one testing site to the County until more providers began to jump into the response. Vaccine was also limited, and the federal and state government was distributing directly to hospitals, leaving the county with a very limited vaccine until supplies opened up. This resulted in challenges as the County took on a disproportionate share of the testing and vaccination due to the logistical demand on private entities.

IMPROVEMENT 2: The Health DOC did not consistently implement ICS in their organization and operations, which diminished their ability to coordinate with other aspects of the COVID-19 response.

ICS provides a strong foundation for a comprehensive and coordinated response to a crisis. It consists of a standardized management structure that defines the chain of command, position titles, terminology, and staff sections. The Health DOC did not consistently implement ICS in their coordination of medical and health operations.[67] This was met with considerable frustration by personnel within the Health DOC and the EOC, in addition to causing structural inefficiencies.[68] [69] These inefficiencies include issues with reimbursement, a lack of feeling among personnel that Health's expertise was needed or utilized, difficulties in relaying and exchanging information, and problems in coordinating resources.[70] [71]

There was a lack of clarity in decision-making due to a lack of consistent ICS implementation. Members of the Health DOC expressed frustration that there were simultaneous expectations for COVID-19 to be a "health

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65 Stakeholder Interview – Health DOC
66 Stakeholder Interview – Health DOC
67 Stakeholder interview – Health DOC
68 Stakeholder interview – Health DOC
69 Online Survey Data
70 Stakeholder interview – Operations
71 Online Survey Data

problem" and a perceived lack of importance in the Health DOC's input.[72] The Health DOC experienced structural issues throughout the response in which necessary resources and scope were abstruse. This difficulty in comprehending other organizational capacities often frustrated the Health DOC, as they believed concerns were not met.

Health personnel expressed concerns that ICS was not effective for their operations. ICS was viewed as a structure for "begin, end, debrief, and move on" that was not appropriate for the gaps experienced in the COVID-19 response.[73] Instead of using ICS, the Health DOC relied on existing relationships with leadership at the EOC to facilitate medical and health operations. This reflects the strength and importance of relationships as an organizational tool within SMC. Personnel from the Health DOC reflected on a "fundamental misunderstanding of ICS", but the relationships with other organizations established before COVID-19 aided the coordination of activities.[74]

IMPROVEMENT 3: There were issues with health metrics and data interpretation that introduced uncertainties when operationalizing health data.

The Health DOC utilized real-time data in disease surveillance and epidemiology. However, concerns remained about the quality of data used for guiding decision-making. The Health DOC expressed a need for capturing metrics not seen as a direct correlate to COVID-19 and infectious disease, including maternal-child health outcomes and behavioral health.[75] These metrics may demonstrate the success of reaching historically at-risk populations or increases in stress within the population.

Medical and health operations reveal data literacy needs, either through training or when sourcing staff. Health DOC personnel expressed concerns that "most people don't understand [health] data", including the failures and weaknesses of that data.[76] This mirrored concerns about public health messaging, in which uncertainties about COVID-19 were not adequately expressed to the community. Data is complicated and nuanced, and the data that fed into metrics used to quantify COVID-19's effects on the community changed over time. This made many aspects of COVID-19 "tricky to understand" even when examining trends.[77]

Further ambiguities in data were identified in the relationships between state agency data systems and the Health DOC system. Data were differently defined or collected under different metrics that impacted the ability to conduct epidemiological analyses. Members of the Health DOC received "awkward estimates".[78] This reveals a larger issue within data implementation in which a need for consistency and collaboration may mitigate problems in translating the same metrics constructed from different methodologies.

Recommendations

Recommendation 1: Develop and implement required ICS training among staff throughout SMC.

Recommendation 2: Implement ICS to support the early establishment of chain of command, unified command, and organizational structures within any SMC established EOC/DOC.

72 Stakeholder interview – Health DOC
73 Stakeholder interview – Health DOC
74 Stakeholder interview – Health DOC
75 Stakeholder interview – Health DOC
76 Stakeholder interview – Health DOC
77 Stakeholder interview – Health DOC
78 Stakeholder interview – Health DOC

Recommendation 3: Identify robust health metrics that qualify and build upon existing epidemiological datasets to provide a holistic outlook on the effects of an infectious disease outbreak. Potential metrics may include unemployment, homelessness, chronic disease morbidities, and behavioral health outcomes, in addition to non-reporting statistics to identify gaps.

Recommendation 4: Provide resources, facilitate training, or source personnel with data communication skills to reduce the gap between data interpretation and raw data.

Recommendation 5: Incorporate health equity into the decision-making process and EOC structure and implement systematic health equity training in preparation for future crises.

Recommendation 6: Implement a MAC Group responsible for managing scarce resources into the All-Hazard EOP.

Vaccine Management & Distribution

Summary

Vaccine management and distribution in SMC was primarily operated through mass vaccination events and clinics. Recently, "pop-ups" have also been utilized to target smaller communities and enclaves. The mass vaccination events were very highly received by both the public and response personnel. Vaccine resources were distributed to Federally Qualified Health Centers (FQHCs) and safety net hospitals prior to the general community. Vaccination events also boosted morale among personnel, especially after the taxing and overwhelming first year of COVID-19 response. The vaccine program gave personnel a tangible product that they could see as progress toward assuaging the effects of the COVID-19 Pandemic.

Concerns within medical and health operations extended to vaccines. Despite the early focus on supporting at-risk communities, health equity was not consistent throughout vaccine distribution. Issues with inconsistent staffing also impacted vaccine distribution. This was especially apparent at vaccine clinics, in which volunteers could not be a reliable source of staff to support the response.

Strengths

STRENGTH 1: Mass vaccination events and clinics were efficacious in delivering vaccines to SMC residents.

Interviewees and survey respondents had high praise for SMC's mass vaccination events. The mass vaccination events held at the SMC Event Center significantly supported the early dissemination of vaccines throughout the County. The public's perception of that event likely bolstered public acceptance of the vaccine – in the words of one respondent, "[I] can't tell you how many good comments I heard about these events." Additionally, FQHCs and safety net hospitals received vaccines prior to distribution to the general community – which ameliorated some pressure on healthcare systems.

The mass vaccination events also increased morale among leadership and personnel at the EOC and the Health DOC. One respondent stated that the efficiency of the mass vaccination events "instilled a sense of confidence in the County's response." Vaccine clinics were called a "huge success," despite some locations having long lines in early phases of mass vaccination. Mass vaccination's ability to deliver "tons" of vaccines per week significantly contributed to a decrease in COVID-19 infections and the severity of those infections within the County. The EOC's ability to mobilize large-scale resources and non-health resources also contributed to the success of the vaccine clinics and mass vaccination events. Examples mentioned by survey respondents included traffic management, portable toilets, contracted pharmacists and nursing staff, and supplies that the Health DOC did not have access to operationalize.

STRENGTH 2: There existed strong inter-departmental support in vaccine administration.

Multiple components of the EOC and departments within SMC collaborated to support mass vaccination procedures. Vaccine clinics, mobile locations, and deployed units were primarily managed through the EOC with collaboration from the Health DOC. The Medical Health Branch and MHOAC provided extensive resources and support to aid and accelerate mass vaccination efforts. The MHOAC, via the County EMS Agenc,y was the first in the state to train Paramedics to deliver COVID vaccines and amongst the earliest to coordinate and successfully attain widespread vaccination of first responders, including prehospital and law enforcement personnel. The MHOAC and EMS Agency were also among the earliest to train Emergency Medical Technicians (EMTs) to deliver

COVID vaccines and the County was the first in the state to utilize Paramedics in pediatric COVID vaccination. The Medical Health Branch and MHOAC provided extensive support to mass vaccination efforts, particularly early in the pandemic, including the use of 911 system EMTs and Paramedics as vaccinators, as well as the provision of on-site clinical oversight and coordination, significantly contributing to the County's leadership within the state and reduction of burden on hospitals via the attainment of high local vaccination rates. Forward planning by the Medical Health Branch and MHOAC enabled the successful early purchase of equipment including deep cold chain storage and transport capability essential to mass vaccination. The Medical Health Branch and MHOAC also extensively supported vaccine management and quality assurance of clinical operations at the County's mass vaccination clinics.

Despite unpredictability of the COVID-19 response, strong collaboration between different sections greatly supported the efficacy of vaccine management. Given the immense workload in addition to vaccine management, the EOC and DOC were assisted by Probation, Building & Planning, County Counsel, and ISD. The Sheriff's Sergeant oversaw mass vaccination field operations as Incident Commander throughout the entirety of the activation.

Areas for Improvement

Improvement 1: Issues with inconsistent staffing caused inefficiencies in vaccine administration.

While the mass vaccination events were extremely successful in their implementation, staffing issues were identified that caused issues with administration and organization. An interviewee reflected that at the beginning of the COVID-19 pandemic, it was "expected" that healthcare workers and retired physicians would volunteer their time or be onboarded to support the initial response. This did not occur, especially given that many healthcare personnel were afraid of contracting COVID-19.

Additionally, volunteers were identified as an unreliable source of staff for vaccine events and clinics. Volunteers did not feel beholden to the larger mission, and a plurality of volunteers engaged in the events only to receive their own vaccination rather than support other events. A survey respondent reflected that "most" volunteers supported events and clinics "to get vaccinated and then stopped" and that "many only wanted to volunteer once". While volunteers may supplement existing staffing capacities, it was identified that volunteers were considered a primary source of staffing. Volunteer staffing led to challenges such as inconsistency with staffing, among an already overburdened system.

Recommendations

Recommendation 1: Develop a deeper pool of clinical staff during emergencies – through master service agreements with vendors which can be leveraged quickly in an emergency.

Recommendation 2: Support the Health Department in mass vaccination training and exercise plan development and participate in mass vaccination exercises as they become available.

Recommendation 3: Advocate for the identification of equity neighborhoods through the Health Department for planning and deployment in future emergency responses.

Testing Operations

Summary

As healthcare systems around the country were challenged to provide COVID-19 testing due to a lack of testing supplies and available staffing, SMC ramped up their response operations to include Mass Testing in their community. In April 2020, SMC, took over the oversight of the state testing operations supported by Verily,[79] to streamline the logistical challenges at the San Mateo County Event Center. The San Mateo Event Center operated as a drive-thru testing site to provide residents with access to free COVID-19 testing. Testing operations later expanded to additional locations to provide access for more residents in locations such as South City, San Bruno, Daly City, and East Palo Alto to broaden the geographical region for testing capacity. These sites were selected due to outbreak considerations and to lower the infection rate in identified equity neighborhoods.

> "Testing is key to understanding the spread of the disease and to further opening our economy. We want to make sure that there are no barriers, including geography, that might prevent someone from seeking a test."
>
> - County Executive

The EOC recruited staffing support to oversee operations at the community-based site from SMC's pool of DSWs, which provided an Incident Commander for the ICS structure to manage the activities of the testing location. Establishing an ICS structure for the testing site helped to strengthen the overall command and control of the SMC pandemic response by streamlining processes, enhancing safety and communications, and mitigating risk. Testing sites struggled with a lack of trained staff and identifying available human resources to support and maintain operations. Additionally, unlike some jurisdictions, SMC faced additional challenges due to impacts from wildfires and hazardous air quality which forced closures and shortened service hours. Even with these impending hazards and threats to testing operations SMC continued to persevere. The drive-thru testing site proved successful developing contingency plans and seeking staffing resources to support 20 lanes for specimen collection, allowing up to 3,500 tests to be conducted in a single day.

Strengths

STRENGTH 1: The San Mateo Event Center mass testing site served as an example of Public-Private Partnership in the Bay Area.

The partnership between SMC and Verily was an early model for the success of a drive-thru testing site and strategic partnership in the Bay Area. Verily began as a state vendor to support testing operations early in the pandemic. Verily supported the testing operations but with challenges in their logistical approach. SMC saw the need for additional logistics support and stepped up to support the mission. This partnership allowed the San Mateo Event Center to be stood up early in the response and rapidly address community needs for testing. Working alongside Verily, SMC was able to refine processes to enhance service delivery and maintain the customer, human-centered focus. As the throughput increased, the San Mateo Event Center was used as a prototype by other neighboring jurisdictions and partner organizations as an example of an efficient drive-thru testing site. The site ran daily for specimen collection with the exception of Sundays and closures due to inclement

79 Verily, a state vendor and sister company of Google specializing in health technology.

weather and wildfire impact. The specimens were sent directly to Verily's laboratory to conduct the COVID-19 testing which expedited the process and for SMC provided a new capacity expanding their current testing capability. Together both Verily and SMC were able to expand the testing footprint to include satellite locations strategically located throughout the County. This increased the ability for SMC to address equity concerns and working with Verily also increased access to testing for residents in the County.

The partnership with Verily also allowed SMC to obtain testing supplies through the supply chain when the rest of the state and other local health jurisdictions experienced difficult challenges in procuring assets for testing, including reported supply shortages. Since Verily conducted the testing in their labs, this resulted in a faster turnaround on test results, while other counties experienced longer wait times through state testing facilities. While SMC continued to bring pandemic expertise and management of the overall incident, Verily complimented this with a scheduling platform that allowed for appointment setting for the drive-thru clinics, which expedited the process, although appointments were not required.

The shared vision and complementary mission of the two entities led to strong collaboration that strengthened the ability of SMC to deliver critical services to the community during the pandemic.

STRENGTH 2: ICS was established early on in testing operations, allowing for a consistent structure that supported accountability, safety, communication and led to rapid process improvements to be implemented.

SMC responders initially followed their internal organizational structure, which left confusion about who was in charge and to whom to report for the testing site. However, after SMC engaged the Sheriff's Department for DSW support in the Incident Commander role, this strong application of ICS allowed for a solid structure to be established for the testing site and complement the overall pandemic response structure. As Verily transitioned the operations over to a fully County-led operation, the established ICS structure allowed staff to transition in and out of roles for long-term continuity and operations at testing sites in alignment with the command-and-control structure of ICS. The ease of communication from the testing site to the EOC was one particular success of applying the ICS structure. Communication was able to travel between the testing site(s) and EOC for resource requests, reporting, and modifications to operations. This was especially important with the threat of wildfires and hazardous air conditions to ensure sites received the latest information and changing weather conditions to ensure the safety of the community and responders supporting testing sites.

Areas for Improvement

Improvement 1: There was a lack of contingency planning for staffing and inclement weather at the testing sites.

Although the testing operations were successful, an opportunity for additional growth includes developing contingency plans for common hazards and threats such as inclement weather and the impacts of wildfire. Due to the lack of contingency plans in place, this resulted in personnel and administrative issues that risked the success of the overall testing operations. For example, there was only one Incident Commander assigned to testing operations which did not allow for an individual to take uninterrupted paid time off or clearly define a succession plan for continuity. The lack of depth in staffing and human resources created challenges for responders throughout the County supporting various operations of the incident.

Another contingency plan that was not built into testing operations was the ability to operate during inclement weather and hazardous conditions. The drive-thru testing site had to close operations due to winter weather and poor air quality from wildfires impacting the region. These instances required a list of additional activities for each

testing site and coordination with the EOC such as rapid communications to the community of closures or modified openings, follow-ups on cancelled appointments, signage to be posted at the testing sites, and staff to be notified of closures. There was the potential for both of these instances to significantly interfere with the EOC's testing mission. Which, without proper pre-planning would likely pull staff from the pandemic response to address the second incident. A predefined planning discussion engaging Command Staff, key Operations staff, testing partners, and other key decision makers could be of value to establish a strategy such as moving testing operations to an indoor facility. However, for testing operations no plans were in place, resulting in site closures delaying critical testing operations.

Recommendations

Recommendation 1: Establish a formal agreement with Verily to provide testing services and operation support for testing sites for future public health emergencies.

- When establishing an agreement with Verily, take the opportunity to talk through any improvements or corrective actions that can be formalized within the contract language.
- Explore other all-hazard incidents (e.g., anthrax, radiological incidents) that the partnership could be beneficial to rapidly serve the community during a catastrophic event.

Recommendation 2: Develop a deeper pool of ICS-trained personnel, which can be supported by volunteers in addition to public health staff who would be assigned roles to consistently staff testing sites. This may include incorporating non-volunteer staffing from across departments within the jurisdictions.

Recommendation 3: Establish a mass testing training and exercise plan to further develop capability within the jurisdiction.

- Conduct a mass testing training exercise using a progressive exercise approach to regularly test and validate countermeasure plans with partners.

Recommendation 4: Develop a staffing and inclement weather contingency plan for testing operations that can quickly adapt to a future response based on all-hazard threats/hazards identified in the jurisdictional Threat and Hazard Identification and Risk Assessment (THIRA).

- Refine the current contingency plan for testing operations for wildfires and hazardous air quality adding any improvement planning actions or procedures to the plan.

Resource Management

Summary

It is widely understood that resource availability was highly impacted during the COVID-19 pandemic. However, despite these shortages, SMC was able to procure the necessary resources to support internal response operations as well as navigate the heavily impacted global supply chain to order mass amounts of materials, such as PPE, for the community and partner entities. This was a major success of the response despite the County struggling with process establishment, workflows, and coordination within resource procurement, receipt, inventory, distribution, documentation, and demobilization. In an attempt to curtail the demands of an extended response, the EOC contracted out with non-profits and vendors to alleviate some of the demands. While SMC was able to build sufficient processes real-time as the County responded, more comprehensive prior planning would have made the resource management process more efficient and would have aided coordination between the EOC and County departments.

Figure 1- NIMS Resource Management Process. Source: NIMS System Guidelines for Resource Management Preparedness

The decentralized structure of the entire resource management process caused immense challenges for resource tracking and documentation, ultimately impacting FEMA reimbursement as well as taking time away from the emergency response as individuals attempted to track down substantiation. No NIMSncompliant resource management process was in place or was established, posing challenges for SMC as the County attempted to manage the vast number of resources that were procured and distributed through the COVID-19 pandemic. Further, a lack of compliance with ICS structure led to convoluted chains of command whose consequences were exacerbated by a lack of a formal Policy Group. Resource requests followed inconsistent pathways for approval which led to the Finance and Administration Section making command and operational decisions. The coordination regarding medical and health resources could have also been improved, as resource ordering and demobilization expectations were not aligned across the EOC and Health DOC.

Despite these challenges, however, the County worked across partner agencies, governmental, private, and non-profit, to serve the most adversely impacted portions of the population, underscoring the County’s commitment to equity. Overall, resource management was a challenge for SMC during the COVID-19 response, but the County overcame many of these challenges and many lessons which will improve resource management for future emergency responses.

Strengths

STRENGTH 1: Despite extremely scarce resources, adequate resources were procured to support internal response operations during the pandemic.

The COVID-19 environment posed many challenges for resource procurement for internal emergency operations. Globally, supply chains were strained, but locally, the process for resource procurement when a jurisdiction is overwhelmed (i.e., mutual aid) was now obsolete as well, as every jurisdiction was impacted and competing for the same resource pool. This, paired with civil unrest and wildfires, made for an environment where procuring emergency goods was extremely difficult. During the data collection process, however, it was underscored that internal resources for staff were procured in a timely manner. For instance, 85% of respondents to the online survey either agreed or strongly agreed that "adequate technology, resources, and equipment relative to my response duties were readily made available throughout the COVID-19 and/or CZU Lightning Complex Wildfire response." SMC worked hard to acquire technological resources in a very stressed market which forced individuals into creating new pathways to obtain resources through procurement and ISD. [80]These pathways were useful throughout the response, as resource scarcity would be an enduring challenge. In addition, 77.8% of survey respondents agreed or strongly agreed that "PPE and other safety supplies relative to COVID-19 were readily available to response and recovery staff in SMC." This access to resources internally was critical to the success of the response, as without these materials, SMC staff would not have the technology and equipment necessary, or the PPE needed to support safe and effective operations. Given the scarcity of resources globally, as well as local resource scarcity due to concurrent and wide-spread disasters, this is an impressive feat by SMC and one that certainly contributed positively to the response.

STRENGTH 2: Many of the processes related to resource management were built as the pandemic progressed. While the response would have benefited from more advanced planning in this area, the development of a resource management process during the response underscored the adaptability of staff.

Sections involved in the resource management process, including Logistics, Finance, and Administration, developed processes throughout the response as opposed to following pre-existing plans, which were either nonexistent, insufficient, or not well known by the vast majority of County responders. This posed challenges for many individuals requesting resources through the EOC, as they had to learn new processes during an already stressful incident. However, the ability of staff to develop these processes "on-the-fly" exemplified flexibility and innovation and supported the resource management effort. There are multiple examples of this process creation, including a process for expediting the approval of vendor contracts and the development of workflows to ensure resource requests were following the appropriate path of review and approval. At first, it was very difficult to establish vendor contracts in a timely manner, for processes that may be appropriate during steady-state operations were still having to be followed under emergency circumstances, such as going to the Board for approval. Eventually, an emergency authorization was given to the Incident Commander to allow for approval of contracts under $500,000 dollars which expedited the contracting process. However, initial delays had a substantial impact on the Finance and Administrative Section and left them backlogged throughout the duration of the pandemic.[81]

In addition, a process for how an ICS form 213 RR should flow through the EOC was also developed and visual aids were created as a reminder to EOC staff. In the beginning, there was immense uncertainty of who was responsible

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80 Stakeholder Interview- Command
81 Stakeholder Interview – Logistics

for what and how a resource request or expense should come to be approved since no infrastructure was in place initially. However, as the response continued, a solid infrastructure was developed that can be strengthened and hopefully implemented for future disasters.[82] The lack of processes initially in place may be attributed to a general lack of understanding of what resource management-related sections do in an emergency response. It was noted in the data collection process that many stakeholders were initially trying to decipher what the Operations, Logistics, and Finance and Administration Sections do and how the responsibilities are distributed amongst the sections. There was also a widely acknowledged lack of past training and exercise on these specific EOC processes, which likely further led to confusion and a lack of overall planning, especially for an unprecedented event such as COVID-19. Some resource management stakeholders noted that they originally expected 20-30 213 RRs but ended up with 20 boxes of them.[83] The lack of planning for an incident of the scale and severity of that of COVID-19 paired with staff unfamiliarity with emergency response operations challenged resource management during the response. However, staff overcame these shortcomings and developed a system to most effectively manage resources given the circumstances.

STRENGTH 3: Different County departments and external partner agencies all worked together to ensure vulnerable populations, or those organizations supporting the County's most vulnerable individuals, received the necessary resources and services.

It was a collaborative effort by many County and external partners to help resources extend to the most vulnerable individuals and hard-to-reach populations. The County worked across departments, with private entities, and with community-based organizations (CBOs) to ensure these key communities received the necessary support. For instance, the SMC Event Center partnered with San Mateo 4Cs, or the Child Care Coordinating Council of San Mateo, after the state sent PPE to childcare facilities and there was no place to store or plan for the distribution of these resources. The Event Center coordinated the distribution and delivered PPE across the County.[84] This was just one example of how SMC and its partner entities exemplified flexibility and commitment during the incident. The Health Department, for instance, continued to strengthen a mutually beneficial relationship with the Red Cross. The Health Department was very involved in supporting the Red Cross in procuring the resources necessary to fulfill their mission, such as PPE, and the American Red Cross provided nurse volunteers to support response operations.[85] This relationship was described as strong, collaborative, and critical to the success of the response.

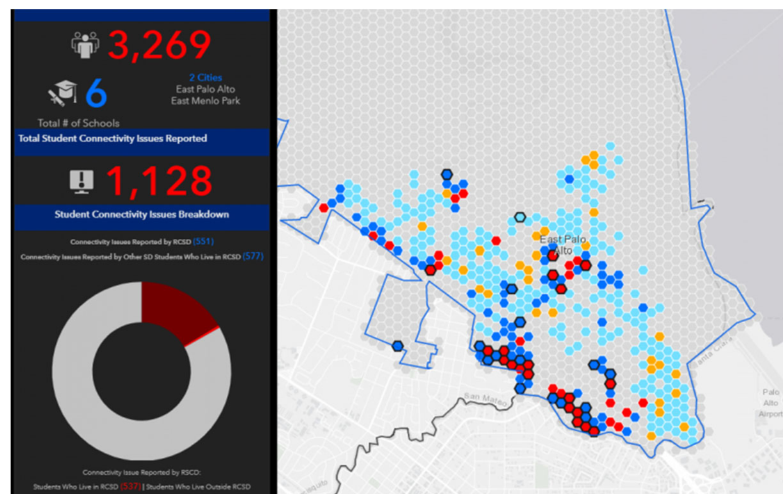

Figure 2- Internet access mapping in SMC that informed efforts of the Digital Inclusion effort. Source: SMC

To support the medical and health needs of populations highly and acutely vulnerable to COVID within the County, the MHOAC established the Care Site Outreach Support Team (CSOST) early in the pandemic in April 2020. The

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82 Stakeholder Interview – Operations
83 Stakeholder Interview – Logistics
84 Stakeholder Interview – External Agencies
85 Stakeholder Interview – External Agencies

CSOST focused on congregate care facilities such as long-term care facilities, shelters, and jails. This multi-agency initiative coordinated by the Medical Health Branch via the MHOAC included local fire and ambulance services, the EMS Agency which hired Emergency Medical Technicians (EMTs) to directly deliver services, County Health, and contracted staff. The CSOST conducted Needs Assessments via phone surveys and on-site assessments. The CSOST also provided training in infection prevention, isolation and quarantine procedures, and extensively deployed PPE resources. The CSOST provided immediate staffing support to facilities facing outbreak including a couple instances in which the team assumed responsibility for all clinical operations within long-term care and skilled nursing facilities. The CSOST provided COVID testing early in the pandemic when testing resources were exceedingly scarce, closely coordinating disease surveillance activities with County Health. CSOST conducted over 10,918 COVID tests, deployed 500,430 PPE items and provided technical guidance and support to over 403 congregate care sites. CSOST was one of the first initiatives of this scale in California created in response to COVID-19 to serve vulnerable populations. Through the CSOST, congregate care facilities were provided the resources to prevent outbreaks and with 24/7 direct connectivity to support and resources via the MHOAC program. The implementation of CSOST clearly prevented and mitigated severe and deadly outbreaks. Unlike other jurisdictions in the state and nationally, the County did not experience the need for complete evacuation nor failure of any sizable healthcare facility due to COVID. CSOST substantially reduced the burden of COVID upon the County's healthcare and eldercare system.

At the onset of COVID-19, the MHOAC coordinated with local hospitals to operationalize surge planning and response. To protect acute care hospital capacity and emergency response efforts, the County established an Alternate Care Site (ACS) to provide support to the existing healthcare infrastructure. The County ACS served highly vulnerable patients, including pediatrics and those with special needs. The Medical Health Branch via the MHOAC in coordination with the broader EOC structure secured and coordinated all resources required to operate the ACS. Clinical services coordinated and overseen by the MHOAC were provided by an amalgamation of medical personnel that were provided by the County itself, CalMAT, National Guard, CA National Guard, and County contracted staff. Patient criteria included patients positive or under investigation for COVID-19 who did not demonstrate a need for acute care and had no place to self-isolate and quarantine. Family members or co-habitants also could be housed at the ACS to prevent or mitigate exposure risk and illness.

A total of one hundred and ninety-seven patients were served at the County's ACS, with ages ranging from two through eighty-nine. Examples of special needs addressed at the ACS included neonate care, elderly, and dialysis patients. The ACS was in operation for 19 weeks from March 25, 2020, through August 6, 2020, and succeeded in its mission to lessen the burden of COVID-19 patients within the County Health System, thereby supporting hospitals in the delivery of the appropriate level of care to the most vulnerable patients.

The County established "Isolation Hotels" to serve vulnerable populations and individuals who were unable to safely self-isolate. This included people experiencing homelessness and those in overcrowded housing arrangements that could potentially infect others. In addition to providing housing, the County selected vaccine and testing sites that were located within concentrated MediCal neighborhoods including the San Mateo Event Center, East Palo Alto, North Fair Oaks, Daly City, Half Moon Bay, and Pescadero. These were established in unison with city partners and CBOs with an eye toward equity and access to all community members.

Moreover, the County took on a massive undertaking to address a critical inequity during the response, that of internet access. Internet access outside of a global pandemic is already an equity issue, with 25% of American adults not having broadband access at home, 20% of California students not having a computer or internet access at home, only 55% of low-income California households having access to high-speed internet at home, only 59% of those in rural California communities having high-speed internet at home, and 66% of California Latino and 67%

of California African Americans having high-speed internet at home.[86] SMC already provided access to free WIFI at over 100 public places, such as community centers, parks, and libraries, as part of the SMC Public WIFI Project that began in 2014. Noticing an even more critical need for access to the internet given the circumstances of the pandemic, the County worked to expand this service to those most in need as part of the Digital Inclusion initiative, which began in August of 2020.

Together, SMC, SMC Office of Education, four school districts, property owners, Columbia Property Trust/University Circle, and technology service providers worked together to implement this initiative, which was in part funded by the Coronavirus Aid, Relief, and Economic Security (CARES) Act grant monies. The first phase of the initiative funded broadband service subscriptions for 650 qualifying students. The County utilized map data to identify the areas within the County where many unconnected students were located and used this information to guide where the establishment of internet access would make the greatest positive impact. By November 20, 2020, internet access was established for over 1800 units of affordable, rent-controlled apartments with over 4,000 residents, including 233 k-12 students. The initiative was expanded and more than 70 additional public WIFI locations were established across the County.[87] Overall, the County had an equity-focused mindset in its resource and service procurement and provision.

Areas for Improvement

IMPROVEMENT 1: The decentralized structure of procurement of vendors across the County during COVID-19 operations caused long-term challenges for the Finance and Administration Section response.

The overall process utilized for procurement of vendors by the County posed challenges for the Finance and Administration Section. Different County departments established contracts with vendors, received services and resources, and submitted the invoice to the EOC, who was then responsible for reviewing the invoice and ensuring all required documentation was included for substantiation and payment. However, with so many different departments creating contracts and submitting invoices, the Finance and Administration Section had to ensure that each entity followed the correct process and obtained the correct documents. This decentralization also led to different contract terms being agreed upon by the vendor and some County departments. For example, some contracts were issued early in the pandemic under the terms that vendors would be paid within ten days when typically, the terms are 30 days. With the amount of paperwork required to substantiate invoices, the ten-day turnaround caused challenges for the County, as they frequently did not have the documentation necessary to issue payment and file for reimbursement from FEMA. Furthermore, a lack of situational awareness of what contracts had been issued by what departments developed within the EOC as a result of this decentralization. The EOC was essentially learning of other resource requests that had been submitted because of what Accounts Payable was processing. For instance, the Accounts Payable would request from the EOC the 213 RR for the resource or service, and the EOC would not have any available information regarding the contractor or service. Those within the EOC say this was due to the fact that

> "We owe this vendor thousands of dollars, we are overdue on the invoice, and we have no information."
> - Stakeholder Interview

86 Kathleen. Internet Inequality During COVID-19. San Mateo County Libraries. June 15, 2020. https://smcl.org/blogs/post/internet-inequality-during-covid-19/

87 County of San Mateo. San Mateo County's Public WIFI Expansion Brings Free Internet to East Palo Alto Communities. December 4, 2020. https://www.smcgov.org/press-release/san-mateo-county%E2%80%99s-public-wifi-expansion-brings-free-internet-east-palo-alto

the department/unit had never communicated with the EOC that a contract had been established. This communication struggle was due to the fact that many people working within the EOC did not have training on the ICS structure. Eventually, the process was centralized, and every time a 213 RR was needed, it went through a centralized system called SMOC Logs. However, challenges continued to exist as no system for documentation and resource coordination was ever truly implemented.[88]

IMPROVEMENT 2: Due to a lack of an overall structure for disaster distribution of resources, no process for submitting for FEMA reimbursement was in place throughout the response, creating numerous challenges.

No overarching Distribution Management Plan exists within SMC for the effective management of resources through procurement, storage, tracking, distribution, and demobilization. As a result, the resource management process was described as "obfuscated and difficult." The lack of a Countywide warehousing space and system posed many challenges. Initially, the County was utilizing a pre-established Health Department warehouse. However, as more and more resources were procured, there was not enough space to store materials such as PPE. As a result, the SMC Event Center became the main hub for resource storage and distribution which did improve efforts to some extent, but a lack of supporting infrastructure prevented comprehensive oversight of resource ordering, receipt, and distribution, limiting the success of the resource management process. This led to mistakes and difficulties. For example, late into the Pandemic response, millions of dollars of supplies were left outside and rained on before this was discovered.

In addition, on some occasions, the County had difficulties working with vendors upon confirming the accuracy of a resource delivery. For instance, the County may have ordered a certain amount of resources and a vendor would claim, upon delivery, that they provided the ordered amount. However, upon further inspection, the County found that they received fewer resources than ordered. The vendor sometimes claimed they provided the accurate amount, which led to disagreement with County staff, who would not issue payment until the discrepancy was reconciled. Moreover, many times, vendors were not aware of or did not care about the process that the County must follow to accurately document resource orders and deliveries. Typically, vendors submit their invoices and expect to be paid in 30 days, leading to frustration during the pandemic when the County needed vendors to meet other documentation requirements.[89] Having a more established Distribution Management Plan that was better socialized both across the County, and for certain aspects of the plan, with vendors, would have helped ensure that all agencies involved were aware of the process that must be followed as part of resource management. Other consequences resulted from the overall lack of a disaster distribution system in SMC, such as challenges with FEMA Reimbursement.

The process for submitting and receiving FEMA reimbursement has extremely tedious documentation requirements that can frequently change. The Finance and Administration Section had challenges meeting these requirements due to numerous reasons related to the overall distribution system, or lack thereof, implemented in the County. At first, for instance, how invoices were going to be paid was an afterthought within the EOC and there was a learning curve in determining what FEMA must receive to approve reimbursement. Once the specific requirements of FEMA reimbursement were better understood, the EOC did prioritize documentation, noting the importance of these processes in IAP objectives and implementing more stringent documentation requirements. With an already ineffective infrastructure for documentation of resources, other resource management challenges compounded the issue, something that could have been avoided if a process had been in place in advance of the response.[90] For example, the decentralization of the contracting process made collecting the

88 Stakeholder Interview – Finance and Administration
89 Stakeholder Interview – Finance and Administration
90 Stakeholder Interview – Operations

relevant documentation for FEMA reimbursement extremely difficult. Resources were being delivered to numerous different locations and the Finance and Administration Team did not have awareness over what entities, Human Services, the Event Center, or a myriad of other departments, were receiving resources and where. Multiple parties had to be followed up with to procure necessary documentation, which was often lost or did not exist. Not having a process in place initially further complicated an already disjointed resource documentation effort and led to an extremely large paper trail that the Finance and Administration Section had to investigate and reconcile.[91]

This decentralization further complicated the way resources were received and distributed. In order for an invoice to be paid, especially for goods such as PPE, there had to be confirmation that the good was received and in what amounts. On many occasions, the Finance and Administration Section would receive an invoice to pay for a good, but they would not receive the signed packing slip indicating that the item was actually received. Following up with individuals to confirm that there was receipt of the good was described as a "nightmare," as resources had been ordered through numerous outlets, such as FedEx, United Parcel Service, and Amazon, and there was no centralized documentation system. This led to the Finance and Administrative Section having to find workarounds to confirm receipt. At one point, the section was given access to the Amazon profile to download confirmation of delivery. Many times, however, this was not enough for FEMA reimbursement. Overall, procuring necessary documentation for FEMA reimbursement was an immense challenge for Finance and Administration which underscores the need to train more DSWs in Emergency Management.

IMPROVEMENT 3: The Finance and Administration Section's emphasis on documentation was not well received by some other sections and departments involved in operations, as they felt that it interfered with their ability to respond.

Many stakeholders provided feedback surrounding the approval process for resources. For instance, one survey respondent noted that "purchasing anything was exceedingly difficult" and that they sometimes felt "approvals or denials were solely on the basis of whether or not the County would be reimbursed rather than any analysis of need." Another survey respondent thought that there was such a strong emphasis on following procedure, that those attempting to receive approval began to "worry about doing the wrong thing and getting in trouble with the EOC."[92] As the response continued, the Finance and Administration Section began to make operational decisions regarding what resources were needed and should be prioritized for ordering and the EOC began to be described as "a finance clearing house."[93] A lack of compliance with NIMS and ICS structures exacerbated this issue, as the workflow for approval of resource orders became convoluted and inconsistent. For example, on some occasions, requests would go to the Finance and Administration Section before Incident Command. Alternatively, there were some occasions where stakeholders felt 213 RRs would be submitted and approved with no financial or operational backing. Overall, there was not a clear process established or adhered to for the approval and prioritization of resources which may have been attributed to a lack of a formal Policy Group. With a Policy Group integrated

> "You cannot meet the needs of your community if you are basing your needs off of what is reimbursable by the Feds."
>
> - Stakeholder Interview

91 Stakeholder Interview – Finance and Administration
92 Online Survey Data
93 Stakeholder Interview – Health DOC

within the EOC, EOC activity may have better aligned with NIMS and ICS structure and could have been driven more by the response's operational needs as opposed to FEMA reimbursement.[94]

Furthermore, stakeholders felt as if the EOC was continuously asking for documentation for resources which they felt became a disruption to the response. Trying to find packing slips and other documentation, stakeholders claimed, took up time that no one had the ability to spare. For the Health DOC, in particular, it was noted that they used ReddiNet extensively during the response and that documentation can be extracted from this system. However, the EOC did not have a system in place that was compatible with ReddiNet or did not use ReddiNet themselves to share the required information for resource documentation. As such, the additional time the Health Department had to take to provide the information to the EOC took time away from the actual response.[95] With no comprehensive, Countywide system for resource management, documentation of resources became a huge undertaking for all County departments involved in the COVID-19 response.

IMPROVEMENT 4: There was confusion surrounding the management of medical and health resources throughout the pandemic response that impacted coordination between the EOC and the Health DOC.

Some areas of disagreement arose during the COVID-19 response regarding medical and health resources, resulting in confusion and frustration. For example, the question of whether the County needed to support for-profit healthcare facilities arose, and at some point, the EOC assumed the mindset that the County should not be the entity with the primary obligation to support these private facilities. For instance, if a hospital required a surge tent that would be provided from the Medical and Health Operational Area Coordinator (MHOAC) resource center, the private health facility would need to pay for transportation and setup. Overall, the County did not want to provide the resources out of the general fund and insisted upon use of medical and health funding, believing that FEMA reimbursement would not be provided if resources were supplied to private entities.[96] This led the Health DOC to have to closely oversee resource requests coming into the MHOAC that needed to be filled by entities outside of the department, noting "coordinate resource requests with MHOAC – particularly those requiring support from/to entities outside of the County Health (i.e., providers, County EOC, region, and state)" in its IAPs.[97] Overall there was an EOC, Health DOC, and MHOAC logistics function, and coordination across these entities could have been improved.

Furthermore, there was confusion surrounding who owned the resources once they were ordered and demobilized. For example, on some occasions, the EOC attempted to collect resources from departments that expected to keep resources within their oversight or integrate them into steady-state operations. When the EOC approved and coordinated purchases, they thought DEM was the rightful owner, whereas other departments felt that the resource, in many cases, became the material of the department that ordered the resources, especially for specialized equipment. For instance, medical and health resources such as medication caches, cardiac defibrillators, and ultra-cold chain freezers were ordered by the Health DOC. At some point during the response, it was noted that the EOC attempted to request that these resources be returned to the County. However, many of these resources have very specific storage and inventory requirements, such as being under the oversight of a physician, being frequently rotated, and being specially stored, inventoried, and maintained. The County does not have this capability or expertise, and as such, the Health Department is hesitant to return the resources, knowing

94 Online Survey Data
95 Stakeholder Interview – Health DOC
96 Stakeholder Interview
97 Incident Action Plan

the ability to manage and maintain the resources is in place. For other resources, the Health Department expected to utilize the resources in steady-state operations after the pandemic, such as ultra-cold freezers within public health laboratories.[98] Ultimately, expectations regarding the final ownership and demobilization of resources were not aligned across response partners.

Figure 3- Ultra-cold freezer delivery during pandemic response. Source: SMC

Recommendations

Recommendation 1: Develop a resource catalogue of all internal and external resources ordered that includes the type and number of resources ordered during the pandemic. Use this as a reference for future public health and other emergencies to better predict resource needs.

- Establish a process for request, procurement, and contracting of equipment, services, and supplies by creating an annex in the Distribution Management Plan.

Recommendation 2: Develop a master list of vendors engaged throughout the pandemic response, noting their services/product type, contact information, and other useful data. Review and update this master list yearly or as necessary.

- Moving forward, consider evaluating and documenting vendor performance to guide vendor choices in future operations and denote challenges and issues that arose with specific vendors. Include this as an annex in the Distribution Management Plan.

Recommendation 3: Develop templates for vendor contracts for use in emergency responses which include all documentation and other requirements.

- Develop informational materials that simply and effectively explain the requirements of vendor operations during an emergency response and widely distribute with those working in resource management and to all vendors. Include this as an annex in the Distribution Management Plan.

Recommendation 4: Maintain relationships formed during COVID-19 with partners who assisted in the resource management process through frequent communications and engagement in trainings and exercises. For example, integrate the Event Center into emergency exercises. Look for opportunities to integrate partner capability into steady-state operations to solidify partnerships and strengthen relationships. For instance, examine how 4Cs can support normal public health programming.

98 Stakeholder Interview – Health DOC

Recommendation 5: Meet with the Health Department to better integrate the EOC's and Health DOC's resource management processes to align expectations and better coordinate in future emergencies. As part of these efforts:

- Discuss coordination with the MHOAC and the resource ordering of private and public healthcare entities.
- Discuss resource demobilization and ownership following an incident, including specific storage, inventory, and maintenance of medical and health resources. Determine who will be responsible for these efforts, and if the County is to be responsible, work with the Health Department to build necessary capability to store medical and health resources.
- Discuss integration of crisis management software to improve the ability of information sharing and documentation during an emergency response. Consider procuring an additional ReddiNet license to allow the EOC access to Health documentation or ensure the new crisis management software is compatible with ReddiNet.
- Use these conversations to inform the development of the Countywide Distribution Management Plan and ensure Health Department buy-in in this document.

Recommendation 6: Develop a Countywide, comprehensive Distribution Management Plan in compliance with FEMA's Distribution Management Plan Guide 2.0 and as required by the Emergency Management Performance Grant (EMPG). Ensure the plan includes the following:

- A centralized process for vendor contracting under an EOC activation where vendor contracts are centralized through the EOC.
- Centralized, pre-vetted points for receiving all resources, sufficient warehousing software for documentation and inventory, and a process for ensuring documentation is received by necessary sections within the EOC.
- A clear organizational chart and workflow for the resource management process compliant with ICS.
- The expectations of a Policy Group in resource management, including scarce resource allocation and making informed operational decisions regarding resource prioritization.
- Necessary changes to processes for working in a remote environment or for working without access to the internet or key technology.
- An emphasis on equity and reaching vulnerable populations through interagency coordination and partnership with trusted agents.
- A process for plan review and update.

Recommendation 7: Hold additional or incorporate into pre-planned exercises a greater emphasis on resource management and finance. Emphasize the documentation element of resource management to underscore the importance of this task moving forward and to establish documentation for financial reimbursement as a main priority in future incidents.

Continuity of Operations

Summary

One of the most frequently cited issues during the data collection for this report is a common one – staff burnout and workloads throughout the COVID-19 pandemic. While staff lauded the phenomenal job of those in critical response roles at County DOCs and the EOC, they identified burnout as one of the major risks to SMC's overall continuity of operations. In addition, other issues were identified specifically for staffing for Finance and Administrative positions, as well as some physical vulnerabilities of the EOC structure.

> "The length and the wide-reaching nature of the pandemic was challenging. You plan for disasters with an end date."
> -Stakeholder Interview

SMC staff have shown dedication to the mission and values of the agency's response to COVID-19. They have worked long hours for months to ensure their community stays healthy and safe throughout the pandemic. Staff had to juggle wildfires and civil unrest, while responding to COVID-19. As staff worked for months and now years on end, burnout has had a critical impact on continuity of operations. Many staff indicated they felt SMC should work on staffing plans to deepen the bench for emergency response staff. There is no question that staff showed dedication to the COVID-19 response.

Strengths

STRENGTH 1: SMC staff felt that their departments implemented successful safety protocols, including teleworking throughout the initial COVID-19 response and subsequent operations.

In the survey for this report, many respondents across the SMC departments mentioned that their department implemented teleworking protocols throughout the initial COVID-19 response and subsequent operations, which were implemented quickly and helped to prevent unnecessary spread of COVID in working environments. Survey respondents felt that overall, adequate technology and resources were provided for their response duties.

SMC encouraged staff to telework as often as possible and switched EOC and DOC operations into a virtual environment to support COVID-19 measures. However, EOC core staff were still working in the physical EOC. This message was delivered in the EOC IAP along with other health and safety tips. Screen breaks every 20 minutes, maintaining proper hydration, and practicing kindness and patience with others were supported in the messaging. SMC took precautionary measures to keep staff health and safety in the forefront of the response.

Areas for Improvement

IMPROVEMENT 1: Overwhelmingly, staff across County departments/DOCs and the EOC continue to report burnout and unsustainable workloads, which may impact long-term retention.

Staff throughout SMC Departments/DOCs and the EOC did a phenomenal job of stepping up when they were called to respond to the COVID-19 pandemic. These staff put their regular work on hold and often worked far more than 40 hours a week over an extended period of time. Working overtime was not necessarily always required, but many staff interviewed or surveyed for this report noted they felt compelled to work long hours or put off vacation time in order to keep up with the work or keep it off of other staff members. They noted that

frequently there was simply not enough depth in critical EOC/DOC positions or other critical roles at departments to provide adequate coverage during such a long-term event. In addition, these emergency response roles were often tackling complex, overlapping incidents on top of COVID-19, such as civil unrest, threats to County personnel, extreme weather, and the CZU Lightning Complex fire.

Survey respondents noted that "large amounts of resources" were consumed during changes in staffing practices. Burnout and overwork were consistently mentioned as negatively impacting organizational practices and workflows. Respondents did not distinguish between burnout occurring during or "post" COVID, simply that it was a general concern throughout the entirety of operations. First Responders, Health professionals, and EOC/DOC staff that were activated and unable to work from home or safety isolate were concerned about spreading COVID-19 to their families. EOC staff routinely shared stories about their inability to sleep at night causing disruption in their daily lives.

Staff retention is at high risk and may continue to suffer for SMC staff long-term. This problem is not unique to SMC, as it has affected public sector staff nationwide during the pandemic. However, it warrants significant attention as it will continue to impact the County's ability to deliver essential services and response needs to the community it serves. Potential future loss of critical positions for the County could be detrimental to ongoing response and recovery efforts and continuity of operations.

IMPROVEMENT 2: Staffing of the Finance and Administration Section positions throughout the duration of the pandemic response proved challenging and continues to be an issue during current-day operations.

As the pandemic has continued, SMC has faced challenges in hiring and retaining Finance and Administration Section staff, impacting the Section's overall ability to effectively complete its functions and impacting staff wellbeing. The number of Finance and Administration Section staff has increasingly declined throughout the response, leading SMC to take measures to bring on board supplemental employees. However, despite recruitment efforts and attempts to temporarily hire back retired County employees, there has been little success in ensuring sufficient support for Finance and Administration Section staff who continue to both respond to the pandemic in their emergency response roles and handle tasks from their steady-state positions. This has caused existing staff to regularly work long hours with little time off and an overall toll on staff wellbeing.

> "My weekends are gone. I could not enjoy vacation time that I had to take, its work all day and all night."
>
> - Stakeholder Interview

Due to a lack of staffing, the County was forced to frequently rotate individuals in and out of Finance and Administration Section positions. While different County departments were able to coordinate together, with staff from the Human Services Agency, Controller's Office, Emergency Management, and the Health Department willing to integrate into other departments' response efforts, this is not a sustainable staffing structure for the long-term response to the pandemic. However, staff have remained committed to their roles, the pandemic response, and the population of SMC.

IMPROVEMENT 3: From a security standpoint, the EOC may have some physical vulnerabilities that could be leveraged during a complex emergency.

As significant civil unrest events broke out across the country in response to the pandemic, SMC staff began to consider the possibility of violence against responding staff members, including those at the EOC. There were

threats to the facility, and physical vulnerabilities of the structure were identified, which could be further addressed.

Some staff noted being concerned about glass windows in the EOC, or the parking garage nearby which could be used by an active shooter. The criticality of the EOC warrants further examination of structural adjustments, modification, and further procedures that can be put into place to help secure the EOC and enhance safety for EOC staff.

Recommendations

Recommendation 1: Establish a protocol for activating DSWs to increase depth when managing an emergency.

Recommendation 2: For all responses, proactively discuss and implement a staffing structure where individuals are rotated out of response operations at regular, sustainable intervals appropriately supporting the incident and integrating continuity aspects to reduce burnout and allow staff to address steady-state responsibilities.

- Hold discussions with key senior leaders and relevant departments such as Human Resources to explore staffing models or all-hazard events based on specific threats.

Recommendation 3: Attempt to develop a cadre of staff for reach-back support at least three individuals deep per EOC position, especially for the Finance and Admin positions, and rotate these individuals into response operations. This may entail continued hiring and recruitment efforts.

Recommendation 4: Convene a team of subject matter experts to review the physical security of the EOC and identify possible vulnerabilities of the facility. Submit a final assessment report for review by senior leaders of county-wide departments to decide next steps for improvements.

LONG-TERM CONCERNS

The long-term concerns following COVID-19 are wide-ranging and impact every aspect of day-to-day life. Since January of 2020, SMC has been staffed in the longest-running emergency activation in history. At the time of the writing of this report, the EOC is still activated. The recovery process will be just as unprecedented and potentially as lengthy as the COVID-19 response was, however, the pandemic is still a part of everyday life. The resiliency of the County's staff has been continuously tested and the staff has continued to rise to the challenge. In every single interview, team members noted that the toughest challenge going forward would be battling fatigue and burnout. While SMC has implemented a number of mental health and wellness efforts, some of the staff do not believe that it is enough to combat the "burnout" that has led to the staff attrition which has occurred. The loss of staff only exacerbates the challenges of those who remain, and many believe the County is not doing enough to meet their growing needs. The County will need to assess a way to continue the emergency activation and recovery process while balancing the pressure put on staff, specifically staff that have been activated for nearly two years.

In addition to the length of the pandemic, one of the long-term concerns is predicting future needs and the ever-changing protocols that occur due to COVID-19's unpredictable nature. Since the pandemic's beginning, SMC staff has faced the challenges of rapidly evolving protocols based upon information continually being updated as the world learned more about COVID-19's severity, virality, and effects. The latest trend of falling cases followed by a new variant emerging (i.e., Omicron, Delta) has made predicting future needs quite difficult. The County will need to attempt to predict the needs to maintain the capacity for scale testing, vaccination, PPE distribution, and other response elements. These requirements will assist SMC in managing future changes and reducing staff burden when required.

At some point in the future, COVID-19 will transition from an ongoing pandemic and activated emergency to a part of everyday life and the County will need to begin the recovery process. A major component of the recovery process will be receiving reimbursements from FEMA for expenses and other disaster costs. It is highly likely that every government agency and CBO working with FEMA will be audited as FEMA has changed the qualifications of what is considered a disaster need for the COVID-19 pandemic. This may cause quite a few denials and appeals for SMC in addition to all other entities across the country, which will lead to an incredibly lengthy and cumbersome process. Employees of SMC noted that there would be difficulty tracking 213RRs, invoices, and packing slips because the process was conducted on paper and images were uploaded. The County will need to assess the most efficient way to organize this information and compile it to make access manageable. With pandemic response still ongoing, this means that the audit may not occur for a few years, so that does provide time for the County to create this database however, this presents another challenge. Staff who participated in a financial capacity or made purchases on behalf of SMC and sought reimbursement may no longer be employed within SMC when the audit process begins. This emphasizes how critical it is that this database possesses clarity and detail prior to an audit occurring.

FINAL THOUGHTS

The findings in this report are not unique to SMC alone, as the pandemic has affected government entities at the local, tribal, territorial, state, and federal levels in a similar manner. The County's emergency staff and first responders have demonstrated an immeasurable level of care and dedication in their efforts to overcome the challenges presented by the pandemic. The themes outlined in this report highlight opportunities for SMC to build upon and grow from and would not have been possible without the input of staff and stakeholders. These findings should be utilized to create new and innovative ways to invest in all-hazards and public health response in the County in the coming years.

The widely acknowledged "silver lining" to the COVID-19 pandemic is a renewed sense of attention to the risks of infectious disease emergencies and the importance of strong public health infrastructure and response capabilities. It is the responsibility of local, state, and federal government authorities to ensure that future investments in funding, staffing, resource allocation, and program development are informed by data, staff, and stakeholder input. This AAR represents the commitment of SMC to develop strategies that take a science-driven and people-centered approach to improving the health and safety of its community.

At the time of writing this report, COVID-19 response efforts are still ongoing for the County and state of California. SMC may use this report to provide a basis for a final COVID-19 AAR once the response is officially and completely demobilized to capture additional data and further inform long-term recovery and planning efforts.

APPENDICES

Appendix A: Survey Data Summary

As part of a multi-pronged data collection approach for the SMC COVID-19 AAR and IP, SMC in partnership with CONSTANT created and distributed a survey to SMC officials to collect feedback from Command and General Staff involved in response and recovery efforts. The survey received responses from 27 individuals.

The survey was distributed on December 16, 2021. The survey remained confidential throughout the response and analysis process. It involved a mix of open and closed questions concerning planning, training, intersectional issues between COVID-19 and the CZU Lightning Complex fires, and areas for improvement.

Closed questions were designed on a five-point Likert Scale in which respondents were asked their level of agreement with a statement. Answer options included “strongly agree”, “agree”, “neither agree nor disagree”, “disagree”, and “strongly disagree”. Respondents were allowed to skip questions.

The results of the survey are discussed below, with quantitative responses depicted through bar charts and qualitative information assessed through content analysis.

Question: What has been your primary role during COVID-19 and/or wildfire response and recovery efforts for your organization? (If multiple, please list the top 2 - 3 roles you have held).

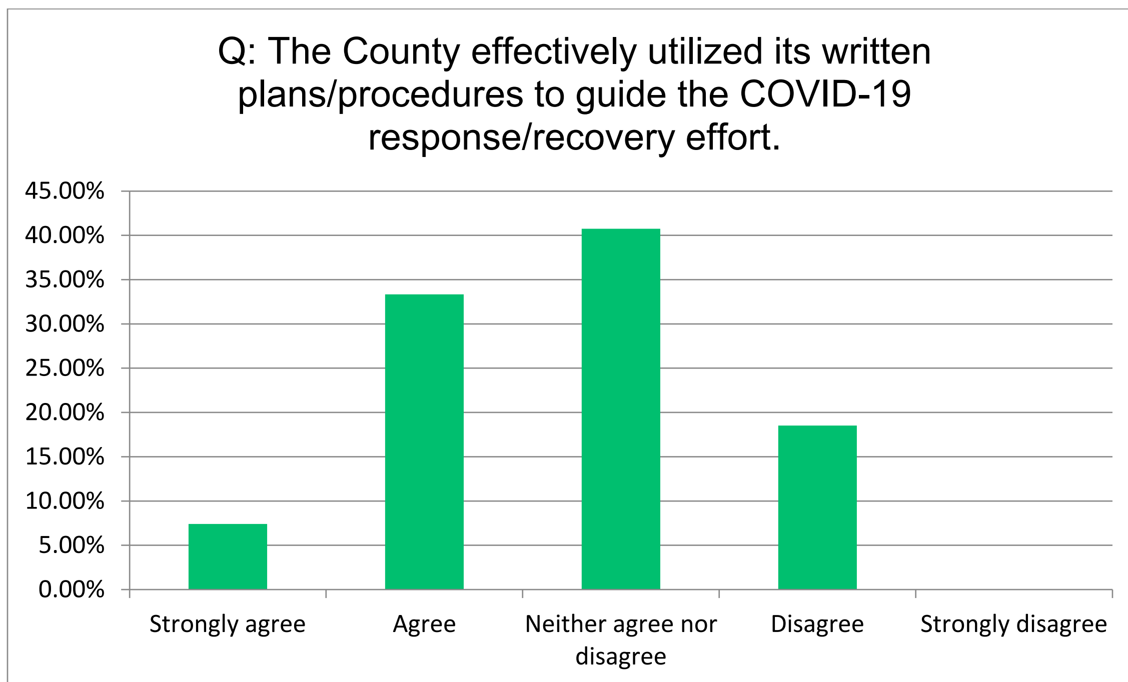
A variety of stakeholders within Command and General Staff responded to the survey, including:

- COVID-19 Incident Command
- CZU Lightning Complex Fire Deputy Incident Command
- Planning Chief and Personnel
- Logistics Chief and Personnel
- Operations Chief and Personnel
- Finance Personnel
- Medical and Health Response Coordination Personnel
- Public Information Officer
- COVID-19 Discharge Planning Manager
- Vaccine Operations Manager
- CZU Lightning Complex Duty Chief and Line Officer
- Mass Care & Shelter Personnel
- Elected Officials Liaison
- Human Resources Staffing
- Legal Advice Personnel
- Volunteer Coordinator

Question: The County effectively utilized its written plans/procedures to guide the COVID-19 response/recovery effort.

The largest plurality of respondents neither agreed nor disagreed with this statement (11 respondents, 40.7 percent). The second-largest plurality agreed that SMC effectively utilized already existing plans and procedures (9 respondents, 33.3 percent). A smaller number of respondents disagreed (5 respondents, 18.5 percent) and strongly agreed (2 respondents, 7.4 percent). As with Question #2, zero respondents strongly disagreed.

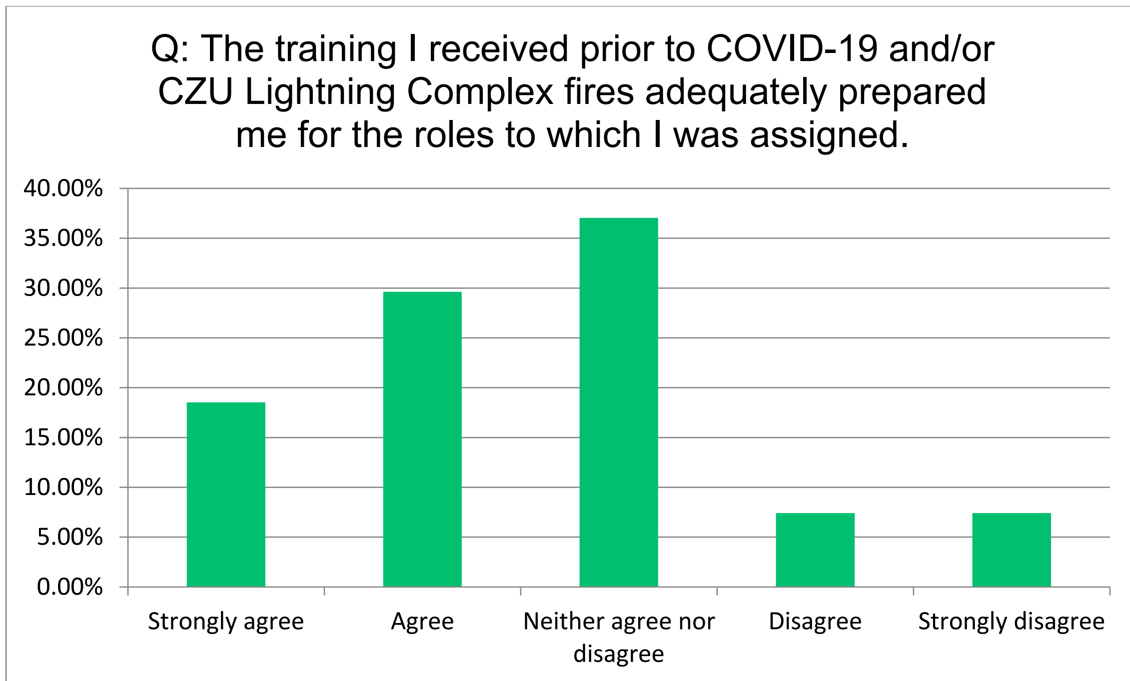
All 27 respondents answered this question.



Question: The training I received prior to COVID-19 and/or CZU Lightning Complex fires adequately prepared me for the roles to which I was assigned.

Respondents significantly agreed or strongly agreed with this statement (8 respondents, 29.6 percent; 5 respondents, 18.5 percent, respectively). A plurality of respondents neither agreed nor disagreed (10 respondents, 37.0 percent). Of the remaining four respondents, an equal number either disagreed or strongly disagreed, with two respondents (7.4 percent) within each category.

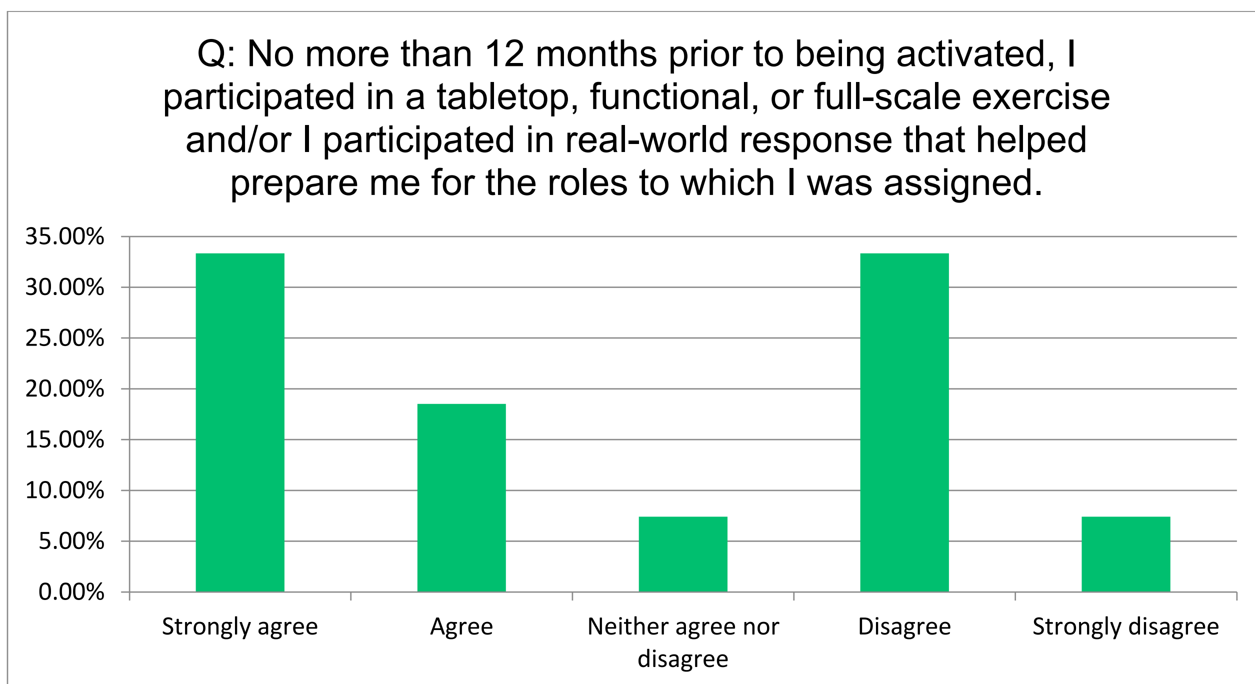
All 27 respondents answered this question.



Question: No more than 12 months prior to being activated, I participated in a tabletop, functional, or full-scale exercise and/or I participated in real-world response that helped prepare me for the roles to which I was assigned.

Responses to this statement reflected a bimodal distribution in which the vast majority of respondents either disagreed (9 respondents, 33.3 percent) or strongly agreed (9 respondents, 33.3 percent). Five respondents (18.5 percent) agreed. Of the remaining four respondents, an equal number either strongly disagreed or neither agreed nor disagreed, with two respondents (7.4 percent) within each category.

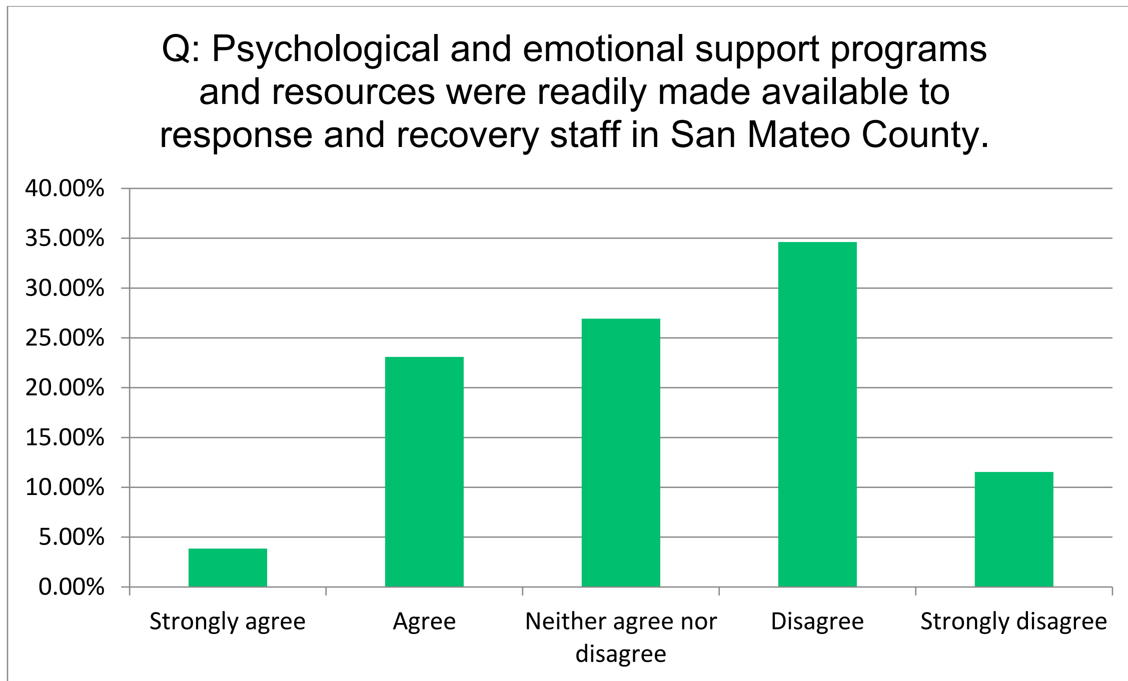
All 27 respondents answered this question.



Question: Psychological and emotional support programs and resources were readily made available to response and recovery staff in San Mateo County.

In contrast to previous questions, respondents broadly disagreed (9 respondents, 34.6 percent) or strongly disagreed (3 respondents, 11.5 percent) with this statement. A sizeable plurality neither agreed nor disagreed (7 respondents, 26.9 percent). Of the remaining respondents, only six (23.1 percent) agreed and one (3.9 percent) strongly agreed.

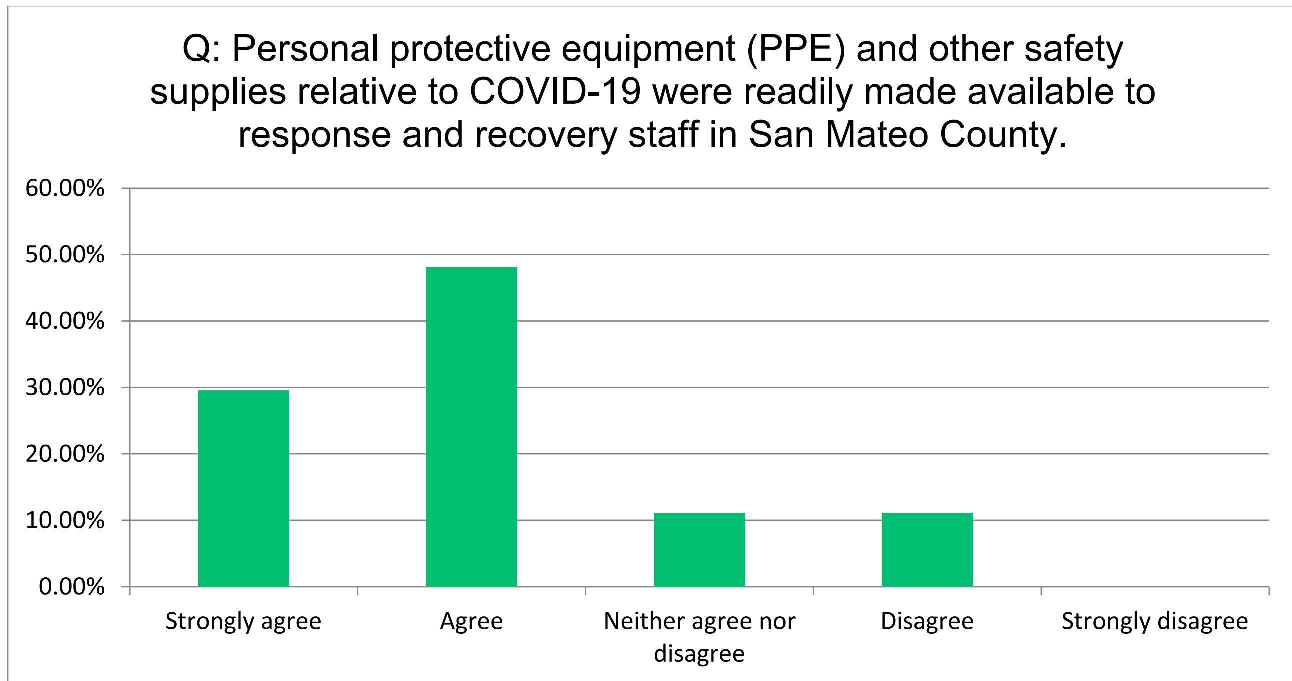
26 respondents answered this question; one skipped it.



Question: PPE and other safety supplies relative to COVID-19 were readily made available to response and recovery staff in San Mateo County.

The vast majority of respondents agreed (13 respondents, 48.2 percent) or strongly agreed (8 respondents, 29.6 percent) with this statement. Of the remaining six respondents, an equal number either disagreed or neither agreed nor disagreed, with three respondents (11.1 percent) in each category. Zero respondents strongly disagreed.

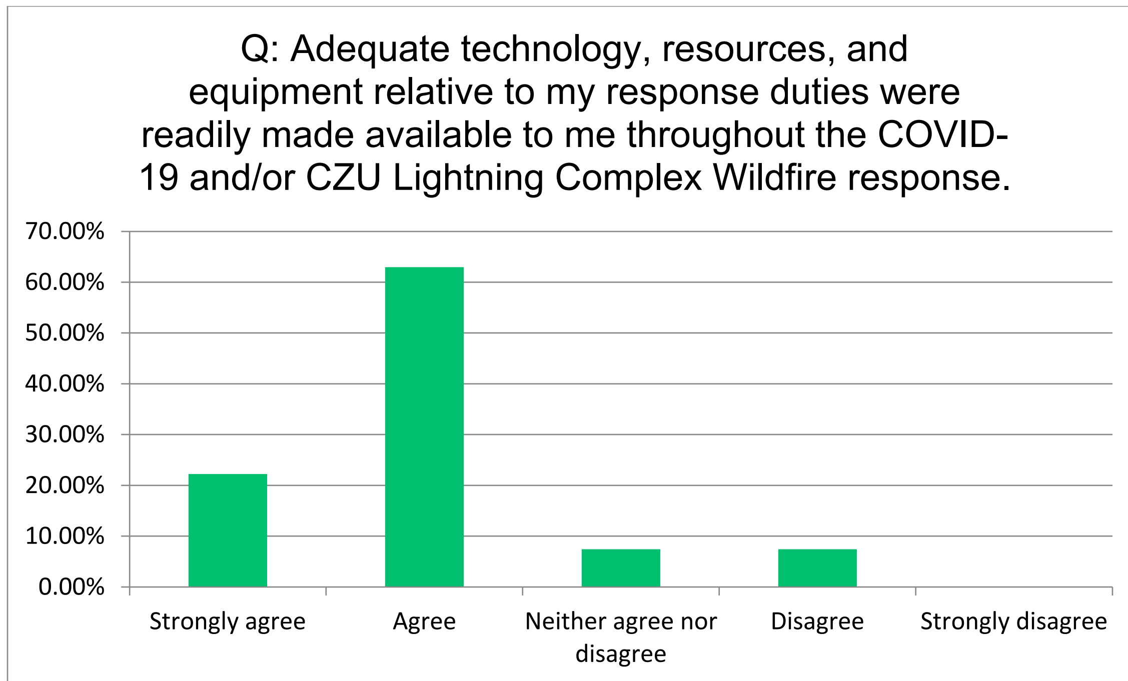
All 27 respondents answered this question.



Question: Adequate technology, resources, and equipment relative to my response duties were readily made available to me throughout the COVID-19 and/or CZU Lightning Complex Wildfire response.

An overwhelming majority of respondents agreed (17 respondents, 63.0 percent) or strongly agreed (6 respondents, 22.2 percent) with this statement. Of the remaining four respondents, an equal number either disagreed or neither agreed nor disagreed, with two respondents (7.4 percent) in each category. Zero respondents strongly disagreed.

All 27 respondents answered this question.



Question: How has COVID-19 affected your department/organization as a whole?

Many respondents mentioned that their department implemented teleworking protocols throughout the initial COVID-19 response and subsequent operations. Additionally, "large amounts of resources" were consumed during changes in staffing practices. Burnout and overwork were consistently mentioned as negatively impacting organizational practices and workflows. Respondents did not distinguish between burnout occurring during or "post" COVID, simply that it was a general concern throughout the entirety of operations. Others mentioned changes to daily practices to facilitate vaccine protocols and administration, especially members of departments not normally related to public health. However, a couple respondents also mentioned that they "seem to be returning to pre-pandemic workloads and practices".

25 respondents answered this question; two skipped it. Selected responses include the following:

> *"Consumed the overwhelming majority of resources including time, personnel and equipment near continuously for the past two years. […] The demands of responding to the COVID-19 disaster along with overlapping fires, PSPS and flooding related emergencies has clearly illuminated that ongoing dependence on state and federal grant funding mechanisms for necessary public health and medical disaster capabilities alone will be insufficient to attain and maintain strong all hazards preparedness and response capabilities."*

> *"The good: It has helped people to work cross-divisionally and build a sense comradery* (sic)*. The bad: People have been over-worked and divisions have not been able to work at their normal capacity because resources are going to the emergency response."*

> *"Every part of our department has been a part of the public health response and our leadership team has steered the departmental response through a DOC structure through which individuals have rotated for shifts. We have also had significantly more interaction with the public through all of the functions we carry out, including inquiries and challenges related to vaccination, testing, case and contact investigation, masking requirements, business compliance, Great Plates, resources needed to support safe adherence to public health guidance and the publicly facing dashboards designed to keep the public informed."*

Question: Did you observe or experience any areas for improvement that should be addressed through a corrective action plan? If so, please describe.

Respondents were varied in their identification of areas for improvement, with no consistent theme among the majority. Several respondents believed that the Department of Health "should have taken the lead on this COVID pandemic" through "additional and consistent training". One respondent remarked that "[DEM] was not prepared to run the incident in the EOC without assistance from other [SMC] departments". Still others remarked on having multiple roles or holding multiple positions during a response where it was "difficult or impossible […] to fulfill all [responsibilities]".

A plurality of respondents stated a need for revamping logistics. One negatively approved of how "EVERYTHING is handled by logistics" (all capitals included in original response). Another respondent reflected that "purchasing anything was exceedingly difficult", with the impression that "approv[als] or deni[als] [were] SOLELY on the basis of whether or not the County would be reimbursed rather than any analysis of the need" (all capitals included in original response). One respondent mused about whether the problem lied within the EOC itself due to "such a strong emphasis on following the procedure" that they "felt there was too much worry about doing the wrong thing and getting in trouble with the EOC". Another respondent corroborated this statement, requesting that future plans emphasizing integrating policy groups into the EOC in which "activity should be driven by operational needs with planning, logistics, and finance" serving as support roles.

Staffing issues were discussed by a smaller plurality. One respondent reflected that COVID-19 "complicated the deployment" of DSWs, and that many such personnel had "legitimate concerns about their health" due to the "unknowns" faced. As such, the respondent stated that San Mateo should "re-examine whether attempting to COMPEL people to help is even a good approach" (all capitals included in original response). Another stated issues with volunteers at testing sites and vaccine clinics, remarking that "most only did so to get vaccinated and then stopped".

25 respondents answered this question; two skipped it.

Question: Did you observe or experience any notable strengths that should be documented and built upon? If so, please describe.

A majority of respondents favorably commented on communication within and from the EOC, as well as collaboration between different departments. A "very strong core PIO team", "clear direction" from the EOC, and regular briefings through the EOC were all noted as significant contributors to the mission. One respondent stated that they had "been in several EOCs where the main issue was communication[,] but that was not the case here [...] communication between EOC/DOC/Field teams was very strong and organized". Daily meetings and briefings provide the respondents with a common operating picture and mission overviews.

A majority also provided highly favorable opinions of teamwork and employee engagement, even in the face of unknown circumstances and potential burnouts. Many respondents stated "teamwork", "direction", and "relationships" supported work "toward a common purpose" that was "incredibly collaborative". The leadership of the Incident Commander was also highlighted as a "guidepost [... with] strong, calm, and focused leadership" that "was not afraid to make decisions and could multi-task as new situations developed". Two respondents singled out volunteers as vital contributors to San Mateo's mass vaccination campaign.

22 respondents answered this question; five skipped it.

Question: Many successful response/recovery outcomes are attributed to the innovative strategies and tactics employed by response personnel. Did you observe any innovative strategies and tactics implemented during either the COVID-19 or CZU Lightning Complex fire response efforts?

Respondents identified a large variety of strategies and tactics as innovative among response personnel. These largely fit categories of technology, emergent leadership, and vaccination/testing services. Geographic Information Systems (GIS) services and electronic data collection facilitated both COVID-19 response efforts.

A plurality of respondents favorably commented on leadership providing tactics for emergent, future-focused operational efforts. One respondent described leadership's paradigm as "build the plane as we were flying it", which served as a "forward-leaning approach [that] made San Mateo County successful". Specific leadership strategies included:

- Establishment of Alternate Care Sites and Alternative Housing Sites
- Early vaccination of first responders
- Early procurement of cold chain equipment and transport refrigerators
- "Data-based decision-making" that addressed "vaccination gaps" in historically underserved communities
- Virtual town halls

Finally, vaccination and testing services were highlighted by the majority of respondents – one of which called them a "huge success". Several respondents stated that mass vaccination implementation was extremely successful, especially at the SMC Event Center. Novel sources of medical staffing supported early vaccination efforts, such as firefighters and paramedics. Two respondents mentioned that drive-through mass vaccination programs meaningfully contributed to "reach and speed" of vaccination. Another respondent corroborated the efficacy of drive-through vaccination clinics as "an excellent model" for future pandemic and infectious disease response plans.

22 respondents answered this question; five skipped it.

Question: What are your long-term concerns for the ongoing COVID-19 response?

Fatigue and vaccination concerns were cited by almost every respondent as being long-term issues that may negatively impact the future of the COVID-19 response. Several respondents specifically cited "burnout" as a salient issue in the past and present, with one respondent explicitly linking burnout with "staff attrition" among all levels of personnel and healthcare workers. Many respondents expressed fears of COVID-19 being "far from eradicated […] the response will continue for quite some time". One respondent requested that San Mateo "continue with Wellness (*sic*) efforts and improve our psychological services and benefits to our employees" to reduce the "psychological impact".

Three respondents expressed concerns that oscillations in COVID-19's intensity may negatively affect command structure. One stated that being "too quick to demob[ilize] and stand down [the] EOC and other ICS structures" created organizational inefficiencies that may last in the response. Another stated that the "unprecedented […] up/down intensity and duration" of COVID-19 has reduced the ability of staff to "ha[ve] a break or a chance to recover". Regarding goals and objectives, one respondent requested that goals and targets be "flexible and forward leaning", in which targets "tend to be date-based rather than situation based […] this naturally means that many target dates are missing/changed due to the evolving situation".

Three respondents mentioned social impacts outside the direct scope of recovery operations that may indirectly impact health and well-being among staff. One respondent mentioned "lingering or yet to materialize effects" of childhood trauma through both the stress of the pandemic and the "interruption of classroom learning and socialization". Others cited "public weariness" as the pandemic continues, as well as "exacerbated inequities in health risk" among historically underserved and underrepresented populations.

Two respondents mentioned extant problems with documentation as a looming concern in the recovery phase. One reflected upon a need for "an automated or electronic process to document each action", stating that:

"There will be a lot of difficulty tracking 213RRs, invoices, and packing slips because all of it was done on paper and uploaded as an image. […] My fear is that audits will come up and there will not be adequate documentation to justify expenses."

25 respondents answered this question; two skipped it.

Appendix B: Summary by Theme

Strengths and areas for improvement within each report theme that SMC exhibited during the response to COVID-19 are provided below. Further explanation of each finding and additional strengths and areas for improvement can be found in the Analysis of Findings section.

Table #3 Summary of Strengths and Areas for Improvement

Theme	Strengths	Area for Improvements
EOC Operations and Communications	STRENGTH 1: A focused and disciplined Incident Command successfully identified and executed major objectives throughout the COVID-19 Pandemic.	IMPROVEMENT 1: There is not a standardized process for notification of activation for the EOC and personnel to staff the EOC within SMC.
	STRENGTH 2: Assigning senior department administrators as EOC section leaders provided a firm foundation and existing knowledge base of County operations for the response.	IMPROVEMENT 2: Despite a high level of experience within the EOC, there was confusion and disconnect about roles and responsibilities between the EOC and the Health DOC.
	STRENGTH 3: SMC's Information System Department (ISD) supported the county's transition to a telework environment and helped support physical distancing measures within the EOC to protect the health and safety of responders.	IMPROVEMENT 3: Due to the fluidity of the unprecedented pandemic, the scaling of the response was difficult for the EOC to effectively demobilize in a timely manner.
		IMPROVEMENT 4: A lack of a standardized EOC staffing rotation system led to feelings of staff burnout which was further compounded by personnel still serving in their normal job capacities while staffing the pandemic response.
		IMPROVEMENT 5: Inconsistent expectations for DSWs experienced by both individuals and the EOC led to gaps in staffing plans that were intensified by a hiring freeze.
		IMPROVEMENT 6: The EOC required a robust emergency management software and customization that fit the requirements of SMC's infrastructure and the resource requirements of COVID-19.

Theme	Strengths	Area for Improvements
		IMPROVEMENT 7: Finance seemed as if it were an afterthought in operations. This oversight had consequences for a real-world response of this size, scale, and severity and posed future challenges for long-term recovery of SMC.
State, Local, and County Coordination and Communications	STRENGTH 1: The majority of state, local, and County actors have an understanding of the NIMS and the NRF in addition to prior training on the ICS and application during complex incidents such as past wildfires.	IMPROVEMENT 1: Information sharing between local, County, and state levels was inconsistent at times, limiting proactive planning and implementation of necessary mitigative actions including the ability to assure equitable access and the provision of safety net services for the community.
	STRENGTH 2: Forward planning for recovery by the CMO's office partnered with strong command presence from the EOC helped to clearly define SMC priorities and presented a path forward to reaching recovery goals. This aided communication and coordination within multiple levels of government.	IMPROVEMENT 2: Contact lists had to be built from scratch for the response as the number of key local, County, and state contacts grew to ensure successful coordination.
Public Information & Messaging	STRENGTH 1: The transition to a Virtual JIC was seamless due to strong relationships and pre-established communication channels.	IMPROVEMENT 1: The Health DOC relied on the JIC to create health-specific public messaging with minimal health expertise.
	STRENGTH 2: The JIC produced a massive amount of content rapidly while maintaining positive information delivery to the public.	
Medical and Health Operations	STRENGTH 1: Early activation of the Health DOC supported communicable disease surveillance and healthcare operations.	IMPROVEMENT 1: Medical and health operations faced supply chain challenges while implementing health equity strategies to support at-risk populations.
	STRENGTH 2: Regional coordination supported strategic health decisions such as health orders and policies and encouraged a consistent response with neighboring counties.	IMPROVEMENT 2: The Health DOC did not consistently implement ICS in their organization and operations, which diminished their ability to coordinate with other aspects of the COVID-19 response.

Theme	Strengths	Area for Improvements
	STRENGTH 3: The Health DOC developed comprehensive public health messaging and community engagement tactics.	IMPROVEMENT 3: There were issues with health metrics and data interpretation that introduced uncertainties when operationalizing health data.
	STRENGTH 4: The Medical Health Branch and Medical Health Operational Area Coordinator (MHOAC) maintained consistent communication with, effectively coordinated and extensively supported continuity of operations of the prehospital 911 emergency medical services system, acute care hospitals, and health care facilities.	
	STRENGTH 5: The Medical Health Branch and MHOAC's proactive and progressive approach assured adequate healthcare capacity within the County while simultaneously positioning the County to serve as a resource to the region and state.	
Vaccine Management	STRENGTH 1: Mass vaccination events and clinics were efficacious in delivering vaccines to SMC residents.	IMPROVEMENT 1: Issues with inconsistent staffing caused inefficiencies in vaccine administration.
	STRENGTH 2: There existed strong inter-departmental support in vaccine administration.	
Testing Operations	STRENGTH 1: The San Mateo Event Center mass testing site served as an example of Public-Private Partnership in the Bay Area.	IMPROVEMENT 1: There was a lack of contingency planning for staffing and inclement weather at the testing sites.
	STRENGTH 2: ICS was established early on in testing operations, allowing for a consistent structure that supported accountability, safety, communication and led to rapid process improvements to be implemented.	
Resource Management	STRENGTH 1: Despite extremely scarce resources, adequate resources were procured to support internal response operations during the pandemic.	IMPROVEMENT 1: The decentralized structure of procurement of vendors across the County during COVID-19 operations

Theme	Strengths	Area for Improvements
		caused long-term challenges for the Finance and Administration Section response.
	STRENGTH 2: Many of the processes related to resource management were built as the pandemic progressed. While the response would have benefited from more advanced planning in this area, the development of a resource management process during the response underscored the adaptability of staff.	IMPROVEMENT 2: Due to a lack of an overall structure for disaster distribution of resources, no process for submitting for FEMA reimbursement was in place throughout the response, creating numerous challenges.
	STRENGTH 3: Different County departments and external partner agencies all worked together to ensure vulnerable populations, or those organizations supporting the County's most vulnerable individuals, received the necessary resources and services.	IMPROVEMENT 3: The Finance and Administration Section's emphasis on documentation was not well received by some other sections and departments involved in operations, as they felt that it interfered with their ability to respond.
		IMPROVEMENT 4: There was confusion surrounding the management of medical and health resources throughout the pandemic response that impacted coordination between the EOC and the Health DOC.
Continuity of Operations	STRENGTH 1: SMC staff felt that their departments implemented successful safety protocols, including teleworking throughout the initial COVID-19 response and subsequent operations.	IMPROVEMENT 1: Overwhelmingly, staff across County departments/DOCs and the EOC continue to report burnout and unsustainable workloads, which may impact long-term retention.
		IMPROVEMENT 2: Staffing of the Finance and Administration Section positions throughout the duration of the pandemic response proved challenging and continues to be an issue during current-day operations.
		IMPROVEMENT 3: From a security standpoint, the EOC may have some physical vulnerabilities that could be leveraged during a complex emergency.

Appendix C: Acronym List

Table #4: Glossary of acronyms.

Acronym	Definition
AAR	After Action Report
ABAHO	Association of Bay Area Health Officers
CAL FIRE	California Department of Forestry and Fire Protection
CARES	Coronavirus Aid, Relief, and Economic Security
CBO	Community-based Organizations
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CMO	County Manager's Office
CONSTANT	Constant and Associates, Inc.
COVID-19	Coronavirus Disease 2019
CSOST	Care Site Outreach Support Team
DEM	Department of Emergency Management
DOC	Department Operations Center
DSW	Disaster Service Workers
EMPG	Emergency Management Performance Grant
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EUA	Emergency Use Authorization

Acronym	Definition
FEMA	Federal Emergency Management Agency
FMS	Federal Medical Station
FQHC	Federally Qualified Health Center
HHS	U.S. Department of Health and Human Services
HSA	Human Services Agency
IAP	Incident Action Plan
ICS	Incident Command Structure
ICU	Intensive Care Unit
IP	Improvement Plan
ISD	Information Systems Department
IT	Information Technology
JIC	Joint Information Center
MAC	Multi-agency Coordination
MHOAC	Medical Health Operational Area Coordinator
PIO	Public Information Officer
PPE	Personal Protective Equipment
PSC	Public Safety Communications
RFI	Request for Information
RR	Resource Requests
SitRep	Situation Report

Acronym	Definition
SMC	San Mateo County
THIRA	Threat and Hazard Identification and Risk Assessment
WHO	World Health Organization

Appendix D: References

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Appendix D: Key Contributors

Special thanks to the many individuals who contributed to the production of this report, many of whom lent their time and knowledge despite being engaged in ongoing COVID-19 response efforts.

Table #5. Key Contributors

Name	Project Role
Mike McKeon	County Project Manager
Iliana Rodriguez	County Core Planning Team
Dan Belville	County Core Project Manager
Robert Manchia	County Core Planning Team
Jessica Driskill	CONSTANT Project Manager
Ryan Dufour	CONSTANT Deputy Project Manager
Ashley Slight	CONSTANT Project Sponsor
Dylan Kilby	CONSTANT Interview Lead and Contributing Author
Kristen Baird	CONSTANT Contributing Author
Jennifer Rosenberger	CONSTANT Interview Support
Nicole Christensen	CONSTANT Interview Support
Sloan Grissom	CONSTANT Contributing Author
Jayson Kratoville	CONSTANT Technical Support
Casey Moses	CONSANT Contributing Author