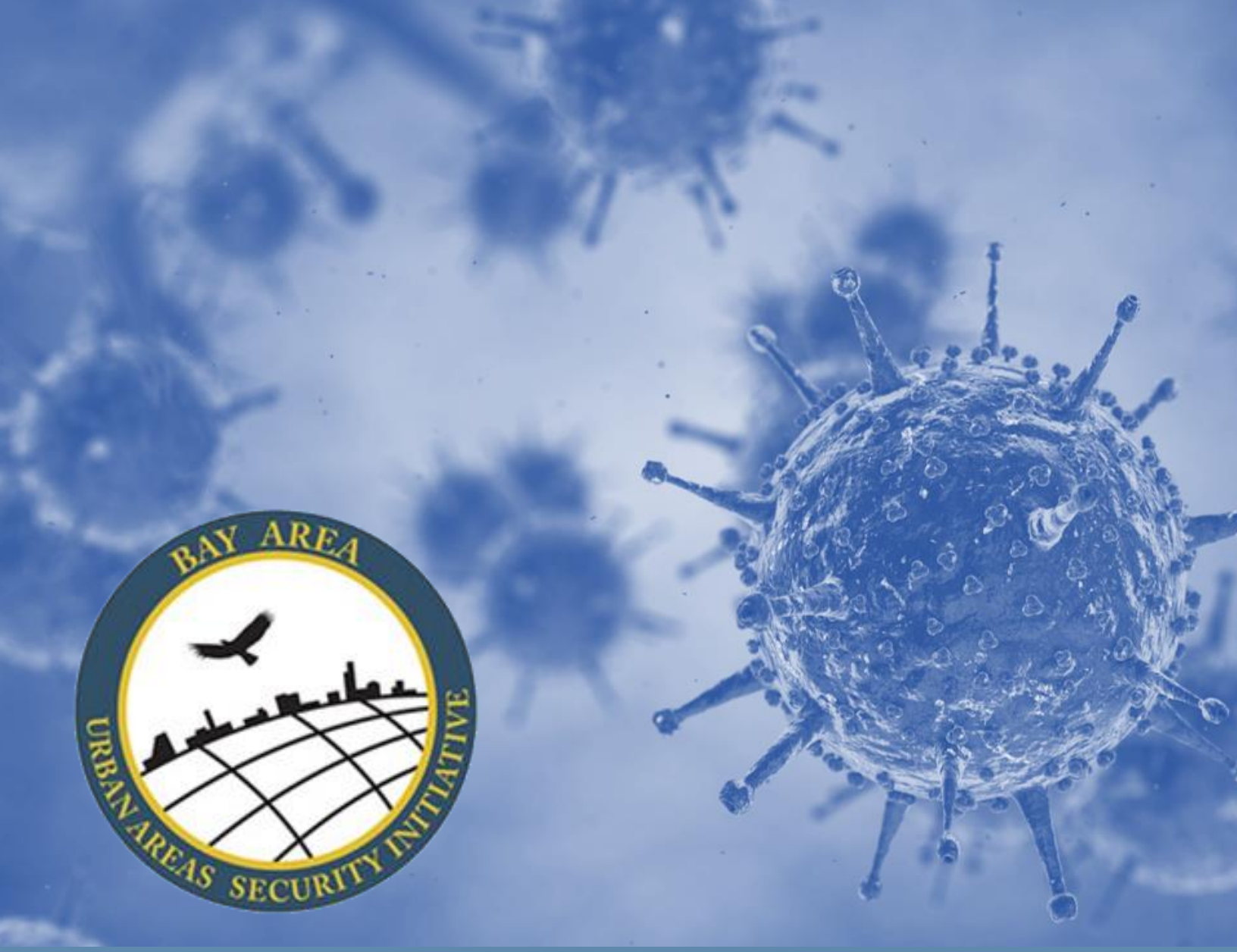

Bay Area Urban Area Security Initiative

Regionwide COVID-19 After Action Report

December 30, 2022

CONSTANT ASSOCIATES

Table of Contents

Executive Summary **3**
Purpose 3
Report Format and Organization 4
Significant Trends and Findings Summary 5
Introduction **9**
Thanks and Acknowledgements 9
Scope 9
Methodology 10
Public Health Emergency Preparedness (PHEP) and FEMA National Core Capability Crosswalk 11
Incident Overview 12
Regional Trends **18**
Operational Coordination 18
Planning 30
Environmental Response/Health and Safety 39
Logistics and Supply Chain Management 47
Public Health, Healthcare, and Emergency Medical Services 55
Public Information and Warning 66
Final Thoughts **75**
Appendix A: Acronyms List **79**
Appendix B: Participating Organizations **81**
Appendix C: Interview Summaries **84**
Appendix D: Polling Data **95**

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Executive Summary

The unprecedented nature of the Coronavirus Disease 2019 (COVID-19) pandemic cannot be understated. Public health leaders and emergency managers around the world navigated many unknowns as they learned as much as they could about the disease caused by the novel coronavirus while simultaneously responding to protect the public.

As COVID-19 response measures were rapidly ramping up, communities across the world erupted in mass protests and civil demonstrations compounded by growing concern over the socially devastating economic and social impacts of the pandemic. During this same period, the State of California and much of the western United States experienced an onslaught of wildfires that engulfed hundreds of thousands of acres and impacted many local communities. In addition, the death of George Floyd resulted in public outrage and protests over much of the Summer 2020. All these concurrent events took place with the backdrop of the COVID-19 pandemic beginning to reveal the impact it would have on our lives.

The Bay Area Urban Areas Security Initiative (UASI) remains committed to its mission of sustaining and improving regional capacity to prevent, protect against, mitigate, respond to, and recover from terrorist attacks and catastrophic disasters. This Bay Area UASI Regionwide COVID-19 After Action Report (AAR) represents the Bay Area UASI's continued collaborative approach to identify common capability gaps across the Bay Area jurisdictions, and to inform a Pandemic Preparedness Framework in order build a secure, prepared, and resilient region.

Purpose

What this Report IS:

- A description of common trends and findings across Bay Area jurisdictions from COVID-19 response efforts from 2020 to early 2022

What this Report IS NOT:

- An analysis of individual Bay Area jurisdiction's pandemic response efforts

The Bay Area UASI has compiled this Regionwide COVID-19 After Action Report to collate common findings and trends across the 14 Bay Area jurisdictions and their responses to COVID-19. In collecting these lessons together, the Bay Area UASI hopes to inform specific priorities for future consideration and advocacy. This Regionwide COVID-19 AAR does not replace the functionality nor purpose of local jurisdiction AARs. It does not follow the traditional AAR format in terms of identifying strengths or areas for improvement for any one organization or jurisdiction. Instead, this report focuses on commonalities and some specific best practices that emerged across the Bay Area during the response. These best practices and regional recommendations will then inform the development of a Pandemic Preparedness Framework. The Framework document will be a resource to help improve pandemic preparedness efforts.

Given the length and breadth of the pandemic and the unprecedented scope of the response efforts in the Bay Area, this report is not meant to be a comprehensive description of all activities conducted in response to the pandemic in the Bay Area. Instead, this report is meant to focus on major trends and recommendations noted by multiple stakeholders to assist in identifying regional actions that are feasible and will have maximum impact on the ongoing pandemic as well as future public health and other emergency responses.

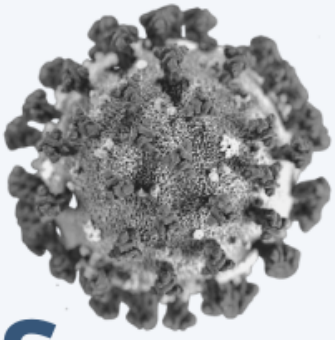
Report Format and Organization

The AAR aims to provide readers with a regional perspective on the 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, covering a basic background on the pandemic.
- An analysis of Regional Trends organized under some of the National Core Capabilities, including:
    - Operational Coordination
    - Planning
    - Environmental Response/Health and Safety
    - Logistics and Supply Chain Management
    - Public Health, Healthcare, and Emergency Medical Services
    - Public Information and Warning
- Final Thoughts, with implications for next steps.

The following section highlights overall findings and trends covered in this report.

SIGNIFICANT TRENDS AND FINDINGS



1

There was confusion between roles and responsibilities for Emergency Operations Centers (EOC) and Health Department Operations Centers (DOC).

Over 60% of jurisdictions interviewed detailed challenges between EOCs and DOCs regarding identification of specific roles and responsibilities.

Jurisdictions faced challenges integrating Disaster Service Workers (DSW) into the COVID-19 response.

2

Over 40% of jurisdictions faced challenges integrating DSWs into response efforts whether from a lack of application, training, or engagement.

3

Telework, when applicable, allowed for increased staff capacity and increased staff safety.

Although not free of challenges, some jurisdictions noted telework allowed for increased capacity and safety among responders.

Over 40% of jurisdictions interviewed noted they relied on ad-hoc systems early in the pandemic due to unanticipated needs and volume.

Several response functions (logistics, warehousing, contact tracing) relied heavily on ad-hoc systems such as paper-based, Microsoft Excel, and Google Sheets early in the pandemic.

4

5

Gaps were exposed for services provided to people with access and functional needs (AFN).

Nearly 60% of reports and interviews noted that initially there were gaps in effectively providing services to AFN communities.

8 out of 14 jurisdictions interviewed found C/FBOs were critical to reaching high risk and AFN communities.

Jurisdictions relied on Community and Faith Based Organizations (C/FBO) to assist in engagement of AFN communities and other high risk populations.

6

7

Ensuring an equitable and inclusive response required additional layers of planning, coordination, and partnership which should be incorporated into updated plans.

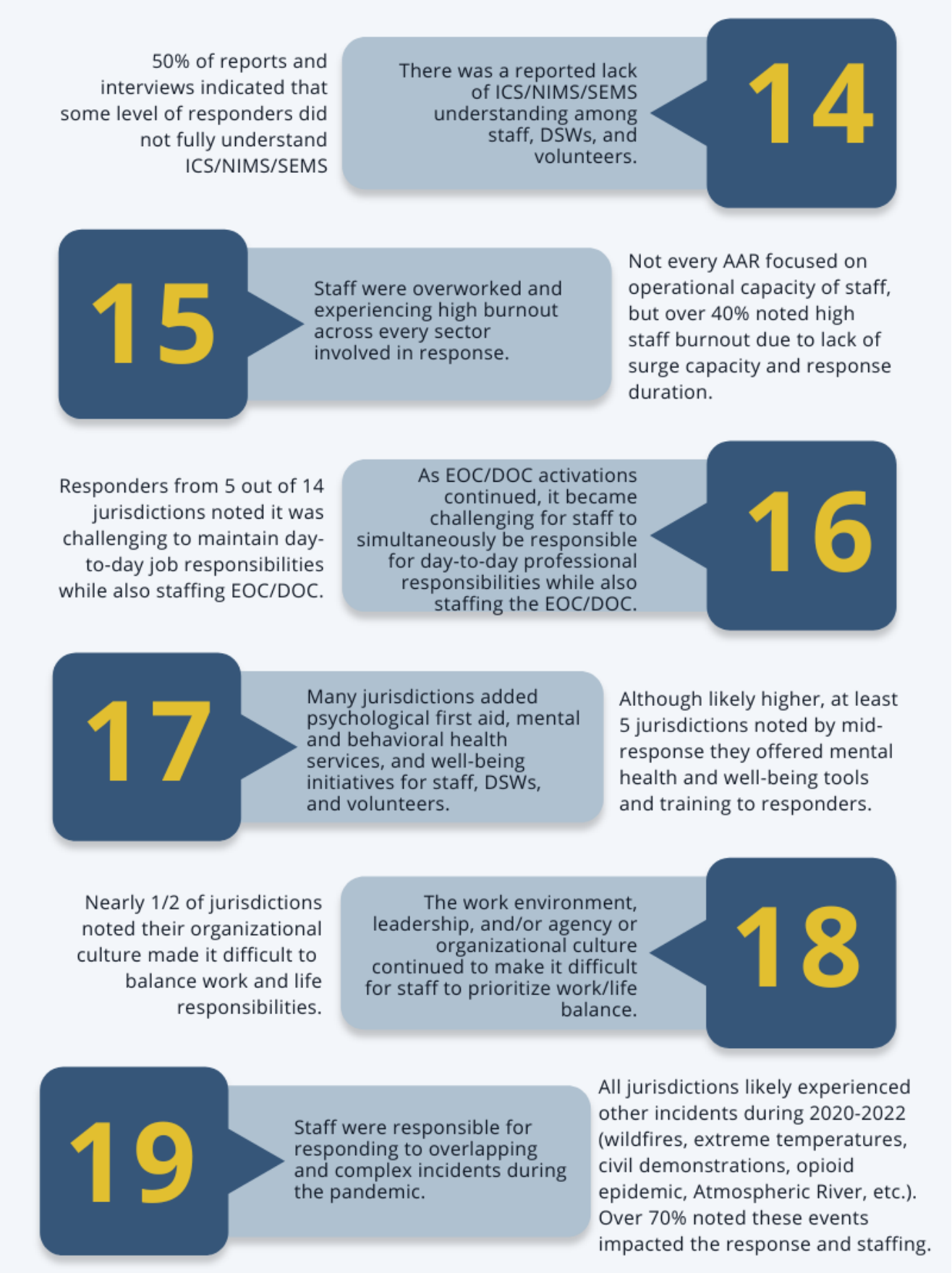
Many jurisdictions had plans with a whole community approach. Yet over 50% noted needing more attention to equity and inclusiveness, requiring more planning and partnerships.

Mobile and strike teams were a valuable asset in meeting the needs of high risk populations in at least 6 of 14 jurisdictions.

Many jurisdictions created mobile outreach or strike teams to provide resources and services to high risk populations, including homebound residents.

8


9
Medical Health Operational Area Coordinators (MHOAC) and Regional Disaster Medical Health Specialists/Coordinators (RDMHS/C) were strong partners in the response for jurisdictions.
Nearly 60% of jurisdictions said their Area and Regional Coordinators were strong partners and critical to response success.
At least 4 of 14 jurisdictions noted they and their systems were not prepared for the volume of resource requests received.
Jurisdictions were not prepared for the volume of resource requests and scarcity of resources. They were forced to adjust systems and processes to meet the new demand.
10
11
Warehouse space and appropriately trained staff were the scarcest resource for logistics sections.
Nearly 30% of jurisdictions noted warehouse space and trained staff were the scarcest commodity.
At least 5 of 14 jurisdictions reported their supply chains were impacted by factors beyond planning efforts.
The supply chain was impacted by factors that were not accounted for in planning such as short notice health orders, absenteeism, scarce resources, and quarantine.
12
13
Previous plans could not account for the unforeseen scale and magnitude of COVID-19, forcing jurisdictions to quickly reformulate these plans during the response.
Most reports and interviews noted plans were not adequate for the scale of COVID-19 since they relied on mutual aid, not accounting for a global crisis impacting all areas at once.


50% of reports and interviews indicated that some level of responders did not fully understand ICS/NIMS/SEMS
There was a reported lack of ICS/NIMS/SEMS understanding among staff, DSWs, and volunteers.
14
15
Staff were overworked and experiencing high burnout across every sector involved in response.
Not every AAR focused on operational capacity of staff, but over 40% noted high staff burnout due to lack of surge capacity and response duration.
Responders from 5 out of 14 jurisdictions noted it was challenging to maintain day-to-day job responsibilities while also staffing EOC/DOC.
As EOC/DOC activations continued, it became challenging for staff to simultaneously be responsible for day-to-day professional responsibilities while also staffing the EOC/DOC.
16
17
Many jurisdictions added psychological first aid, mental and behavioral health services, and well-being initiatives for staff, DSWs, and volunteers.
Although likely higher, at least 5 jurisdictions noted by mid-response they offered mental health and well-being tools and training to responders.
Nearly 1/2 of jurisdictions noted their organizational culture made it difficult to balance work and life responsibilities.
The work environment, leadership, and/or agency or organizational culture continued to make it difficult for staff to prioritize work/life balance.
18
19
Staff were responsible for responding to overlapping and complex incidents during the pandemic.
All jurisdictions likely experienced other incidents during 2020-2022 (wildfires, extreme temperatures, civil demonstrations, opioid epidemic, Atmospheric River, etc.). Over 70% noted these events impacted the response and staffing.

Introduction

Thanks and Acknowledgements

Without the dedication of all government personnel, healthcare staff, first responders, community and faith-based organizations, private agencies, and countless others who contributed to the 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 Bay Area during a disaster whose impacts have been felt by the region and around the world. The Bay Area UASI would first and foremost like to thank all jurisdictional personnel, including those staff members who were activated or assisted those activated, and all other healthcare workers and first responders for their ongoing efforts in response to the COVID-19 pandemic.

The response to the COVID-19 pandemic continues, even at the date of writing of this report, to require support from multiple County, City, State, and Federal responders, thousands of volunteers, and countless residents, all of whom are instrumental in supporting the region. Despite the ongoing global pandemic, the response efforts seen from all individuals and groups highlights the unity necessary to help overcome the challenges presented by COVID-19. This effort to help the community heal is universally appreciated by everyone involved in the writing of this report, and Bay Area UASI would like to thank everyone who offered their selflessness, dedication, and determination throughout the process.

The authors of this AAR would also like to thank all those who contributed to the development of this report. Thank you to those who helped author the document, reviewed drafts, participated in workshops, participated in interviews, provided data or reference material, and participated in the various planning meetings associated to provide input.

This AAR was written and developed by Constant Associates, Inc. (CONSTANT), a third-party, private sector emergency management and public health preparedness consulting firm contracted to compile this report.

Scope

The report compiles trends, best practices, and recommendations collected from the 14 Bay Area jurisdictions' shared experiences responding to the COVID-19 pandemic. The report will inform core content for the Bay Area UASI Pandemic Preparedness Framework, which will be used to inform future preparedness priorities. This Regionwide AAR does not replace the functionality nor purpose of local jurisdictional AARs. 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 regional actions that are feasible and will have maximum impact on the ongoing pandemic as well as future public health and other emergency responses.

Methodology

Data for this report was compiled through several sources, starting with a review of available jurisdictional Mid-Action Reports (MAR) and AARs from the Bay Area. Local AARs were carefully reviewed for trends across jurisdictions, best practices, and recommendations that could be applied regionally. Of note, at the time of writing this report (August of 2022), only seven jurisdictional AARs were available. Some jurisdictions were still developing their AARs during the development of this report. Jurisdictions without completed AARs were still able to contribute, however, through the additional data collection methods discussed below.

Local MARs/AARs or Assessment Reports were analyzed from the following jurisdictions:

- Marin County
- Monterey County
- City and County of San Francisco
- City of San Jose
- San Mateo County
- Santa Clara County
- Santa Cruz County

In addition to the jurisdictional reports, other regional, state, and national reference reports were reviewed to provide context and substantiation for this report. These included a Bay Area Joint Information System (JIS) Interim AAR and other sample AARs from FEMA, the National Homeland Security Consortium, the California Hospital Association, the California Primary Care Association, and other AARs across the West Coast including Oregon, Washington, and Colorado.

Small Group Interviews focused on the following themes:

- Individuals with Access and Functional Needs (AFN)
- Emergency Medical Services (EMS) Agencies
- Hospital Representatives
- Allied Healthcare Partners (Non-Hospital)
- Warehouse and Supply Chain Partners
- Private Sector Partners
- Mental Health Partners
- Community Based Organizations (CBOs), Voluntary Organizations Active in Disaster (VOAD) Partners
- EMS Providers / Ambulance Services
- Public Information Officers

Individual virtual interviews were also offered to anyone in each of the 14 Bay Area jurisdictions who may have been interested in providing input for the Report. However, with the response to the pandemic ongoing, few interviews were completed (only four were completed in the fall of 2021, with individuals from Santa Cruz County, San Mateo County, Solano County, and Santa Clara County from the emergency management and public health sectors). Instead, stakeholders across the Bay Area expressed more interest in group virtual interviews, workshops, and discussions during standing workgroup meetings for the Bay Area UASI's emergency management and public health workgroups. CONSTANT facilitated small debriefs during two workgroup meetings in December 2021 as well as a Regionwide Virtual Workshop in February 2022 to discuss shared challenges and identify best practices as a region. These meetings and the workshop assisted in identifying shared trends, strengths, and challenges across the Bay Area.

CONSTANT also conducted 11 small group interviews between February 2022 and June 2022 to bring together responders organized by response functions. The small group interviews allowed stakeholders from different jurisdictions to come together and provide a regional perspective on relevant themes. Data was collected from participants in the small group interviews to identify consensus among response experiences.

Public Health Emergency Preparedness (PHEP) and FEMA National Core Capability Crosswalk

Regional Trends within this AAR are organized by applicable Federal Emergency Management Agency (FEMA) National Preparedness Goals: Core Capabilities. The table below is a crosswalk of the core capabilities in this report with their corresponding PHEP capabilities and FEMA Mission areas, to assist public health partners in identifying applicability.

FEMA National Core Capability	PHEP Capability	FEMA Mission Area(s)
Operational Coordination	Emergency Operations Coordination	Prevent, Protect, Mitigate, Respond and Recover
Planning	Community Preparedness	Prevent, Protect, Mitigate, Respond and Recover
Environmental Response/Health and Safety	Responder Safety and Health Emergency Operations Coordination Public Health Surveillance and Epidemiological Investigation	Respond
Logistics and Supply Chain Management	Medical Material Management and Distribution	Respond
Public Health, Healthcare, and Emergency Medical Services	Medical Countermeasure Dispensing Medical Material Management and Distribution Medical Surge Public Health Laboratory Testing Public Health Surveillance and Epidemiological Investigation Community Recovery Non-Pharmaceutical Intervention	Respond
Public Information and Warning	Emergency Public Information and Warning	Prevent, Protect, Mitigate, Respond and Recover

Incident Overview

Origins in China

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.[1] 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 (Coronavirus Disease – 2019). 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.

Federal and State Level Response

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.[2] 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. Organizations in the public, private, and nonprofit sectors have worked to mitigate the impact of COVID-19 on essential functions through remote work and other business continuity strategies.

Early community responses focused on non-pharmaceutical interventions such as masks, physical distancing, and handwashing to reduce the exponential person-to-person spread of the virus— i.e., "flatten the curve." Physical distancing measures helped decrease the concentration of individuals in each 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 local health orders, including 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

1 World Health Organization. Timeline of WHO's Response to COVID-19. https://www.who.int/news-room/detail/29-06-2020-covidtimeline

2 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.

higher education institutions have been critical to expanding testing, contact tracing, isolation, and quarantine capabilities.

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 of 2020, supplies of personal protective equipment (PPE) in the Strategic National Stockpile (SNS) were depleted by roughly 90 percent.[3] 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. FEMA continues 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.

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. Challenges remain in combatting vaccine hesitancy and addressing inequities among historically excluded populations.

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 the 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.

3 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.

Summary Timeline of Major Response Milestones

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 16, 2020	ABAHO Multi-Agency Coordination (MAC) Group Activated for COVID-19.
January 18, 2020	The Centers for Disease Control and Prevention (CDC) begin to screen international passengers arriving at San Francisco International Airport (SFO) from the Hubei Province, China.
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. In Santa Clara County, a third California patient tests positive, bringing the total U.S. count to seven. The patient recently travelled to Wuhan, China.
February 1, 2020	Travis Air Force Base in Solano County announced as a possible quarantine location for international travelers.
February 2, 2020	The number of confirmed coronavirus cases in California rises to six. This includes the first person-to-person transmission in the state: In San Benito County, a man who had recently travelled to Wuhan, China, passed the virus to his wife.
February 3, 2020	Santa Clara County declares a local health emergency.
February 6, 2020	An individual in Santa Clara County dies of causes related to the coronavirus. It is the first such death in the United States, although this is not widely known until late April.
February 21, 2020	The Grand Princess cruise ship returns from a 10-day cruise to Mexico back to San Francisco and disembarks. It departs the same day for a 14-day cruise to Hawaii. Some passengers stay on the ship for the second cruise.
February 25, 2020	The Mayor of San Francisco declares a local emergency.
February 27, 2020	Solano County declares a local emergency.
February 29, 2020	The U.S. reports the first death believed to be caused by COVID-19.

Date	Event
March 2, 2020	Two more coronavirus cases are confirmed in Santa Clara County, bringing the county total to nine. Meanwhile, San Mateo and Placer County report their first confirmed COVID-19 cases. Sonoma County declares a local emergency.
March 3, 2020	Marin and San Mateo Counties declare local emergencies.
March 4, 2020	Governor Newsom of California declares an emergency. Santa Cruz declares a local emergency.
March 6, 2020	21 people on board the Grand Princess cruise ship outside the San Francisco Bay test positive for COVID-19. San Francisco and Yolo Counties declare emergencies.
March 7, 2020	The City and County of San Francisco ban all non-essential group activities in city-owned facilities, such as city hall, libraries, and piers.
March 9, 2020	The Grand Princess docks in the Port of Oakland and passengers begin disembarking.
March 10, 2022	Contra Costa County declares a local emergency.
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 13, 2020	President Donald J. Trump issues an emergency declaration for all states tribes, territories, and the District of Colombia under the Stafford Act. Napa County declares a local emergency.
March 16, 2020	The California legislature passes a $1.1 billion emergency coronavirus funding measure for ventilators, hospital beds, and hotels. Seven Bay Area counties declare shelter-in-place orders through April 7: Alameda, Contra Costa, Marin, San Francisco, Santa Clara, Santa Cruz, and San Mateo. Alameda County declares a local emergency.
March 17, 2020	Monterey, San Benito, and Sonoma counties adopt shelter-in-place orders.
March 18, 2020	Napa, Solano, and Yolo counties adopt shelter-in-place orders.
March 19, 2020	Statewide shelter-in-place order issued.
March 27, 2020	The COVID-19 attributed death toll in California passes 100.

Date	Event
March 31, 2020	Health officers in seven Bay Area jurisdictions extended a previous stay-at-home order through May 3, 2020, to preserve critical hospital capacity across the region.
April 12, 2020	The Bay Area surpasses 5,000 cases of COVID-19.
April 17, 2020	A joint statement from seven Bay Area Health Officers includes an order requiring individuals to wear a face-covering when leaving their home.
April 28, 2020	The United States reaches 1 million total confirmed cases of COVID-19 and over 50,00 deaths.
May 11, 2020	The Bay Area surpasses 400 coronavirus deaths.
May 18, 2020	ABAHO issued a joint statement announcing progress on COVID-19 indicators and next steps for reopening.
May 25, 2020	California breaks its previous one-day record for new coronavirus cases with 2,565 new cases announced on Memorial Day.
June 18, 2020	Governor Newsom orders a statewide mask mandate due to rising numbers of COVID-19 cases and deaths. Many local governments had previously dropped mandatory mask-wearing measures.
July 3, 2020	ABAHO issued a joint statement calling on residents to stay home, avoid gatherings with people not in their immediate households, comply with state and local face covering requirements, wash their hands frequently and thoroughly, and practice physical distancing of at least 6 feet as much as possible.
December 4, 2020	ABAHO announcement that they will implement the State's new Regional Stay Home Order, not waiting until local hospitals are near crisis to act.
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 15, 2020	ABAHO issued a joint statement stating that COVID-19 vaccine will be distributed following federal and state framework.
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.
February 12, 2021	State officials announce that those with high-risk medical conditions would once again be eligible to receive the vaccine.

Date	Event
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 15, 2021	California announces that everyone over the age of 16 will be eligible to receive the COVID-19 vaccine.
May 19, 2021	ABAHO announced they strongly support the California Department of Public Health's strategy to continue with current masking guidance until June 15, when the State will align with the CDC's updated masking guidance.
June 3, 2021	ABAHO announced their support for the opening of California schools for full time in-person instruction for all grades in the fall of 2021.
June 15, 2021	California reopens, lifting most COVID-19 restrictions.
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.
August 2, 2021	ABAHO urged immediate vaccination and issued orders requiring use of face coverings indoors.
August 5, 2021	Seven Bay Area counties and the City of Berkeley announce people within the region will need to wear masks indoors in public places even if they are vaccinated.
August 31, 2021	80% of Californians eligible for the vaccine have received at least one dose.
October 7, 2021	ABAHO issued criteria for lifting COVID-19 Indoor Masking Requirements.
November 11, 2021	The California Department of Public Health (CDPH) says that any fully vaccinated adult in California should be eligible for a booster shot.
November 18, 2021	California reaches 5 million coronavirus cases.
December 1, 2021	The first U.S. Omicron case is found in San Francisco.
December 17, 2021	ABAHO urged boosters to protect against Omicron variant.
February 9, 2022	Eleven Bay Area Health Officers announce that they will lift most indoor mask mandates on February 16, 2022.
February 25, 2022	Governor Newsom declares that he has now ended the vast majority of his executive orders pertaining to COVID-19.

Regional Trends

Operational Coordination

Capability Definition

This refers to the ability to establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of core capabilities. This includes mobilizing critical resources, establishing command, control, and coordination within an affected community.

EOC/DOC Operations and Coordination

The COVID-19 pandemic required an unparalleled level of effort to coordinate response strategies and resources across County Emergency Operations Centers (EOCs), City EOCs, and County Department Operations Centers (DOCs), not to mention private sector command centers and healthcare command centers as well as regional, state, and federal EOCs.

Most EOC/DOC operations are built for managing a limited-term emergency or disaster, with defined operational periods and a cyclical planning structure based on identifying objectives for each period. Bay Area jurisdictions who provided input for this report stated that their EOC and DOC operations have been built from prior activations for wildfires, earthquakes, exercises, and extreme weather primarily. These jurisdictions have frequently tested their EOC or DOC activations and had experienced staff capable of providing strong leadership in the EOC/DOC environment. Public Health departments were accustomed to providing Emergency Support Function (ESF) #8 (Public Health and Medical Services) support in the EOC or adjacent to the EOC's operations.

However, public health emergencies are unique, and prior experience with public health emergencies in the Bay Area affecting multiple jurisdictions at once had been limited to H1N1 in 2009 and Ebola preparation in 2014. Most jurisdictions noted that they had let public health lead those efforts or any other local outbreak responses, with support from the EOC and other county DOCs as needed.

Emergency Management and Public Health

The emergence of COVID-19 began in a similar fashion. Grounded in a medical based response, many jurisdictions turned to medical subject matter experts within Public Health to guide a medically based approach. Jurisdictions were able to leverage strong, existing relationships between Public Health and Emergency Management departments to establish a flow of constant communication in early 2020 as new information regarding the virus developed. Many public

health DOCs activated early (in January and February), while EOCs typically activated later (in March) once cases began to appear in the Bay Area.

At the beginning, many agencies and departments were willing to work with one another to address issues and challenges as they arose. As EOCs and DOCs became overwhelmed and cases began to increase, it was evident County EOCs needed to be activated to respond to the COVID-19 pandemic to support Public Health DOCs. County EOCs were also needed to support the numerous non-health response activities because of the pandemic's cascading impacts such as opening shelter-in-place (SIP) and quarantine hotels, feeding operations, transportation issues and significant staffing resources needed.

At this point, some jurisdictions operated out of a Unified Command structure, while others combined the EOC and Public Health DOC by co-locating them. Still others continued to operate as two separate entities. Many of the jurisdictions noted that co-locating EOC and Public Health DOC operations was helpful when it was possible. SIP orders did move many functions back to separate locations or to remote operations. As the pandemic continued, several jurisdictions reported that EOCs and Public Health DOCs became less and less coordinated. However, at least one jurisdiction noted the coordination between entities improved over time. EOCs would deactivate or go to a lower activation level to conserve resources during lower case count seasons, while Public Health DOCs remained activated or adjusted operations by moving COVID-19 response activities to their day-to-day functions rather than the DOC. This made it difficult for either entity to fully rely on support from the other, as activation levels or structures changed.

One of the most cited challenges by those who provided input for this report was the difficulty in coordinating response between the Public Health DOC and the County EOCs. It was often unclear who was leading and who was responsible for which functions during a pandemic. County emergency management and public health were not used to functioning in this type of response and certainly not for such an extended period. In addition, jurisdictions noted the complexity of establishing sustainable operational periods in the EOC/DOC structures due to the pro-longed duration of the response, meeting frequency and cadence, and the situation reporting needs of the incident.

Not surprisingly, there was continued division amongst public health and emergency management stakeholders in the Bay Area when commenting on recommendations to improve a coordinated structure in future pandemics. Some public health stakeholders felt that EOCs needed to move to a supporting role and "let public health lead" while some emergency management stakeholders felt that Unified Command structures would have been more appropriate, or that public health needed to build out their response under the EOC structure.

Internal departments and agencies worked well with one another to provide support and best serve their communities. Public Health, Emergency Medical Services, and Environmental Health would be in constant communication to cover all aspects of the virus including transmission, preventing, response, patient transport, testing, proper donning and doffing of equipment, and protection measures.

ICS Improvement

Familiarity with the Incident Command System (ICS) has been noted as an area for growth. As jurisdictions continue to implement staff training to increase response capacity and competency, ICS training should continue to be a priority. With staff turnover throughout all phases of the COVID-19 pandemic, new staff members had not been trained extensively in ICS or were responding to a large-scale event for the first time. As such, many jurisdictions conducted "just in time" training to bring new staff or newly assigned EOC personnel up to date on the response as well as their responsibilities within the EOC. Many felt it was difficult to be fully prepared for the complexities of this response, especially when considering information change and duration.

Integration of DSWs was an interconnected theme throughout this document as a challenge. To facilitate their integration, establishing ICS proficiency amongst DSWs will allow for larger staff integration into EOC's and DOCs within jurisdictions. Specifically, continuing to provide ICS training to staff including ICS 100, 200, 700, and 800 will give a good foundation for any individual who may be plugged into an EOC position.

For many jurisdictions in the Bay Area, they already had expansive training requirements in place for county staff to complete on an annual basis. However, enforcement of these requirements is typically not prioritized, and some county departments are less likely to implement these training requirements than others. While emergency management, EMS, and public health departments are typically required to incorporate this training, more nontraditional response staff in other county departments who may be called upon to serve in an EOC or DOC (e.g., Human Services, Social Services, Public Works, Libraries, etc.) often did not have experience with ICS or the National Incident Management System (NIMS)/Standardized Emergency Management System (SEMS).

During the data collection for this report, some public health stakeholders commented on the need for a tailored version of the ICS structure specifically for public health DOCs. These stakeholders felt that the traditional EOC structure and ICS forms did not account for health and medical roles such as the incorporation of the Medical and Health Operations Area Coordinator (MHOAC), the healthcare coalition, and medical subject matter experts. Some public health departments have already created their own tailored DOC structures and adaptations from traditional ICS/EOC frameworks. However, this sometimes confused other county departments using traditional structures as they did not always understand the public health modifications.

Policy Groups and Multi-Agency Coordination Groups

Very few jurisdictions reported activating or using formal Policy Groups or Multi-Agency Coordination (MAC) Groups at the local level during the pandemic to coordinate response across County departments. The Policy Group and/or MAC Group structures are frequent hallmarks of a coordinated emergency response structure. Some jurisdictions activated modified policy groups at one time or another, such as to discuss equity plans or to coordinate on mass vaccination efforts. Far more frequently, jurisdictions had multiple policy groups at the departmental level with little cross-coordination and varying membership over time. These policy groups frequently did not have a defined role or concept of operations ahead of time and were

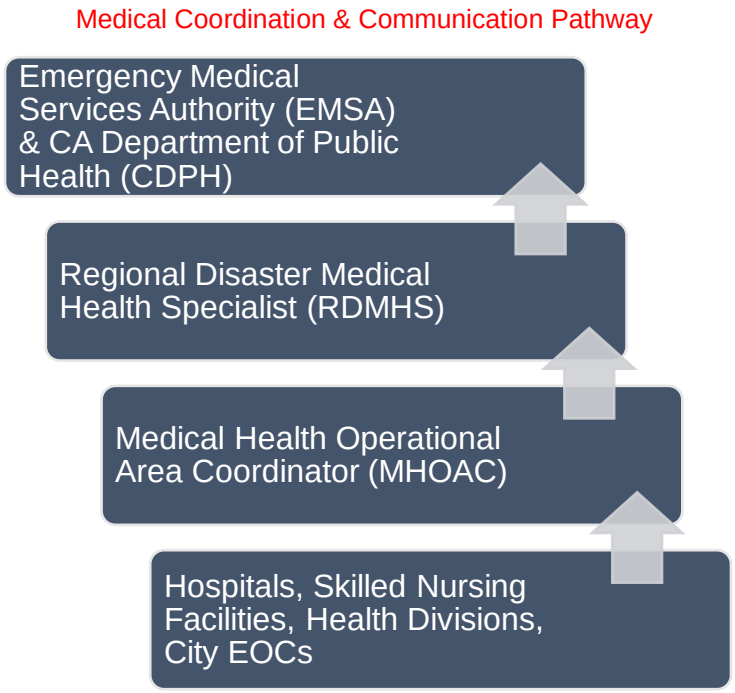
established ad-hoc. Of note, every Bay Area Health Officer participated in the regional ABAHO MAC Group, which remains active at the time of the writing of this report.

While long-term activation of a Policy Group or a MAC Group may be difficult due to limited resources and staff time, the importance of these cross-departmental coordination groups cannot be understated. These could have assisted in standardizing response protocols across county departments as well as improving coordination between emergency management and public health.

State and Local Coordination

The COVID-19 pandemic quickly overwhelmed local capacity and capabilities. With healthcare facilities and local response entities burdened with shortages of staff and resources, outside entities were called upon to assist in stabilizing jurisdictions.

Public Health and Medical Coordination



Staffing and resource shortages were a large stressor to healthcare facilities and jurisdictions. When a facility could no longer fulfill the needs of their staff and patients through their own procurement channels, they sent requests to the MHOAC to assist in acquiring such necessary materials. The MHOAC's function is to coordinate disaster medical and health resources within the operational area as well as to facilitate critical information sharing across public health and medical partners.

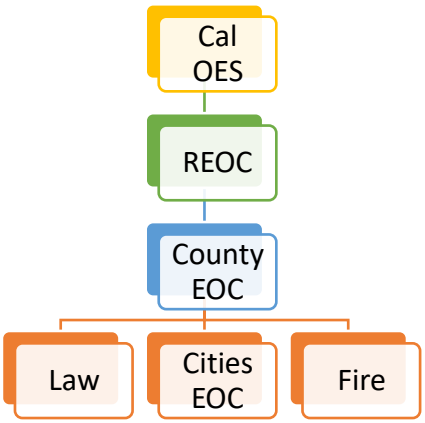
Over the course of the COVID-19 pandemic, County MHOAC's received thousands of resource and information requests from healthcare facilities and first responders. Additional information regarding resource requests handled by the MHOACs is provided in the Logistics and Supply Chain Management section of this report. From a coordination and information sharing standpoint, the MHOAC program was lauded as critical to the ability of jurisdictions to work across counties and regions to share resources, provide data, and identify barriers regionwide. The MHOACs, alongside the Regional Disaster Medical Health Coordinators / Specialists (RDMHC/S), worked together across the Bay Area to advocate for needs at the regional and state levels.

At the state level for public health and medical entities, the California Department of Public Health (CDPH) and the Emergency Medical Services Agency (EMSA) processed resource and

information requests that could not be met at the local or regional level. Due to counties and regions throughout California being heavily impacted, the state was not always able to meet the demands of a county. Therefore, some requests were denied or partially completed as difficult decisions of weighing jurisdictional needs were decided by the State.

In addition, local healthcare coalitions (HCCs) were cited as crucial resources for operational coordination in the public health and medical space. The past few years' worth of investment from the Hospital Preparedness Program (HPP) to build healthcare coalitions and engage smaller healthcare facility types such as Skilled Nursing Facilities (SNFs) and Long-Term Care Facilities (LTCFs) built the foundational structures upon which much of the pandemic response relied. Jurisdictions with strong pre-pandemic HCCs that had engaged in frequent training and exercise together reported the most successful outcomes in terms of coordination between public health and healthcare during COVID-19.

Emergency Management Coordination



Similar to the public health and medical coordination pathways cited above, emergency management agencies spent significant resources pre-COVID-19 on building up relationships and coordination pathways between cities, law enforcement, fire, and County EOCs. At a jurisdictional level, many noted that local departments and partners were familiar with the County EOC and its purpose ahead of time. However, in the Bay Area, each county's emergency management agency is often organized or structured differently. Some are hosted under the local Sheriff's Office, while others are standalone offices or entities. This sometimes made it difficult to coordinate emergency management across counties and regions. However, the Bay Area UASI organization itself was cited frequently as a critical resource in this area. The Bay Area UASI Emergency Management Workgroup and other similar workgroups helped counties and cities to share resources or discuss challenges.

When resource or information requests could not be satisfied at the county level, they would be sent up to the Regional Emergency Operations Center (REOC), then escalated to the California Governor's Office of Emergency Services (Cal OES) at the state level to be considered. Again, with numerous jurisdictions sending requests for assistance, inventory and staff time at the regional and state level was not sufficient.

Overall, jurisdictions noted pre-existing relationships with CDPH, EMSA, Cal OES, emergency management departments, EMS agencies, and public health departments made for cohesive and effective coordination. CDPH and Cal OES had calls regularly with local government emergency response entities and pushed out alerts as information on COVID-19 became more concerning. As such, response entities and healthcare facilities were able to prepare, although the magnitude of the impact was still a constant challenge.

Private Sector Partnerships and Coordination

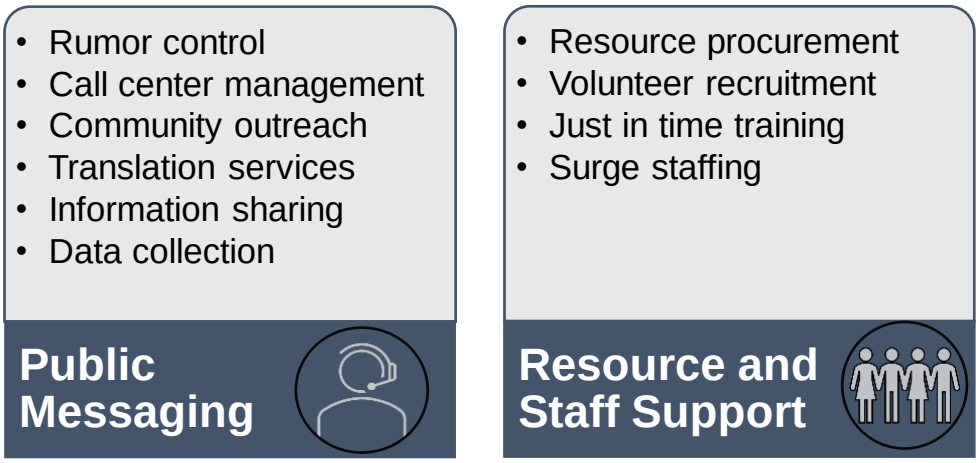
Early in the pandemic, there were few business representatives or liaisons within local EOCs, which complicated coordination and communications. As coordination improved, private businesses were able to donate items to support the pandemic response. The items included snacks, toiletries, water, coffee, and other needed items. Private business and community based organizations (CBOs) worked together to assist in food delivery and wellness checks, which resulted in a great relationship that many felt should be continued long after the pandemic response. Jurisdictions' response operations helped support local businesses in various aspects, to include ordering catered meals for responders to assist the local restaurant business.

The private sector experienced many challenges during the pandemic; however, panic buying and confusion from health orders and guidance had the biggest impact. Businesses noted it would have been beneficial to coordinate and reinforce messaging about how to avoid panic buying or resource hoarding. Private businesses also had difficulty interpreting local health guidance as it came across vague. Because businesses have a broad geographic footprint, it was difficult to stay updated with the most current guidelines, especially as it crossed into local jurisdictions. Other regulatory agencies, such as the Occupational Safety and Health Administration (OSHA), contributed to further confusion as several private businesses were under the threat of being shut down if they were not able to accommodate new guidance within a short turnaround.

Several private businesses benefitted from strong coordination and communication with their local health jurisdictions to ensure they were aligned with the guidelines as much as possible. This became an issue with work capacity as large businesses with small crisis management teams had to perform outreach to hundreds or thousands of jurisdictions regarding health guidelines. In addition, business crisis managers had to respond to multiple incidents across the country (i.e.: COVID-19, wildfires, civil demonstrations), which was overwhelming.

Engagement with Disaster Organizations

As COVID-19 overwhelmed local capabilities, partnerships with disaster groups and organizations were pivotal in addressing operational gaps. CBOs, Voluntary Organizations Active in Disasters (VOADs), and Community Organizations Active in Disasters (COADs) were



instrumental in supporting public health and emergency management agencies in their response to the COVID-19 pandemic. The groups assisted in operational activities including:

These groups noted their inability to previously test remote work capabilities, however COVID-19 did not hinder their ability to provide critical support to local and regional partners.

Local agencies and departments reported they did not understand the entire scope and response activities VOADs and COADs could offer prior to the COVID-19 pandemic. However, jurisdictions quickly realized how impactful they would be to support their mission of saving lives. One county's VOAD program felt strongly that their partnerships with government response partners contributed directly to high vaccination rates and low COVID-19 rates within their operational area. VOADs were able to establish community response teams, which allowed for greater and deeper outreach with non-profit, community, and faith-based partners in the community. Partners identified that engaging a fully funded COAD/VOAD liaison or team early on in a response as well as proposing the creation of smaller VOAD teams results in greater input from community partners and increases the overall community-wide response.

Another county VOAD reported having a seat in the EOC was extremely beneficial in being able to see the overall picture of the response as well as connect with the necessary personnel to effectively support county operations. Other counties agreed and stressed the importance of having a seat in the EOC for VOADs to be successful. The partnerships emergency managers and response planners made with CBOs, VOADs, and COADs will serve jurisdictions well in their response to future emergencies requiring additional support.

Spontaneous Volunteer Management

Individual volunteers and volunteer organizations were an integral resource during the COVID-19 pandemic. They provided supplementary support, as well as relief for long-term operations. Some of the use of individual volunteers and volunteer organizations highlighted in this report include volunteer assistance with logistics and supply chain management, vaccine administration, point of distribution operations, CICT operations, equity and inclusion planning efforts, medical operations, and public information and communications.

For the use of volunteers to be efficient and effective, it is essential to have an established volunteer management program. The community is often inspired to come together and volunteer to assist during a disaster. This may result in many individual community members or volunteer groups spontaneously arriving to provide assistance. This can create a situation where spontaneous volunteers become an impediment to the response operations. This particularly occurs when the response organization is ill equipped to manage spontaneous volunteers effectively and efficiently.

The following were some examples of volunteer management challenges shared by jurisdictions and other community partners:

- Businesses reached out to vaccination sites offering volunteers. However, it was difficult to place these volunteers as many did not have medical experience which was most in demand at the vaccination sites.

- There were some challenges connecting volunteers with jurisdictions able to accept their assistance. Many jurisdictions did not have an adequate volunteer management infrastructure in place to accept and utilize the volunteers.
- As needs for volunteers shifted in level and type some jurisdictions had difficulty finding volunteers when they had a need versus when volunteers were available or offered assistance.

Mental and Behavioral Health Coordination

Mental Health partners noted the most common request included licensed facilities experiencing challenges around behavioral health clients refusing to wear masks or follow infection control protocols. It was difficult to find proper professional resources to assist in explaining the need and benefits of adhering to infection control protocols to these clients. Many facilities experienced shortages in behavioral health staffing. As such, partnerships were established, including working with County Behavioral Health, to address staffing needs for these facilities. There were also efforts to ensure Departments of Behavioral Health had access to vaccines. Accommodations were also made to transport individuals to vaccine clinics and make testing equitable in these communities.

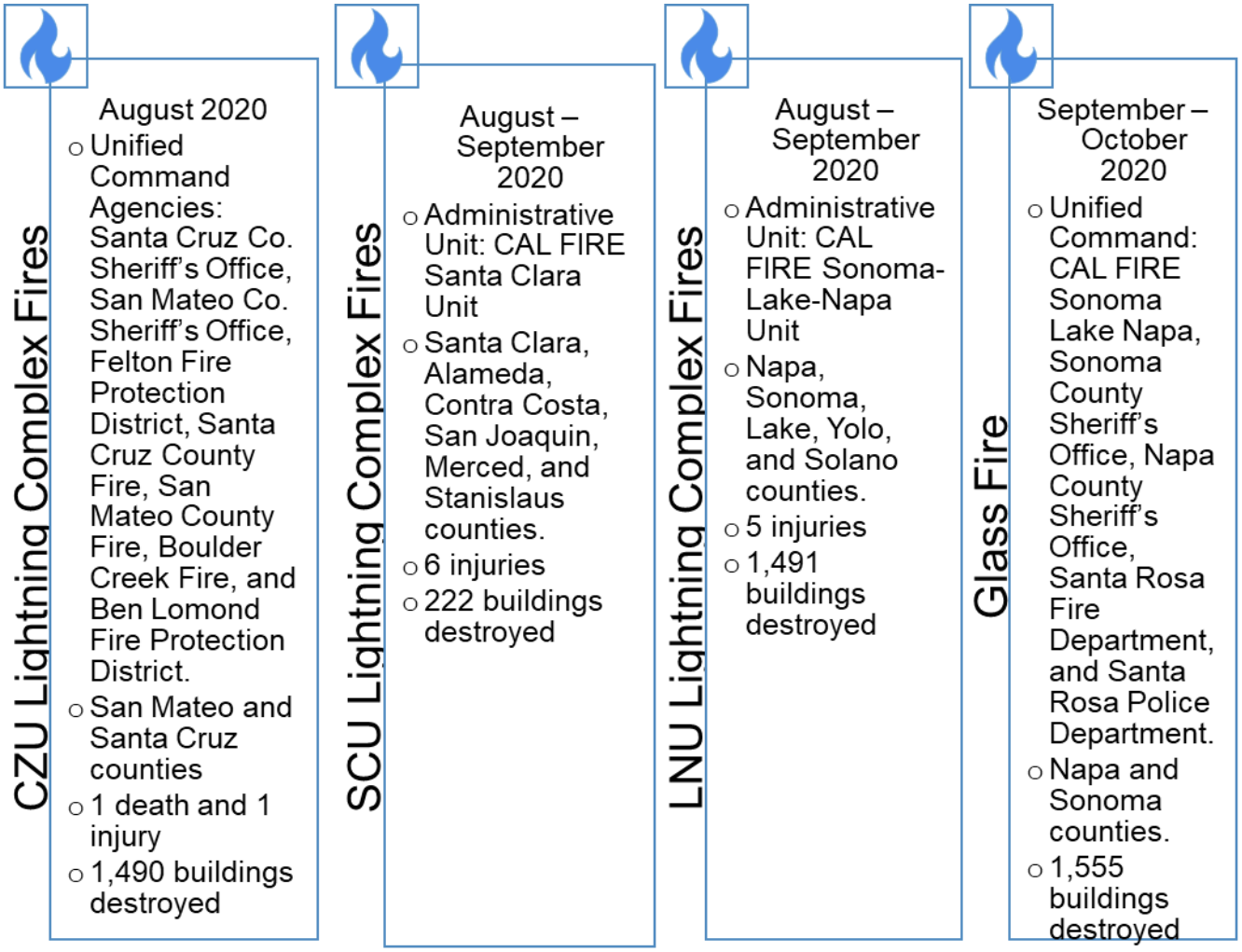
Complex Incident Management

The Bay Area experienced several complex or overlapping incidents while individual jurisdictions had their own wildfires, civil demonstrations, extreme heat, severe winter weather, and Atmospheric River (heavy rainfall event) situations to contend with in addition to pandemic response operations. Jurisdictions used ICS to scale up operations when simultaneous incidents required it, then scale down to address the COVID-19 pandemic when the incident concluded.

Most jurisdictions seemed to have used an Area Command structure to expand operations i.e., established multiple command structures under an EOC umbrella to tackle incident response. Thus, there may have been a separate team for a wildfire response than the team handling the COVID-19 response. While this structure is recommended by NIMS and helped staff focus on incident response priorities, these complex and overlapping command structures worsened already acute staff burnout, as EOC/DOC and first responder personnel were further strained and asked to fill multiple roles. In addition, even though separate commands were often established, some staff were asked to serve roles for both due to a lack of available, trained personnel. Section Chiefs, for example, often responded to multiple incidents and serving in that role for multiple command structures.

Notable Wildfires

2020 and 2021 marked two of the worst years for wildfires in California, continuing an increasing trend due to climate change. 2020 was particularly dangerous for the Bay Area with two out of the top five most wildfires impacting multiple counties in the Bay Area. This was in addition to several multijurisdictional fires caused by lightning strikes. Some of the most notable fires included the following:



Adapting Plans for Complex Incidents

Mass Care and Shelter Plans had to be adapted to account for social distancing and jurisdictions had to reduce capacities of shelters, which resulted in logistical challenges as they operated additional shelters to meet evacuation needs. Guidance related to wearing face masks during the pandemic had to pivot to accommodate smoke from poor air quality during wildfire incidents. This required communications maneuvering that was challenging especially as later research recommended wearing N95 masks to slow the spread of COVID-19.

One jurisdiction noted that they had no incidents of norovirus during wildfire season, despite it being a regular occurrence in shelters. They attributed this to the additional PPE and distancing protocols added during the pandemic, and it was suggested that these protocols might be beneficial in any shelter activation.

Increasing Cooperation

With overlapping events and complex incidents, public health and emergency management agencies had to further increase their cooperation internally and externally with partners. This included ensuring that roles and responsibilities were not only differentiated but also complementary. Many EOCs and Planning Sections expanded their coordination and support roles for these additional responses.

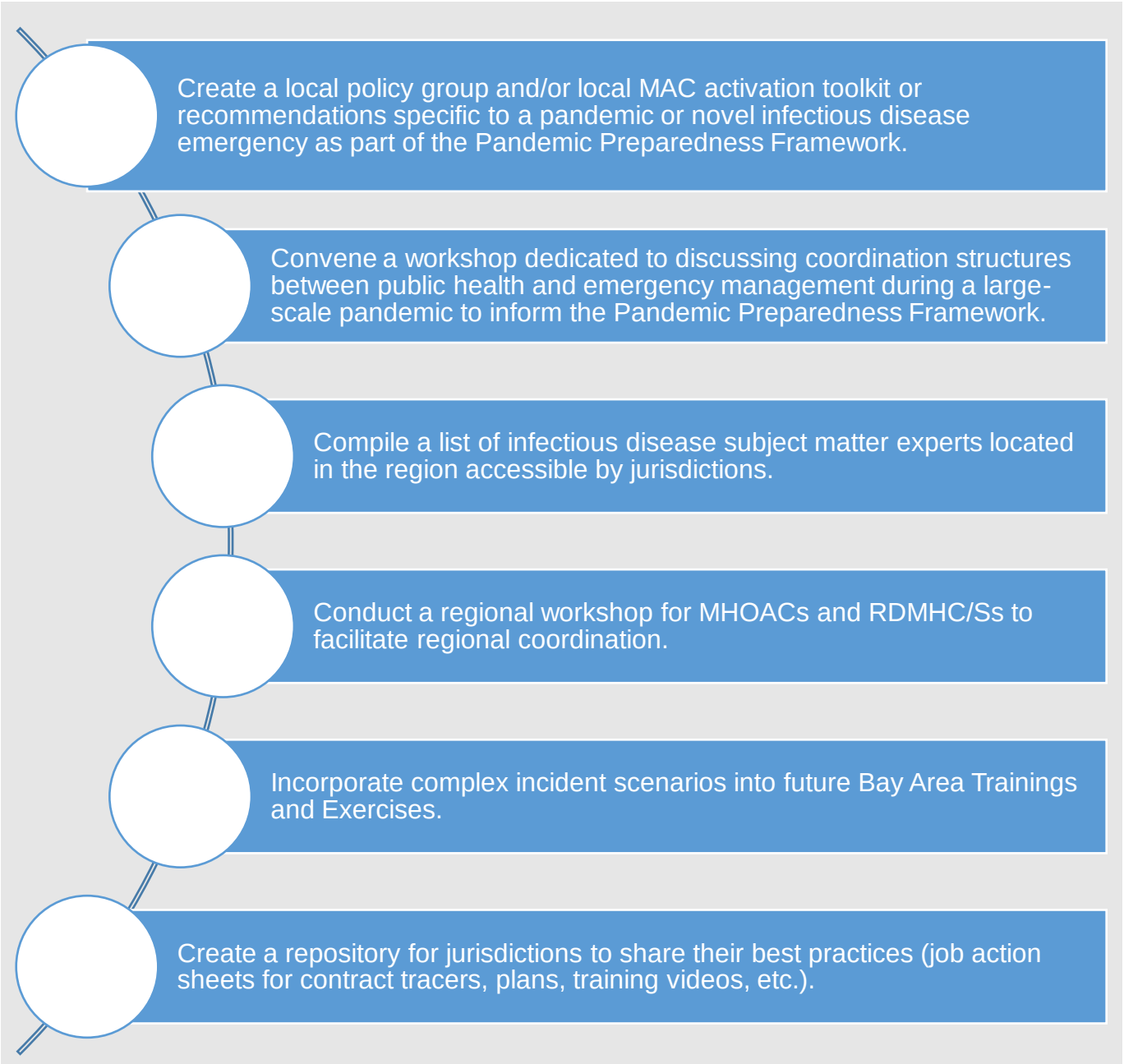
Two lessons learned included:

- Do not exhaust all DSWs immediately during an incident, as they may be needed for further activations and may be needed as reserve staff.
- Broaden exercise scenarios to include complex incident response.

One jurisdiction noted they had a best practice of creating an Incident Management Team (IMT) using their existing EOC structure and matched the number of personnel with the incident size. If the incident needed resources (such as procurement or purchasing), they could just tap into the existing process for COVID-19 without creating redundant sections.

Best Practices – Operational Coordination		
EOC/DOC Operations	**State and Local Coordination**	**Complex Incident Management**
Activating County EOCs to support Public Health DOCs once they become overwhelmed and unable to handle response to a public health emergency.	Establishing strong pre-event relationships with: - State entities (Cal OES, EMSA, CDPH) - Health Care Coalitions - Private Sector and Community-Based Orgs - Mental and Behavioral Health Partners - Public Health, EMS, and Emergency Management	Reserving some DSWs for responding to additional emergencies and building their ICS knowledge and proficiency.
Co-locating activated EOCs and DOCs when feasible and appropriate to bolster information sharing.	Educating local DSWs and county departments on the MHOAC program and pathways for public health mutual aid ahead of time.	Masking and distancing in shelters can reduce further infectious disease outbreaks.
Activating local Policy Groups and MAC Groups to increase coordination between local departments.	Identifying subject matter experts available to support response operations.	Creating smaller IMTs to focus on the secondary responses.
Establish a community branch to better structure coordination between government entities and CBOs and non-profit service providers.	Investing in paid and full-time VOAD liaison roles responsible for tracking and training various C/FBOs involved in response.	

Regional Recommendations – Operational Coordination



Planning

Capability Definition

This refers to the ability to conduct a systematic process engaging the whole community in the development of executable strategic, operational, and/or tactical-level approaches. This includes developing plans that identify critical response objectives, as well as exercising, training, and maintaining plans.

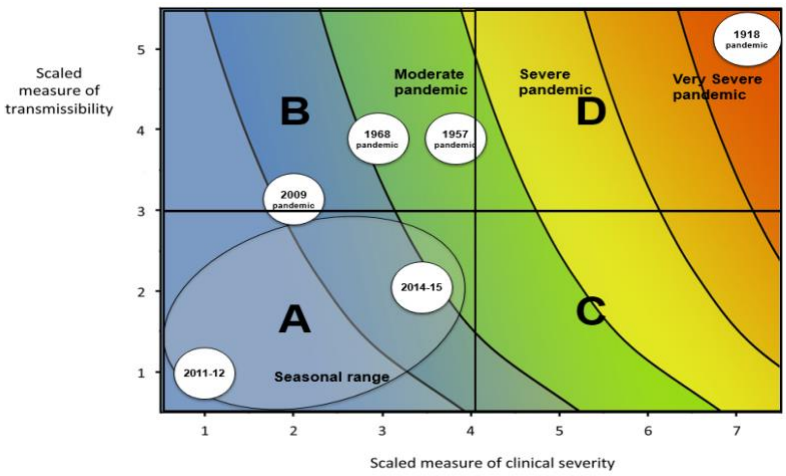
Pandemic Planning Prior to COVID-19

Planning is typically conducted during the preparedness phase of the emergency management cycle. Most jurisdictions within the Bay Area had a Pandemic Plan or Infectious Disease Response Plan (80% reported having such a plan) prior to January of 2020. However, the novel nature of COVID-19 required most to engage in plan development and revision during the incident response phase to account for changing guidance from national and state partners. Additionally, jurisdictions were simultaneously activating other disaster plans, such as wildfire response plans, and had to make operational adjustments to combine response techniques. The lack of pre-incident planning opportunities presented unique and complex challenges.

Previous Pandemics

Pandemic planning was a common disaster preparedness activity across the nation prior to the COVID-19 pandemic. According to the Center for Disease Control (CDC), prior to the COVID-19 pandemic the following were notable pandemics which affected the United States:[4]

- 2009 H1N1 Pandemic
- 1968 H2N2 Pandemic
- 1957-1958 H2N2 Pandemic
- 1918 Spanish Flu Pandemic[5]



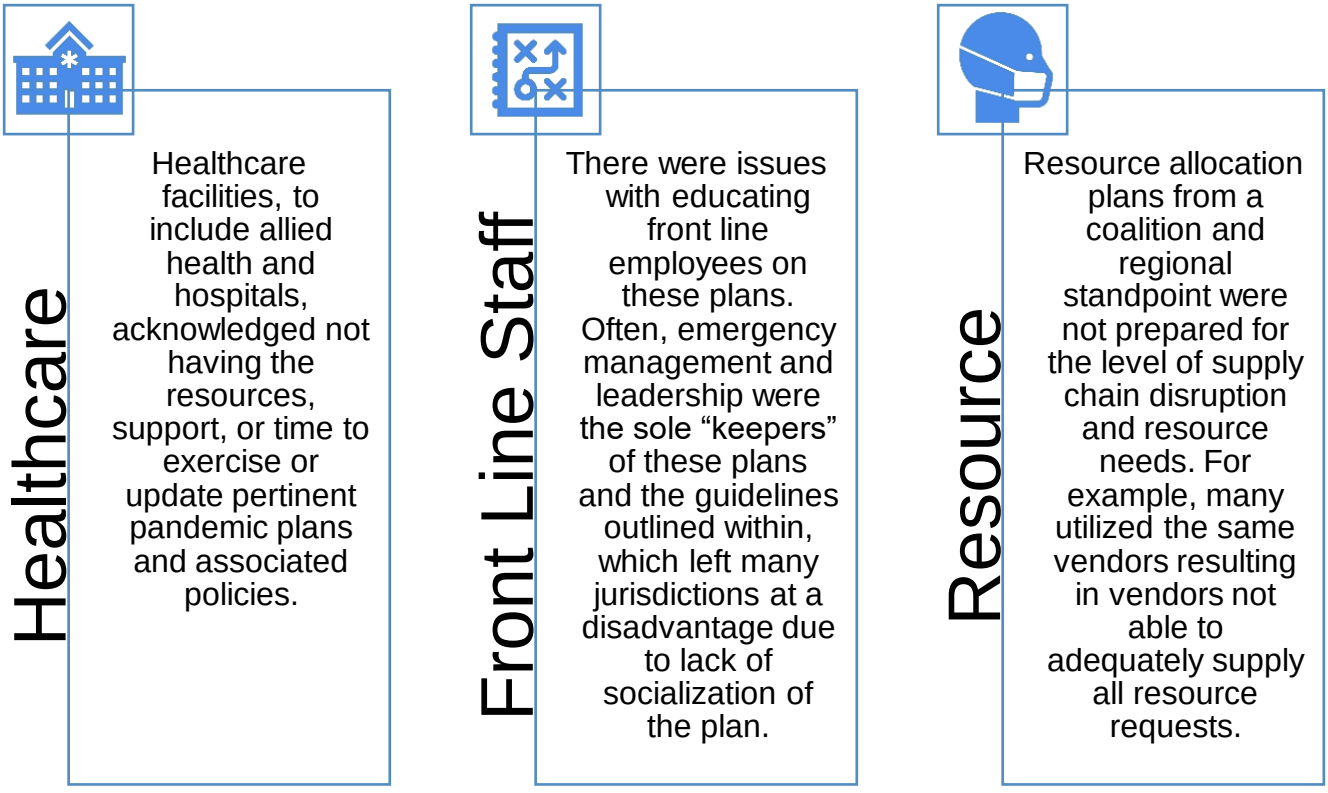
4 Center for Disease Control. Past Pandemics. (2018). Retrieved from https://www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html.

5 Centers for Disease Control and Prevention. HHS Pandemic Planning Scenarios Based on the Pandemic Severity Assessment Framework. (2016) Retrieved from https://www.cdc.gov/flu/pandemic-resources/national-strategy/severity-assessment-framework-508.html

These pandemics were mainly centered around the influenza virus. Jurisdictions noted the bulk of their previous pandemic planning was also centered around an influenza pandemic due to industry forecasting and historical information, as well as the 2009 H1N1 pandemic outcomes. Most jurisdictions noted having at least an unapproved pandemic plan or an approved pandemic plan centered around influenza. Some used these previous pandemic plans to conduct pandemic training and exercises with their healthcare coalitions, public health partners, EMS agencies, first responders, and emergency management. Many used annual influenza seasons and vaccine clinics to test Point of Dispensing (POD) plans for mass vaccine dispensing scenarios. This provided a useful foundation to begin planning for COVID-19 when vaccines became available. Some jurisdictions also reported that pandemic or novel infectious disease scenarios were not often tested or exercised, as other hazards (e.g., wildfire, active shooter, earthquake) were deemed to be more likely.

Pre-Pandemic Planning Challenges

The following are some challenges noted amongst jurisdictions concerning pre-COVID-19 pandemic planning efforts:



Assumptions in previous pandemic plans were often inadequate for the reality of the COVID-19 pandemic response. The number of details and prescriptive tasks in some of the plans made them difficult to adapt to the current situation and incident needs. This was especially true in previous planning specific to influenza pandemics, as COVID-19, from an epidemiological

standpoint, presented vastly different planning challenges than the influenza virus. Plans could not account for the unforeseen scale and magnitude of COVID-19, forcing jurisdictions to quickly reformulate these plans during the response, particularly with each new virus variant and wave.

Jurisdictions also noted challenges with utilizing previous EOC activation and Continuity of Operations (COOP) plans. EOC activation plans were not written with this type of prolonged, global incident in mind. Jurisdictions noted that due to the number of new staff in the EOC, there were often challenges orientating them to the EOC process because of the lack of user friendly EOC activation plans and job aid checklists for this type of EOC activation. COOPs had to adjust to new realities as well, such as remote work. Many COOPs focused on physical buildings and workspaces for disaster response operations, did not account for more than a year of operating in a disaster environment, nor did they fully take into the account the need for a mechanism to effectively identify DSWs.

COVID-19 Planning

Some jurisdictions began activation of their EOCs and response plans as early as January 2020, which helped them get a head start and build infrastructure they would desperately need in March of 2020 when shelter-in-place orders began.

The theme of "dynamic" and "flexible" disaster response operations was evident throughout the data collection process across jurisdictions, organizations, and industries. While many had previous influenza pandemic plans available to use as a starting point, COVID-19 proved to change with every new variant, CDC recommendation, and changing data on transmission rates, infection rates, and hospitalizations. Initially, planning included preparing for the virus to spread to the Bay Area UASI region's cities and counties. At first, the Bay Area jurisdictions were using the limited information available from China concerning their response operations and lessons learned and building upon previous influenza pandemic plans. Testing was not yet widely available, and a vaccine was at least a year or more away from development and distribution across the country. Jurisdictions noted the development of new plans, policies, and procedures to use for the impending threat of local spread was necessary and a critical success of the Bay Area's response.

Data Analysis and Modeling

Following the initial identification of community spread was a series of waves of high transmission, infection rates, and hospitalizations. Each wave presented its own unique form of planning challenges and unpredictability. Jurisdictions noted as the situation continued to evolve, data analysis and data modeling proved to be a critical asset for planning. Alongside any previous pandemic plans, exercises, and training, data proved to be the most valuable planning tool as plans were written often during or with little time before activation.

Common data utilized nationwide during COVID-19 included:[6]

6 Center for Disease Control (CDC. (2022). COVID Data Tracker. Retrieved from https://covid.cdc.gov/covid-data-tracker/#datatracker-home.

- Local, state, and national infection rates, fatalities, and hospitalizations
- Wastewater surveillance
- Social impact and prevention measures
- Variants and genomic surveillance
- Testing results
- Vaccination distribution and coverage
- Vaccine effectiveness and breakthrough cases

An overarching theme from jurisdictions was the constant pivots and changes in response plans due to new data, new governmental directives, and the prolonged duration of the response. These changes, especially during the first portion of the pandemic, occurred almost daily if not more frequently. Subsequently, each new wave brough new data points and governmental directives. EOC/DOC operations had to quickly adapt to the constant change of information and response planning needs and the vital task of accurately and effectively communicating these changes internally and publicly. One positive was the significant investment many jurisdictions made into the development and implementation of innovative data tracking and modeling tools which aided in informed decision-making. However, some jurisdictions noted gaps in transmitting this data equitably across responding departments and agencies. Additionally, jurisdictions noted the filling data requests could be extremely time consuming due to the number of requests, the difficulty in obtaining the needed data points for external data requests from groups such as governmental officials and the media, and often tight turnaround timeframes. There were also significant issues communicating the limitations of available information to the public or to political officials without training or knowledge of surveillance data.

Extending EOC/DOC Activations

One jurisdiction, for example, noted their Incident Action Plan reached 75 pages in length at one point, with over 1,650 entries in the ICS 203.

With the dynamic nature of pandemic plan development and updates came necessary changes to EOC operations planning. Jurisdictions noted the substantial length of Incident Action Plans (IAPs) developed by the EOC Planning Section due to the prolonged duration of the EOC response operations. Some noted the allocation of EOC resources required for the IAP development for each operational period was too high. Some EOCs adjusted by lengthening their typical operational periods (e.g., from 12 hours to two weeks), while others were inconsistent with producing IAPs when staff resources were low. The typical IAP and Planning P ‘cycle’ is not built for responses lasting for years. This also underscored the need for more technology-based planning tools in the EOC to offset some of the staff responsibilities and time commitment required for manual IAP production. EOCs also had to pivot when social distancing measures were implemented to keep personnel safe as well as to adapt to virtual operations. Staff in the physical EOC had to have adequate PPE and implement distancing as well as regular temperature checks.

Plan activations were heavily centered around public health and medical planning and response. Due to the nature of the incident, public health and medical agencies were at the forefront of the response, which translated to a significant integration of these stakeholders into EOC structures

as well as planning and response activities. Jurisdictions and organizations had to become quickly familiar with Emergency Support Functions (ESF) #6: Mass Care, Emergency Assistance, Housing, and Human Services and ESF #8: Public Health and Medical Services. Jurisdictions noted a gap in prior attention and education for non-healthcare or public health partners in these functions. This translated to a significant investment of time and resources to ensure staff across the region were familiar with public health and healthcare planning and response activities.

Additionally, California experienced other catastrophic disasters in conjunction with the pandemic, such as wildfires and civil unrest. This presented additional challenges to jurisdictions as they were faced with not only simultaneous, complex disaster responses but also the constraints of operating in a pandemic, such as enforcing public health regulations. For example, jurisdictions noted additional efforts went into updating mass care and shelter plans for incidents such as wildfires due to additional social distancing, PPE, and isolation/quarantine requirements.

Plan Applicability and Adaptation

In response to COVID-19, jurisdictions reported immediately activating their pandemic/influenza plan, emergency operations plan, outbreak plan, mass immunization plan, and others to provide guidance and direction. Quickly it became evident the plans were not all encompassing when dealing with COVID-19 and therefore needed significant updates. Additionally, plans did not consider the possibility of responding to multiple large-scale events at once such as the COVID-19 pandemic, civil unrest, and statewide fires.

The dynamic nature of the COVID-19 pandemic highlighted the need for local government response plans to incorporate:

- Social distancing
- Work from home protocols
- Infectious disease precautions
- Multiple large scale event activations and responses
- AFN accessibility plans and procedures
- Scare allocation protocols
- Software solution or inventory management system
- Shortage of staff procedures

As a result, they had to build new processes while carrying out response operations. Emergency Management agencies reported responding to COVID-19 while simultaneously creating mass public safety immunization plans to vaccinate public safety staff, and mobile vaccination plans to account for individuals unable to report to vaccination clinics. Changing guidance from CDC and CDPH forced ongoing revisions to ensure compliance. COVID-19 also presented unique challenges when setting up alternate testing and housing sites. Alternate Care Site (ACS) plans were activated but had to be tailored specifically to meet the demands and social distancing requirements of COVID-19. Of note, many ACS sites were not utilized due to an inability to adequately staff these surge locations.

Medical Plans Adaptability

Hospitals reported utilizing past influenza full-scale exercise materials and after-action reports to guide their response to the COVID-19 pandemic. Some reported that while they did not have specific COVID-19 mitigation plans established, they had a foundation to jump start their approach. Centers for Medicare and Medicaid Services (CMS) waivers were authorized to relax requirements of hospitals and other healthcare facilities, which afforded the ability to leverage existing plans. Many facilities reported this as being extremely pivotal in allowing personnel to break through the "red tape" and initiate total cooperation within the facility and the jurisdiction.

Training and Exercises

With healthcare providers and first responders providing care for a novel virus, it became clear early on that response entities felt unprepared and unequipped to address the quickly growing scale and severity of the COVID-19 pandemic. While the National Institutes of Health (NIH) and other healthcare associations launched websites containing educational resources for healthcare providers, responders were still in a reactive state, as information was delayed, and the response required immediate decision-making to limit the impact of the disease. They also had limited time to spend on training and instead focused on "in the field" learning.

ICS/NIMS Training

ICS and NIMS/SEMS provide the common framework for incident management. Overall, there was a reported lack of fundamental ICS/NIMS/SEMS understanding and knowledge that especially impacted an incident response with no jurisdictional borders and which required coordination across all levels of government, private sector, and the public. Noting a discrepancy in staff ICS competency, some jurisdictions conducted "just in time" training to bring new staff or EOC personnel up to speed on current response priorities and their position responsibilities. With multiple jurisdictions having to engage employees without traditional emergency response roles, more widely administered ICS/NIMS/SEMS training would have allowed response efforts to scale to the level necessary more quickly. Having ICS qualified staff has proven to be a strong area for growth that will contribute to strengthening response efforts in future incidents.

Healthcare Facility Engagement

The COVID-19 pandemic required coordination between local emergency management and various levels of care. While engagement with the larger providers, such as hospitals and skilled nursing facilities, is more common and practiced, there seemed to be a lack of engagement and coordination with outpatient care settings prior to the pandemic. As these facilities are responsible for taking patients to lessen the burden on hospitals and skilled nursing facilities, it was critical that they were updated as soon as information became available to ensure continuity of care within the healthcare system.

Those jurisdictions who reported strong relationships amongst healthcare coalitions and various healthcare facility types seemed to have the highest success with handling patient surge and initiating hospital decompression when needed. Regular engagement with outpatient care facilities by healthcare coalitions and emergency management entities helped to establish the necessary points of contact ahead of an incident, develop trusted working partnerships, coordinate the development and sharing of emergency response plans, and effectively disseminate information to all healthcare partners as timely information was disseminated during COVID-19.

Crisis Standards of Care

Crisis standards of care can be defined as the guidelines established to help organizations and healthcare professionals deliver the best care possible through circumstances where resources are limited. The COVID-19 pandemic heavily strained medical resources, demanding a shift in care from providing individual care on a patient-by-patient basis to focusing on doing good for the majority.

Some jurisdictions noted a gap in training regarding crisis standards of care. Especially at smaller healthcare facilities, such as skilled nursing facilities, staff were not accustomed to a crisis-level mentality when it came to prioritizing care.

While crisis standards of care planning is typically based on ensuring fair and unbiased treatment, COVID-19 exposed the inequalities that exist within the current health care system. COVID-19 disproportionately affected at risk-individuals while exacerbating pre-existing comorbidities.

Early in the pandemic, one jurisdiction implemented Care Site Outreach Support Teams (CSOSTs) which included paramedics, nurses, EMTs, and other healthcare professionals sent to healthcare facilities ahead of time to provide on-site assessments of their capabilities relative to response. Feedback from healthcare facilities indicated these teams could also incorporate crisis standards of care training when implemented in the future and include respiratory therapists and mental health specialists too.

CDC, CDPH, and the Office of the Assistant Secretary for Preparedness and Response (ASPR) provided COVID-19 crisis standards of care resources. However, the amount of information pushed out via health alerts to healthcare facilities, personnel, and health departments made it confusing at times to discern the most current and accurate information to follow. Due to the novelty of COVID-19, healthcare facilities and personnel acted in a reactionary capacity, absorbing new information from the state rather than existing plans or those of H1N1.

In some jurisdictions, medical health teams traveled to skilled nursing facilities and assisted living centers to provide on-site training to healthcare facilities regarding N95 proper fit testing and conducted facility walk-throughs to ensure proper social distancing and infectious disease mitigation strategies were in place. This was a successful best practice which helped provide facilities with a baseline of knowledge to work from.

Best Practices – Planning		
Pandemic Planning Prior to COVID-19	**COVID-19 Planning**	**Training and Exercises**
Plans developed for pandemic influenza served as an initial framework for COVID-19 response plans.	Adaptability, commitment, and innovation were key characteristics for adapting pandemic and/or infectious disease response plans throughout the pandemic response. Plans that were scalable and easily modified were the most successful, with particular emphasis on plans that focused on response coordination rather than the specifics of the disease.	Pre-activation training for DSWs about their roles when activated benefits the overall response and integration. DSWs should be trained on topics such as crisis communications, testing/vaccination, ICS/NIMS/SEMS, EOC operations, and sheltering.
Regular exercising and training on pre-existing pandemic or infectious disease response plans with community partners and healthcare resulted in more familiarity and resiliency to meet the challenges of COVID-19.	After the first wave, developing a “playbook” to assist with the foundational planning needs for additional waves of the virus allowed response agencies to more easily adapt to changes throughout the pandemic.	Provide alternative training methods, such as recorded videos, to DSWs. The topics should cover introduction to being a DSW and ICS principals.
Review COOP plans for updates to templates, essential services, and remote operations.		Sending outreach teams to healthcare facilities early in a pandemic to provide crisis standards of care training, infection prevention and control training, and PPE donning/doffing training can help build resiliency in the healthcare system.

Regional Recommendations – Planning

- Review the current Bay Area UASI Disaster Service Worker Toolkit and continue to add training modules in crisis communications, EOC operations, shelter operations, Point of Dispensing (POD) operations or mass testing/vaccination, and ICS/NIMS/SEMS. Provide technical assistance to local jurisdictions in advocating for more routine DSW training and integration during the planning phase.
- In the Pandemic Preparedness Framework, incorporate recommendations for how EOCs and DOCs can adapt the IAP development process, Unified Command structure, and Planning P "cycle" for a long-term emergency.
- In future Bay Area UASI workshops, have jurisdictions share the most common updates and changes they are making to Pandemic Plans / Infectious Disease Response Plans, best practices, job action sheets, training, and other relevant response documentation. These should be stored in a repository with access for all jurisdictions.
- Promote training opportunities or distribute guidance through Bay Area UASI regarding crisis standards of care, and promote the best practice of sending outreach teams to smaller healthcare facilities early during a pandemic to evaluate infection prevention practices and teach on crisis standards of care.
- Coordinate a regional exercise with jurisdictions activating their pandemic plans due to a region level outbreak.

Environmental Response/Health and Safety

Capability Definition

This refers to the ability to conduct appropriate measures to ensure the protection of health and safety of the public and responders. This includes identifying, assessing, and mitigating responder health and safety through dissemination of resources and guidance.

Staff Burnout

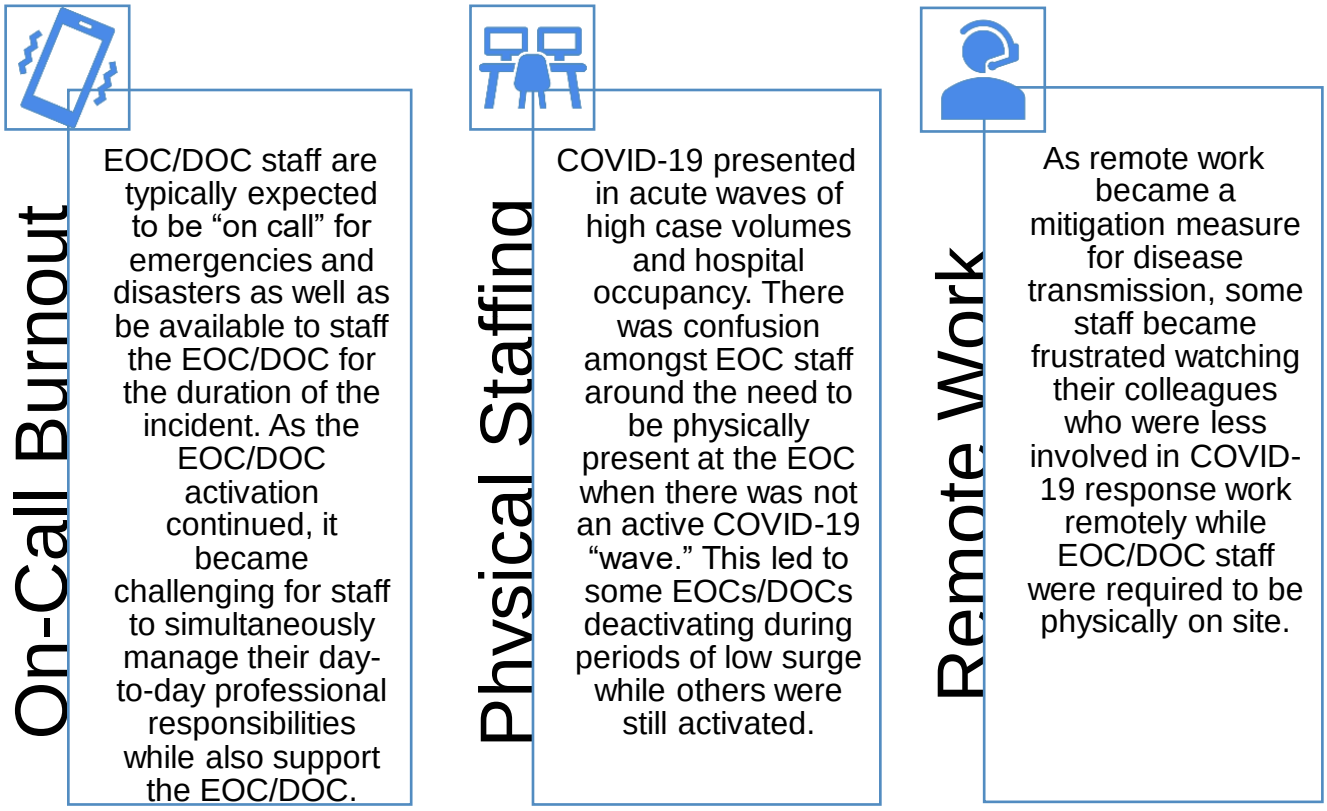
Disaster response is typically acute in nature, lasting anywhere from hours to a few weeks. The COVID-19 pandemic response time frame is unprecedented in the emergency management industry. Response personnel across jurisdictions and disciplines were required to sustain emergency activation almost consecutively for over two years. This intense and chronic environment of professional responsibilities and expectations left many in the response profession with extreme fatigue and burnout. This negatively affected their mental wellness both at work and in their personal life.

EOC/DOC Responsibilities

As April 2020 ended, it quickly became evident the COVID-19 pandemic would not last just a few weeks. As the weeks turned into months, jurisdictions recognized staff were overworked and experiencing burnout due to the significant responsibilities and weight of the response operations. Data collected from jurisdictions highlighted the excessive amount of work, professional responsibility, and the almost constant need to pivot operations and tactics which sometimes led to confusion and inefficiencies, causing further exhaustion. EOCs and DOCs across jurisdictions were activated for a historical length of time, coinciding with a historic exodus of staff from the public sector emergency management field due to burnout.

For example, one jurisdictional EOC noted staff began asking if they could go back to their office and desk to do their non-response work and then come back into the EOC when response work was needed because they could not keep up with both roles otherwise.

The initial activation began with the standard activation of required staff, establishment of operational periods, and initiation of response activities. As activation prolonged for months and past the new year of 2021, EOCs worked to establish appropriate operational guidelines and EOC staff expectations. Jurisdictions noted the following challenges:



The intensity of the EOC/DOC environment compared to past activations was noted amongst staff. Many stated it was a more tense environment, possibly due to the changing guidance around COVID-19 as well as the personal impacts of the pandemic, such as increased childcare responsibilities, caregiving responsibilities, and fears of transmitting the virus to loved ones at home. This ultimately added to stress amongst EOC/DOC staff and made working interdepartmental and intradepartmental relationships more difficult. The integration of psychological first aid (PFA) into disaster plans, the Incident Command Systems (ICS), and overall EOC/DOC operations was noted as necessary for long-term operations of this scale and severity by some jurisdictions.

Integration of PFA and mental and behavioral health services into the EOC/DOC environment may include the following:[7]

- Integration of mental health professionals into the ICS structure by establishing clear roles and decision-making authority to provide PFA to the EOC/DOC staff.

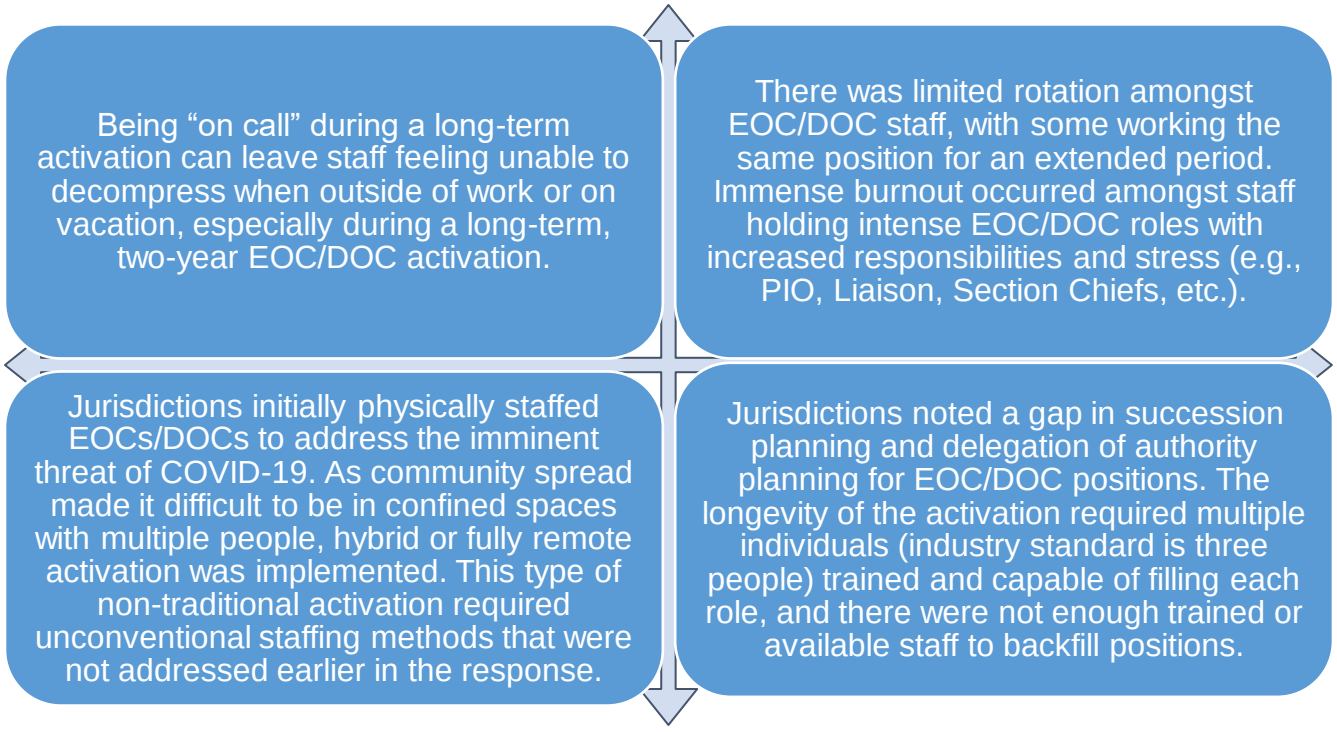
7 Unbound Medicine (2020). Preparing to deliver psychological first aid. Retrieved from https://relief.unboundmedicine.com/relief/view/PTSD-National-Center-for-PTSD/1230011/all/Preparing_to_Deliver_Psychological_First_Aid.

- Identification of designated areas where these mental health professionals may provide PFA and/or coordinating mental health professionals to circulate around the EOC/DOC to identify those who might need mental wellness assistance.

Span of Control

The ICS maintains the foundational principle known as span of control. The philosophy behind span of control is to prevent one individual from overextending their time, capacity, competency, and energy. This is accomplished by ensuring that as the disaster increases in size and complexity, so does the staffing model and management structure. Jurisdictions reported span of control as a key area for improvement, as staff often filled multiple roles and responsibilities for extended periods of time. As one jurisdiction noted, staff often overwhelmingly rise to the occasion for a short-term incident, but long-term response leads to high levels of burnout. In the COVID-19 response, staff attempted to maintain the same level of commitment garnered for short-term, acute responses throughout the duration of the pandemic.

Burnout is characterized by feelings of energy depletion or exhaustion, increased mental distance from your position, feelings of cynicism related to your position, and reduced professional efficacy.[8] The following gaps noted by Bay Area UASI jurisdictions are in opposition to the span of control ICS philosophy and caused burnout amongst staff, serving as areas for improvement for future long-term EOC activations:



8 Merlo K, Conen, K, Scott, B, et al. Burnout in the disaster response workforce: The impact of work roles and the covid-19 pandemic. Journal of Emergency Management. 2021; 19(9) DOI:10.5055/jem.0593

Work/Life Balance

Work/life balance is defined as the amount of time spent doing a job compared to the amount of time spent with family and other things an individual enjoys. Jurisdictions noted the impact leadership expectations and organizational culture had on employees' work/life balance during disaster response operations. The longevity of EOC/DOC activations, breach of Span of Control, and the deep personal impact of the COVID-19 pandemic directly affected the ability of staff to foster a healthy work/life balance over the last two years. On top of professional demands and time commitment, staff faced the risk of contracting the virus themselves, loved ones contracting the virus, deaths amongst family, friends, and colleagues, childcare constraints, school shutdowns, personal supply shortages, etc.

Several jurisdictions noted, however, that the overall environment of leadership and the agency or organizational culture continued to make it difficult for staff to prioritize their work/life balance.

- The demand of working long shifts over weeks and months as well as staffing shortages made it difficult for staff to request time off, as they feared an insurmountable pile of work waiting for them when they returned.
- Response fatigue was common, as most individuals in the response industry were committed to "saving lives" and felt a personal duty to work without stopping.
- Disaster response staff were also at increased risk of Secondary Traumatic Stress, which consists of stress reactions and symptoms which result from exposure to another individual's traumatic experiences rather than direct exposure to a traumatic incident.[9]

Employee Benefits

Employee benefits programs and policies have been challenged during the pandemic response. Many employees have expressed concerns about a lack of human resources (HR) policies that address common issues in the pandemic such as telecommuting, compensatory time off, out-of-class work, and vacation time during extended emergencies. In some situations, the lack of policies led to supervisors developing rules ad hoc, unintentionally creating discrepancies and increasing inequality among employees or divisions within departments. At the same time, the pandemic forced organizations to implement telework policies, increasing some institutional capabilities and promoting a safer work environment while allowing staff to stay

Some jurisdictions implemented strategies to encourage work/life balance such as:

- Offering mental wellness training from mental health experts.
- Incorporating a Wellness Officer and program into the response.
- Making expanded Employee Assistance Programs (EAPs) available to staff to seek external mental health support.
- Implementing mental health checks amongst staff.

9 Center for Disease Control and Prevention (CDC). (n.d.) Emergency Responders: Tips for taking care of yourself. Retrieved from https://emergency.cdc.gov/coping/responders.asp.

home to provide sick care or childcare. Workshop and interview feedback noted there needs to be a more concerted effort by leadership and stronger labor policies to address the issues of DSW employee classification, time off, and wellness programs consistently across jurisdictions and responding departments.

Compensation

Persistent understaffing without a reduction in workload for many organizations resulted in a loss of adequate compensation for those who met and exceeded their compensatory time caps; without a reasonable way to flex or limit hours, staff worked far more than normal with much of the same pay during the pandemic. As a result, some employees left their positions for opportunities with higher salaries and better benefits outside of the public sector. Many jurisdictions have responded by increasing staffing levels and hiring additional personnel to alleviate understaffing but are competing for the same candidates across the Region. Local governments are also competing with private vendors who are often able to offer higher salaries and better benefit programs.

Expanded Benefits

In most cases, there were expansions to employee benefits because of the pandemic. For positions that allowed for it, telework was a welcomed change. Some HR departments also changed carry over rules for vacation time to accommodate employees who were unable to use their time during the response. One mental health partner stated they offered COVID-19 sick time and provided an extra vacation day to deployed staff. Healthcare and first responders were also able to get vaccinated earlier which allowed them to feel safer and to work in highly impacted communities. However, some jurisdictions noted that public health and emergency management personnel sometimes felt slighted by early vaccination policies as they were not initially considered “first responders” or healthcare workers if they worked at a public health clinic, for example.

One jurisdiction added paid administrative leave for staff who were potentially at high risk and hazard pay policies during the pandemic for some responders, which was very well-received. Other jurisdictions wished they had similar policies in place, or that hazard pay was in place for EOC/DOC staff working overtime.

Exacerbating Inequalities

DSW deployments and staff reassignments carried inherent inequalities. In some jurisdictions, when stay-at-home orders were issued, those who could not telecommute were placed on paid furlough. Many of these furloughed employees were predominantly Black, Indigenous, and People of Color (BIPOC) and in lower-paid job classes, versus management and analyst classes who were able to telecommute. Often, furloughed employees were prioritized to fill immediate DSW assignments, which were largely entry-level and in-person during a public health emergency. The DSW positions were also required to travel to work sites while public transportation was significantly reduced or perceived as unsafe.

Staff were often still required to fulfill their responsibilities in their home department while a deployed DSW. This made it difficult for staff to know who to take direction from, especially with competing priorities, project loads, and time off requests. Some DSWs were deactivated without sufficient communication and coordination with home departments. This resulted in home departments not having a seamless reintegration plan for the returning DSWs and unclear expectations of time off between deactivation and resuming normal operations.

Transition to Telework

Transition to the telework environment created complications for jurisdictions and staff assigned to telework. Many staff have varying degrees of access to technology, internet quality, reliability of video conferencing, work at home space, and freedom from distractions. Facilities were responsible for supplying laptops, cell phones, and other equipment to facilitate telework. Differences in resources exacerbated inequities within the workplace. Many facilities did not have existing telework policies prior to the pandemic to address these challenges, and it took time to develop them. Though a positive aspect of the pandemic that was almost unanimously supported by all jurisdictions was the fact that each jurisdiction now has expansive structures for telework in place, two years later.

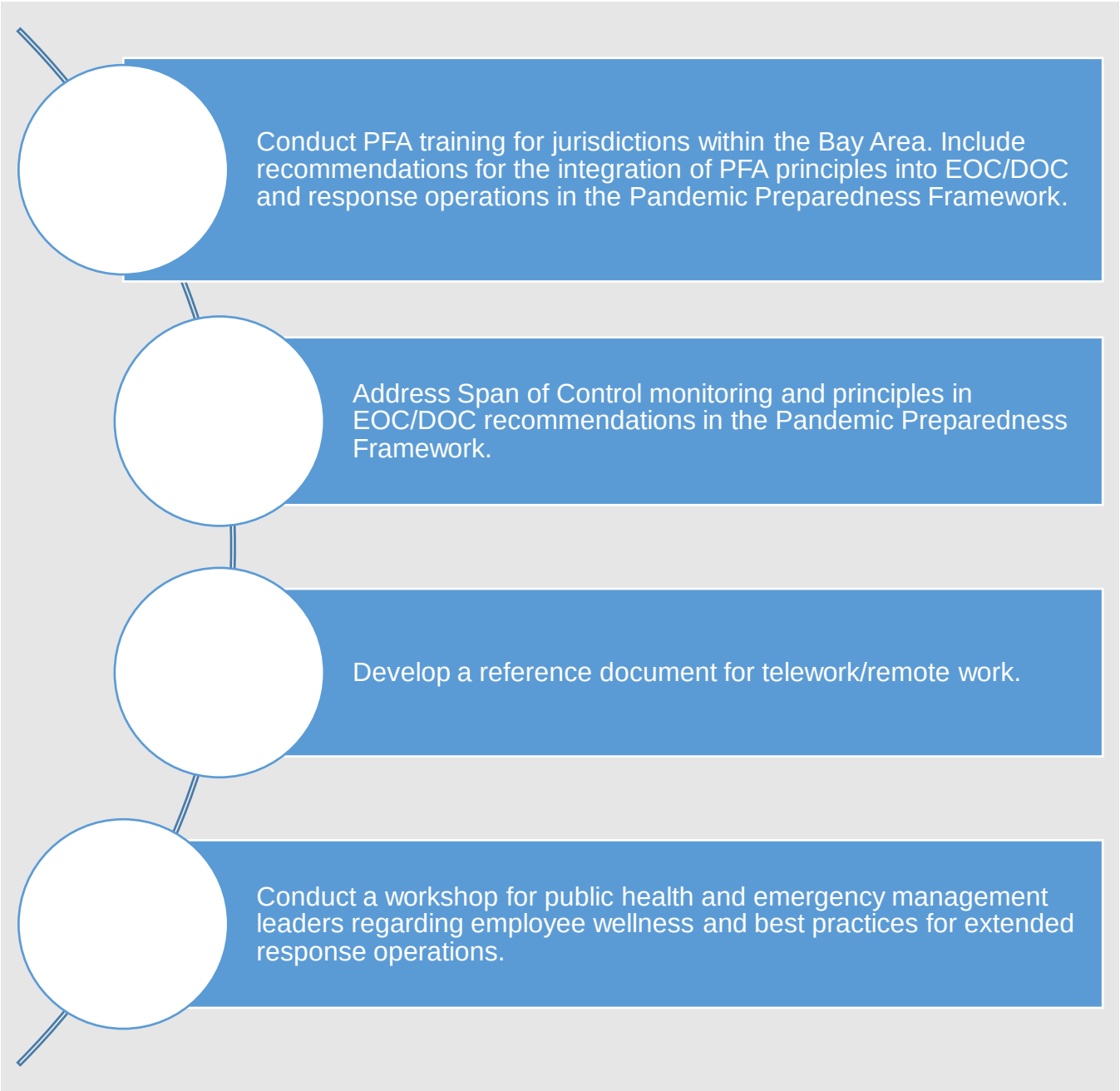
The shift to telework also added more response capabilities for employees. This included virtual activations, virtual patient services, and assistance with staffing challenges. Early adoption of new forms of technology, like Microsoft (MS) Teams as a collaboration and communication tool, was impactful for transitioning to telework. Staff noted that shifting to virtual operations eased their anxiety. However, because of the added benefits of telework, some jurisdictions have noted a reluctance from employees to return to in-person work as response efforts slow.

Employee Assistance Programs (EAPs)

EAPs became a prominent tool promoted by organizations to address responder health and safety. Employees who used EAPs noted they experienced challenges using the programs, however, because the programs were overwhelmed by the demand. The programs often had out-of-date lists of service providers and, when they were up to date, many of the providers were not accepting new clients. They also experienced frustration trying to seek support through the programs, because procuring services was time consuming and required frequent follow-ups. Further, most EAP programs are intentionally anonymous without any reporting metrics. This makes it difficult to assess whether the programs were being utilized effectively. Many jurisdictions made a concerted effort to provide mental health services to staff. These services, however, were not easy to use and were thus overlooked by many staff members or staff indicated that the organization's culture did not actually allow for the services to be fully utilized because they did not have time or the services were not provided in an accessible format (e.g., they had to travel to another location to get services).

Best Practices – Environmental Response/Health and Safety		
Staff Burnout	**Employee Benefits**	**Employee Assistance Programs**
Integrating wellness activities into daily operations and meetings, such as icebreakers, meditation exercises, and time for staff to "vent" or share a success.	Improving internal policies to allow roll-over of Paid Time Off (PTO) hours through the traditional fiscal year.	Updating the list of service providers frequently to ensure all staff members can access resources.
Creating dedicated phone lines for EOC/DOC positions, e.g., Ops Chief Cell Phone, which can be handed off when the position is transitioned to another person, to avoid staff getting personal calls on their cell phones during an emergency.	Instituting an audit of departmental telework policies across departments and across roles/positions while examining them from an equity lens, to ensure these policies are not discriminatory.	Identifying anonymous utilization metrics to help track program usage across departments without sacrificing individual user anonymity.
Integrating PFA principles into disaster plans, ICS, and EOC/DOC operations, such as dedicated Mental Health roles and objectives.	Providing the necessary computers and equipment to conduct telework to all staff consistently. This includes a stable internet provider such as a mobile Wi-Fi hub or hotspot.	Identifying alternative service providers that may comply with EAP benefits. This includes virtual resources.
Instituting span of control monitoring for EOC/DOC and other activated roles, by having the Safety Officer or Section Chiefs audit each role's span of responsibilities and management.	Examining possible compensation expansions, such as hazard pay or paid administrative leave for those at high-risk or who may have caregiving responsibilities.	Exploring non-traditional programs to incorporate into EAPs, such as career coaching, childcare assistance, and eldercare resources.

Regional Recommendations – Environmental Response/Health and Safety



Logistics and Supply Chain Management

Capability Definition

This refers to the ability to deliver essential commodities, equipment, and services in support of impacted communities and survivors to include emergency power and field support. This includes mobilizing and delivering governmental, non-governmental, and private sectors resources to save lives.

The COVID-19 pandemic underscored the fragility of supply chains and exposed gaps in public health logistical planning and preparation. Pre-existing relationships between coordinating entities and jurisdictions helped address resource management challenges and improved coordination when possible. However, many existing plans and processes could not match the scale needed for COVID-19, nor did they account for the level of external competition for resources within and beyond the region. Jurisdictional warehouses were immediately found to be lacking in adequate space and staffing. The supply chain was impacted by factors that were not accounted for in planning such as shifting and short notice health orders, absenteeism, scarce resources, and quarantine requirements. Initially, many jurisdictions resorted to ad-hoc inventory management and resource tracking systems and information sharing dashboards until more robust IMS and resource tracking systems came online.

Regional or Operational Area (OA) Coordination

Jurisdictions were adamant in many of the small group interviews and the regional workshop that the MHOAC and RDMHC/Ss were strong partners in the response. These roles helped fill many critical resource and supply gaps response agencies were facing and made for easier communication due to pre-existing relationships. MHOACs also provided a more centralized and detailed process for resource requests.

Three areas for improvement included:

- More regional coordination for existing Memorandums of Understanding (MOUs),
- Standardizing Logistics Sections within the EOC/DOC,
- Improved communication and coordination with Cal OES, and
- Additional backfill for the MHOAC and RDMHC positions regionwide.

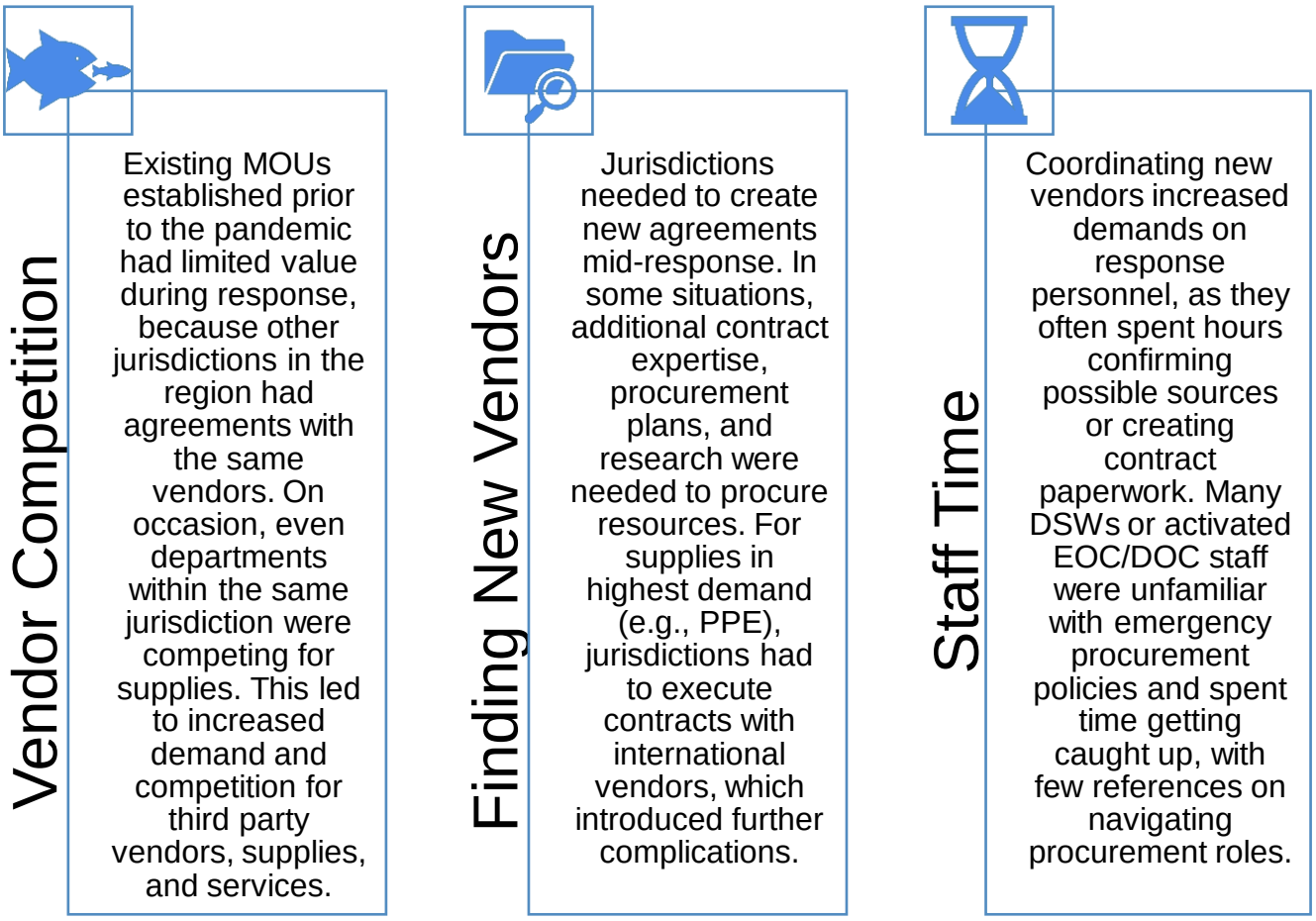
Strong Pre-Established Relationships

Regionally, strong relationships between MHOACs, RDMHC/Ss, and jurisdictions facilitated the timely fulfillment of medical and health resource requests when supplies were available. Many felt that the pre-established relationships helped overall communication and that it was easy to coordinate with identified contacts. The MHOAC/RDMHC/Ss pathway for medical and health mutual aid requests had been trained to and exercised comprehensively in the region. Many MHOACs and RDMH/Ss stepped in when getting supplies from regular vendors became difficult. RDMHC/Ss were critical to connecting the region to other resources and were noted as a best

practice for OA coordination. In addition, they allowed the region to fill staffing gaps across the region without going to the state on some occasions. Both the MHOAC and RDMHC/S positions were easier to communicate with and more available than other traditional resource request coordination paths. For instance, it was not always clear what resources were attainable from the state or through local EOCs. However, most jurisdictions did note that the MHOACs/RDMHC/Ss needed additional staff capacity and backfill.

Memorandums of Understanding (MOUs) and Contracts

There were many issues with vendor competition and MOU activation noted by jurisdictions throughout the data collection process for this report. They can be summarized as follows:



Logistics Section Operational Oversight and Experience

Although several jurisdictions acknowledged having strong logistics personnel, there was frequently inconsistent structuring and oversight of the Logistics Section within an EOC or DOC.

- In some cases, the Logistics Section was moved during the response and oversight of the section changed. Sometimes the Logistics Sections for emergency management and public health were combined or co-located to reduce duplication. Other times, they would be located at local warehouses, or off-loaded to third party vendor staff.
- Both the EOC and Public Health DOC Logistics sections were responsible for triaging and prioritization of resources, explaining how to get PPE to facilities, and answering logistics-related questions, which led to some duplication of effort amongst both.
- Many of the staff or DSWs assigned to work in Logistics Sections were not trained in logistics management, inventory management, or warehousing operations.

Warehouse Operations

The COVID-19 pandemic impacted warehouse operations across all sectors, including public health and emergency management. The impact was largely felt in a lack of trained warehouse staff and the sheer logistical scale of the response. Many jurisdictions were forced to creatively partner with the private sector for additional warehouse space and staff. IMS also fell short given the volume of requests and the new information associated with vaccines, cold chain storage, and scarce resources. Most jurisdictions filled the IMS gap with Microsoft and Google spreadsheets.

Inventory Management Systems (IMS)

County warehouses had to serve hundreds of accounts during COVID-19, providing supplies for:

- County Departments
- Cities
- EMS/Ambulance Providers
- Healthcare Facilities
- Correctional Facilities
- Schools
- Law Enforcement and Fire
- Pharmacies
- Community-Based Organizations

Almost every jurisdiction in the Bay Area struggled with finding an ideal IMS or software solution during the COVID-19 pandemic. In some cases, the IMS that was in place before the pandemic fell short during response, either not able to handle the scale or requests or was not built to include information about new types of medical countermeasures or cold chain storage. Most response agencies eventually relied on simple but effective Excel or Google spreadsheets in their warehouses. These systems allowed personnel to monitor resource requests during the early stages of the response when capacity was limited and when other software had failed. It also allowed personnel across departments to easily share information.

As resources became scarce and supply chains slowed, the same systems were also used in tracking resource allocation. These spreadsheets had the added benefit of being quicker for DSWs to gain access to compared to an IMS that required credentialing, training, and technical

support. Many jurisdictions have begun to explore new IMS systems instead of continuing to use the ad-hoc systems.

Scaling for COVID-19

Existing logistics planning did not account for the scale of the pandemic and therefore did not allocate enough warehouse space to support the operations. Most jurisdictions had to spend time finding and securing additional warehouse space and staff, either through private sector partnerships, MOUs, contracts, or by reallocating county properties. DSWs, volunteers, and the private sector all assisted in filling staffing needs. Available warehouses did not have the capability to support the large volume and quick turnaround of supplies or new requirements for vaccine and cold chain storage. Many jurisdictions still have large stockpiles of supplies purchased with COVID-19 funds which will need long-term storage solutions and stockpile rotation.

Experience and Training

There was a nationwide shortage of staff with experience in and knowledge of:

- Inventory management principles and systems
- Warehouse operations
- Medical and Health supplies and requirements
- Stockpile and pharmaceutical rotation
- Scarce resource allocation principles
- EOC/DOC operations
- Mutual aid pathways

Many jurisdictions reported needing full-time, dedicated staff with expertise in the full cycle of resource management to build future capabilities or noted a desire for a regional logistics strike team that could be deployed to areas impacted by an emergency or disaster in the region. Additional staffing support and expertise included warehouse positions requiring certifications or qualifications such as forklift operators and drivers with commercial driver's licenses. Often, the staffing requirements were filled by available personnel with similar job duties such as a business manager or warehouse operator, though they did not always understand public health and medical supplies management.

Organizations and facilities that fared the best during times of resource scarcity were those that had robust stockpiling and support volunteer programs in place pre-pandemic.

After H1N1 and Ebola, some organizations realized that PPE items often went on backorder, for example, and would keep a rotating 60-90 day supply on hand for winter flu surge, using the summers to resupply.

Supply Chain Management

Supply chains remain a fragile and vulnerable part of the COVID-19 pandemic. In the initial stages, many agencies had to scramble to update or create scarce resource allocation protocols or committees because existing protocols did not account for the scale or relied on regional and

state solutions. Scarce resource distribution became more challenging when vendors and distributors began limiting orders or cancelling them with little notice, causing preemptive overordering to account for future shortfalls.

Several jurisdictions were able to leverage strong logistics teams to update plans and create dashboards that promoted information sharing and allowed for better resource allocation by tracking supply levels at healthcare facilities, for example. For testing supplies, one jurisdiction noted that having a partnership with a private company specializing in health technology allowed them to secure supplies when the rest of the state was experiencing challenges. Other private sector partnerships across the region were critical to providing alternative supply sources.

Scarce Resource Planning and Protocols

Most jurisdictions had to develop some variation of a scarce resource allocation protocol or create a committee/working group to account for the sheer volume of resource requests coming not only from county departments, schools, correctional facilities, or healthcare facilities, but also from community-based organizations and private sector entities. While previous plans provided a foundation, most had to be adjusted significantly to create allocation parameters uniquely tailored to those at highest risk of exposure to COVID-19.

Often health and medical resource distributors placed limitations on order size and quantity, shifted items to backordered, or cancelled orders without notice. This inadvertently encouraged others to over-order even in times when they may not need supplies, to account for these limitations later. Jurisdictions with strong logistics teams were able to adjust quickly for resource tracking, creating new systems and engaging subject matter experts (SMEs) to setup a more sophisticated resource tracking system which helped to more equitably allocate scarce resources (e.g., PPE). Many emphasized doing due diligence in vetting vendors to evaluate their contingency plans for filling orders.

One best practice was open communication and transparency with local healthcare facilities through the healthcare coalitions about local supply chain impacts and resource supply levels. This enabled facilities to participate in countywide dialogues regarding impacts and forecasting future needs.

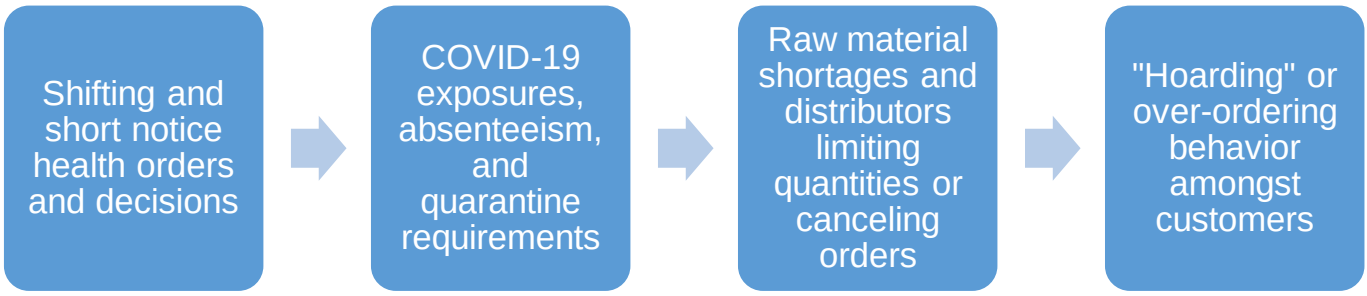
Supply Tracking and Information

Overall, there was effective communication about the types of resources needed during the various stages of the pandemic response, to include N95 masks, gloves, masks, and hand sanitizer. Jurisdictions were able to procure critical resources from the state through direct purchasing.

Some jurisdictions were able to create a dashboard or shared information platform to track supply levels and create a priority-based system where they could identify when response activities needed to be adjusted to account for limited supplies. Dashboards were able to monitor par levels (minimum amount of supply required) and create a scorecard or a stoplight system for visually identifying resource levels.

Supply Chain Disruptions

Overall, the following factors disrupted the supply chains throughout the pandemic:



Some of the most commonly difficult items to obtain during COVID-19 included:

- Catheters
- Personal Protective Equipment (i.e., N95 masks, gloves, gowns)
- Ventilators
- Steroids
- Blood draw equipment
- Formula
- Pharmaceuticals
- Disposable stethoscopes
- Disinfectant wipes and other sanitation supplies
- Portable High Efficiency Particulate Air (HEPA) filters
- Testing supplies and specimen collection containers
- Albuterol
- Respiratory supplies
- Crash cart medications and supplies

Alternative Supply Use

With the medical supply chain heavily impacted, healthcare staff were rationing necessary equipment to protect themselves and their patients all while providing the most safe and effective method of care. While CDPH provided notifications to healthcare facilities and providers regarding extending the use of N95's and other medical equipment, some staff reported they were unaware they had the ability to use alternative supplies given the shortage in medical supplies throughout the country. For example, staff were unaware they could use gauze in substitution for cotton balls during an emergency response where inventory was extremely limited.

As the medical supply chain continued to be impacted, private companies started utilizing creative measures to help those on the front lines. Distilleries shifted production to begin providing hand sanitizer donations to jurisdictions. Healthcare personnel were informed they could use high concentrated ethanol-based hand sanitizer developed from such distilleries in place of hand sanitizer if they had none. While this was not always ideal, it allowed healthcare

workers in clinics and skilled nursing facilities to utilize other products when the supply chain was severely lacking.

Best Practices – Logistics & Supply Chain		
Regional or Operational Area Coordination	**Warehouse Operations**	**Supply Chain Management**
Prior engagement, relationship-building, and training with the MHOACs and RDMHC/Ss facilitated resource requests and OA coordination for supply chain and scarce resource issues.	Developing ad-hoc resource tracking systems into formal databases throughout the pandemic response underscored adaptability and provided the necessary infrastructure to manage resource requests more effectively.	Resource information sharing, communication, and transparency with local stakeholders and healthcare coalitions was the best tool for scarce resource allocation to manage expectations and forecast future supply needs.
Backfilling the MHOAC and RDMHC/S roles with supplementary teams of trained personnel.	Partnering with public and private sector partners to identify warehouse space and staff provided the necessary support to meet the scale of the response	Tracking scarce resources with a dashboard that visually represented par levels of scarce resources aided transparency and coordination across partner entities.

Regional Recommendations – Logistics & Supply Chain

- Consider hosting local or regionwide workshops focused on MOUs and contract vendor sharing. These workshops should incorporate both emergency planners and contracting/procurement personnel to discuss resource competition in a future disaster. Cal OES should be invited to participate as a key player. Incorporate this planning into the Scarce Resource Allocation Framework.
- Compile a regional list of recommended requirements for IMS as part of the Scarce Resource Allocation Framework in order to encourage regionwide integration and collaboration.
- Using the Functional Assessment Support Team (FAST) model, review the feasibility of creating Logistics / Warehouse Support Teams or a strike team within the Bay Area to deploy to jurisdictions needing assistance in scaling up operations.
- Identify the most frequently "scarce" resources and supplies during the pandemic and dedicate regional resources towards identifying backup suppliers or stockpiling options for these items.
- Bay Area UASI advocate on behalf of member jurisdictions with Cal OES and CDPH for a resource information sharing dashboard.
- Recommend for inclusion in local plans potential warehousing space that can be activated via mutual aid or resource requests to support a local jurisdiction or regional logistics and supply operations.

Public Health, Healthcare, and Emergency Medical Services

Capability Definition

This refers to the ability to provide lifesaving medical treatment via emergency medical services (EMS) and related operations to avoid additional disease and injury by providing targeted public health, medical, and behavioral health support to all affected populations.

Vaccination Management

Mass vaccination, or Point of Dispensing (POD), events served as a rallying call for the public, local government leadership, and responders. Generally, the public praised public health's ability to deliver large amounts of vaccines per week which significantly contributed to a decrease in COVID-19 infections and the severity of those infections within the region. Jurisdictions used innovative campaigns to vaccinate their communities, which was a significant achievement. PODs were commonly conducted at fairgrounds, pop-up events, medical schools, nursing schools, and event centers. As the pandemic evolved, the mass vaccination sites transitioned to smaller community-based and local sites based on site agreements.

Of note, content related to vaccine equity, accessibility, and messaging is provided in other sections of this report. Also, many jurisdictional AARs were completed during the height of vaccine distribution and may not have included comprehensive information about these efforts at the time of this writing report.

Internal and External Support

Pop up sites and mobile (strike) teams were valuable in distributing vaccines to smaller communities, people without transportation, or people experiencing homelessness.

Operationally, many jurisdictions noted they had strong interdepartmental support and external partnerships in vaccine administration. Local EMS agencies, EMTs, and paramedics became invaluable partners in delivering vaccines and staffing vaccine sites. Providing vaccines to all responders also created a safer work environment and allowed them to enter locations with communal outbreaks at lower risk. Two common best practices were "pop-ups" and mobile (strike) teams focused on smaller communities, people without transportation, or people experiencing homelessness. CBOs and faith based organizations (FBOs) were also critical in helping jurisdictions to focus on specific communities and target vaccine messaging.

Mobile vaccination teams were found to be the most effective way for reaching individuals who were homebound. These individuals could either request vaccinations or CBOs and FBOs would help coordinate on their behalf. Organizations lowered the technology barriers community

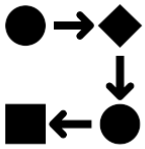
members faced when vaccine registration was primarily conducted online. Volunteers, such as those from Medical Reserve Corps (MRC), and third party vendors were also key resources in staffing the mobile vaccination teams.

Tier System Challenges

The vaccine rollout also came with many challenges stemming from the volume of vaccines that needed to be distributed. Because vaccines were distributed in a tier system, some jurisdictions noted an unequal distribution of scarce vaccine dosages. Some citizens were unable to use the online registration systems and instead called local health departments to facilitate registration. These factors often resulted in the public overwhelming communications platforms with questions regarding vaccination registration. One jurisdiction noted that at one point they had over 200 employees assisting in registering people for vaccinations. Another jurisdiction sent out iPads to CBOs who assisted their communities in registering for vaccines.

There was also confusion surrounding eligibility that resulted in several populations being ineligible to receive first doses, despite being medically at risk for complications due to COVID-19. Several jurisdictions had to change appointment registration platforms multiple times, which was challenging for the public and caused frustration.

Points of Dispensing



Jurisdictions had POD plans and had exercised them in the years leading up to the pandemic; however, there were many additional considerations for COVID-19 that had not been learned with other events and exercising. For example, jurisdictions had to revamp their plans to account for high volumes of patients, flow, adverse reactions, and maximum efficiency. Staffing at vaccine sites was also notably inconsistent and inefficient. Planning often cited volunteers and volunteer organizations as major staffing components of PODs, though these sources were often inadequate. Jurisdictions were then competing for third party vendors to staff sites. To incentivize volunteers, many jurisdictions offered vaccines to those who participated but staff noted they rarely saw these volunteers working multiple shifts.

Cold chain storage for vaccines was an additional consideration for both POD operations and warehousing. Jurisdictions generally did not have the storage needed and often had to procure the necessary equipment in parallel to PODs becoming operational. Similarly, one jurisdiction noted the PODs also needed to incorporate crisis standards of care to be more resilient when there were supply and resource shortages, as healthcare volunteers and staff were not used to innovating with the supplies available and resisted alterations to normal vaccination procedures.

Case Investigations and Contact Tracing (CICT)

CICT for COVID-19 presented several challenges that forced traditional CICT plans and operations to adapt during the pandemic. Challenges such as non-symptomatic individuals, slow and inconsistent test results, resistance to providing test result and contract tracing information, supply chain issues, and staffing shortages were all barriers to effective operations. In addition, many jurisdictions started the initial response with the goal of contact tracing for 100% of cases only to become overwhelmed by the end of 2020. Once the volume of cases had become

overwhelming, CICT operations prioritized efforts towards congregate settings and other high risk and vulnerable population groups.

Innovating CICT Operations

Many jurisdictions pursued innovative methods to achieve CICT objectives, including new partnerships with external organizations, strong relationships with stakeholders such as school districts, and new funding that allowed additional staff hires. Across the region, jurisdictions noted the need to ramp up contact tracing capacity and staff, as well as expedite contracting procedures to best mitigate transmission. Escalating and expediting staffing created a strengthened contract and hiring process that was applicable to other response areas such as vaccines and testing. Outside of hiring additional staff, some jurisdictions were able to incorporate state personnel into their CICT operations while others incorporated volunteer programs.

In addition to providing a layer of safety for staff, shifting to remote work had the added benefit of building systems that made it possible to integrate additional staff and volunteers into CICT whereas in the past, computer systems, local presence, and more workspaces would have been needed. This innovation allowed for the scale needed to support CICT as remote staff could be brought in from anywhere to assist.

Although not traditionally a part of CICT, support CICT staff were also able to provide other COVID-19-related services such as vaccine information, accessibility resources, food and wellness assistance, and temporary housing information.

Data and Case Management Systems

Existing case management systems were quickly found to be insufficient for COVID-19 CICT operations. Initially, many CICT operations started with paper, Google Sheets, or Microsoft Excel but incident needs quickly exceeded technical capacities of these systems. Many of the existing systems could not be accessed remotely and did not have adequate access controls. The systems had to facilitate remote work and volunteers with the same level of security provided by internal systems. In some situations, jurisdictions switched between multiple systems throughout the pandemic. Jurisdictions felt that it would have been valuable to have a statewide system in place before the pandemic.

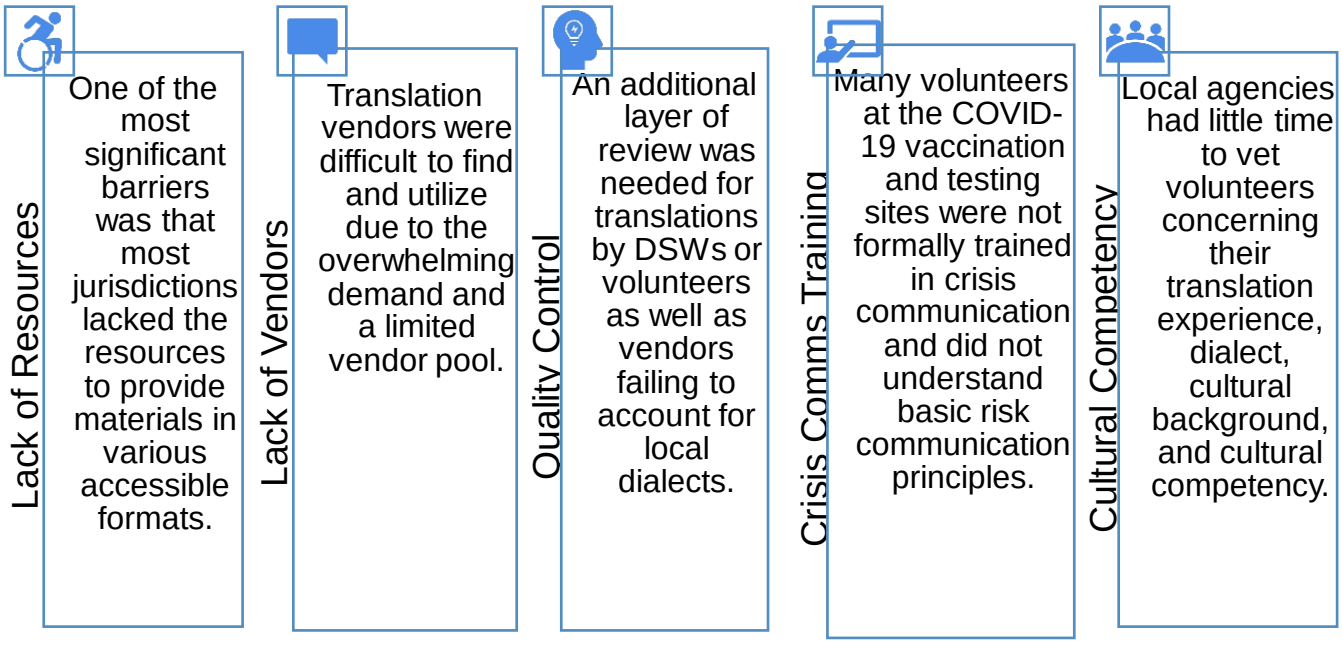
Volunteers, particularly the Medical Reserve Corps (MRC), were key partners in CICT operations. In one jurisdiction, the volunteers became a data analysis and modeling team, assisting multiple response efforts. That team was able to create a common operating picture that informed resource availability and capacity building. That information helped maintain the success rate of CICT efforts.

Equity and Inclusion Planning

The COVID-19 pandemic has grossly exacerbated pre-existing inequities worldwide with no exception in the Bay Area. Overall, jurisdictions in the Bay Area worked proactively to take a data-driven, equitable, and inclusive approach to the pandemic despite severely limited resources. Many jurisdictions have pre-existing, steady state positions and departments whose role is to identify and address the needs of the most vulnerable populations in their communities. During the pandemic, these, among new entities aimed at addressing pandemic-related inequities, helped ensure agencies responded to the pandemic through an equity lens and helped jurisdictions implement response initiatives specifically targeted at historically underserved populations. In many jurisdictions, CBOs and other local partnerships were a key component in ensuring the most impacted populations were provided with the resources and services necessary to mitigate the disproportionate impact of the pandemic.

Accessible Messaging

Significant messaging gaps continued through the pandemic specifically around tailoring messaging for individuals with AFN such as:



One of the main challenges concerning accessible messaging was digital literacy. According to research from a 2018 study of San Franciscans, the most significant and consistent gaps in technology usage and access were amongst four socioeconomic demographic groups: low-income, limited English proficiency (LEP), senior citizens, and those with a disability.[10] During data collection for this report, individual and small group interviews noted these demographics were consistently mentioned as having the most difficulty in accessing digital information and/or registration for testing and vaccination sites (please reference Vaccine Management section for further information). Joint Information Systems (JIS) and crisis communications best practices are heavily based on sharing information digitally. Even print material used during the pandemic, such as door hangers or flyers at community centers and libraries, frequently referred residents and users to a website for more information (e.g., public health department's COVID-19 website or dashboard) which was sometimes difficult to navigate for these population groups. It also contributed to a lack of trust in government agencies, as rumors spread surrounding the use of websites which were difficult to navigate for these populations and the lack of translated material. It was noted that some population groups may have perceived this as intentional and a way of keeping certain population groups from accessing information available to other populations.

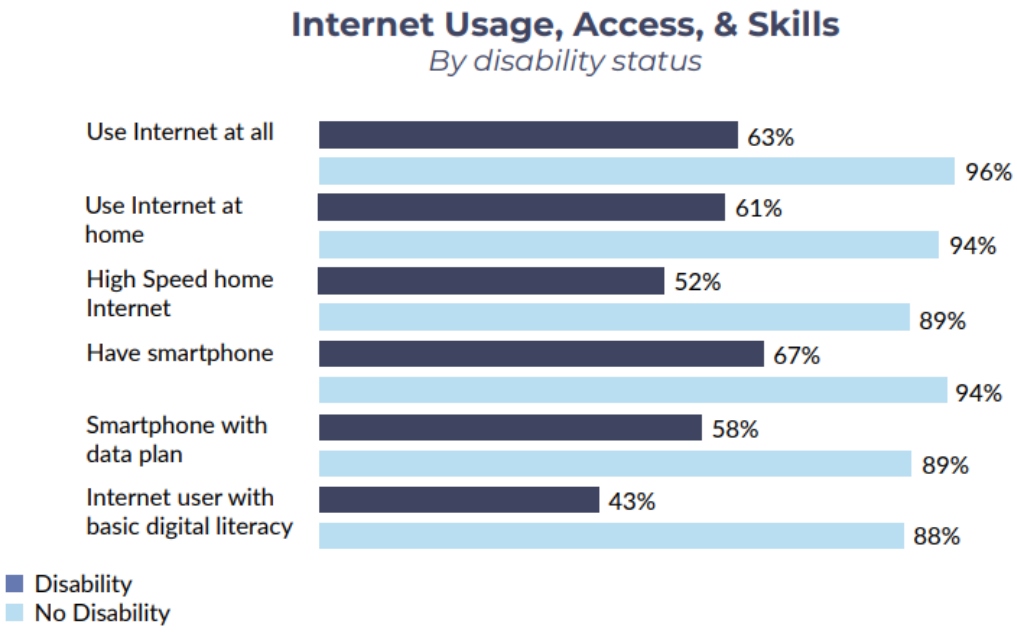


Figure 1: Internet Usage, Access & Skills by Disability Status (San Francisco Equity Strategic Plan)

10 City and County of San Francisco. Digital Equity Strategic Plan, 2019-2024. https://sfmohcd.org/sites/default/files/SF_Digital_Equity_Strategic_Plan_2019.pdf.

Addressing Accessibility of Services

Access to services became a prominent concern for hard-to-reach and underserved communities. Jurisdictions were forced to address significant accessibility issues for efforts such as PODs or Vaccination Sites and Mental and Behavioral Health services.

POD / Mass Vaccination Sites	• During the pandemic, it became increasingly evident that traditional POD sites do not often provide the necessary space, resources, layout, or processes to equitably serve all members of the community. • To address inadequacies of sites, jurisdictions integrated CBOs serving populations with AFN into mass vaccination efforts. This helped remove significant barriers like limited transportation to and from sites, lack of access to information in multiple languages, and limited mobility throughout the sites.
Homebound Outreach Teams	• Some populations that were eligible to receive the vaccine, such as adults aged over 65 years or individuals with pre-existing conditions, experienced challenges when attempting to make vaccination appointments. • Outreach or strike teams were created to engage hard-to-reach populations, including homebound residents. Some jurisdictions deployed teams to provide vaccinations at individuals' homes. • Smaller jurisdictions and those with fewer resources frequently had long wait lists for at-home vaccine appointments. Most jurisdictions wished they had additional resources (staffing, equipment) to organize and deploy at-home visits quicker and on a wider scale.
Mental / Behavioral Health	• With the move to telework and telehealth for non-essential services in many sectors, some communities reported having better access to certain services such as mental and behavioral health treatment or consultations. • Inequities and challenges still existed even with the increase of telehealth. This included limited internet access for some vulnerable populations as well as inaccessibility of routine preventative care that needed to be in-person but was cancelled or delayed.

Community Relationships and Partnerships

Some of the most successful approaches involved the presence of a dedicated, paid Volunteer Organization Active in Disaster (VOAD) liaison within the Emergency Operations Centers (EOCs) and/or Department Operations Centers (DOCs) who could then coordinate with targeted, sub-VOAD/Community Organizations Active in Disaster (COAD) groups within cities or targeted communities.

Jurisdictions relied heavily on CBOs to assist in engagement of AFN communities and hard-to-reach populations. New partnerships were established, and existing partnerships were capitalized on to interact with and provide information and services to vulnerable populations in a culturally competent and accessible manner. These partnerships allowed jurisdictions to provide integral services throughout the pandemic response to populations they would have otherwise had more difficulty effectively serving.

Jurisdictions emphasized the importance of directing funding to these CBOs to reimburse them for their time and services, as these groups are typically already at capacity and without the appropriate resources to scale up significantly during an emergency response without additional capital.

For many jurisdictions, the impacts of the pandemic significantly limited the accessibility of traditional services for people experiencing homelessness. Traditional engagement or interaction with this community was often not possible due to physical distancing guidelines. As a result, partnerships were formed with organizations servicing people experiencing homelessness to provide outreach on services, to include wellness, food, and shelter.

Project Room key,[11] which started as a partnership between FEMA and state agencies to provide non-congregate sheltering services to people experiencing homelessness during the pandemic, required a significant amount of investment at all local levels. The project successfully built new partnerships for many jurisdictions with Departments on Aging, Social Services, Childcare, and Victim Services, among others. It drove jurisdictions to create a new approach to non-congregate sheltering from the ground up with the help of many new partners, all of whom need to continue to be engaged in emergency planning going forward.

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11 See Project Roomkey/Homelessness Response Providers During COVID-19. California Department of Social Services.
https://www.cdss.ca.gov/inforesources/cdss-programs/housing-programs/project-roomkey

Emergency Planning and Response Structures

Ensuring that equity and inclusive planning was at the forefront of operations, several jurisdictions and organizations coordinated frequent standing meetings to discuss the integration of equity and inclusion into the response. Some of the strategies for equity inclusion in planning and response included:

- Cal OES' Office of Access and Functional Needs (OAFN) hosted weekly calls to disseminate important information about best practices for promoting equity and challenges faced by vulnerable communities during the pandemic. However, the size and scale of the pandemic quickly required additional investment of resources within EOC and DOC structures at each jurisdictional level to further support equity and inclusivity planning.
- Equity Plans or annexes were added to some jurisdictions' current plans relative to specific functions (e.g., an equity plan for mass vaccination, or an accessibility' plan for public messaging).
- Some jurisdictions used a Policy Group or subcommittee to convene regularly with members of the community or CBO representatives to identify current challenges.
- EOC/DOC structures were sometimes modified to include positions for the purposes of equity or accessibility.

Another challenge cited was access to accurate data for the purposes of equity planning. Many jurisdictions were relying on data sources that may have been out of date or not comprehensive enough (e.g., census, EmPOWER, etc.). They often did not have a centralized source of data regarding vulnerable communities and groups, though they were able to get around this by tapping into local community and advocacy groups to find data on specific subpopulations. Of note, some jurisdictions did use the CDC Social Vulnerability Index[12] to guide public health community-based programs.

Although COVID-19 vulnerability intersected with many disabilities, data was not always collected amongst cases in testing to understand how COVID-19 impacted the lives of those with disabilities. Similarly, data on income or race or ethnicity was also not often aggregated for all testing results which caused similar gaps. Jurisdictions struggled to see 'the whole picture' with COVID-19 data. Other jurisdictions outside of California had some success with implementing point-in-time data collection such as Community Assessment for Public Health Emergency Response (CASPER) assessments[13] to collect representative data on COVID-19 impacts on communities, but these types of assessments are extremely resource-heavy, and most jurisdictions lacked the staff and resources to implement them.

These challenges reinforced the critical role that community partnerships played in filling the gaps in equity and inclusivity planning during COVID-19 response efforts across the Bay Area. Departments that were already overwhelmed due to the demands of response relied on

[12] CDC/ATSDR Social Vulnerability Index. https://www.atsdr.cdc.gov/placeandhealth/svi/index.html
13 See Centers for Disease Control and Prevention (CDC) Community Assessment for Public Health Emergency Response (CASPER) Toolkit. https://www.cdc.gov/nceh/casper/default.htm.

volunteers, data, and expertise from community-based organizations and advocates to address challenges. Many of the lessons cited by Bay Area jurisdictions centered around having these relationships solidified sooner and with better information sharing pathways.

ACCESSIBLE MESSAGING

One jurisdiction created **a Language Access Section** devoted to culturally competent communications and multilingual outreach, including creating language leads for Spanish, Vietnamese, Tagalog, and Chinese to engage impacted communities, stakeholders, civil leaders, and ethnic media to ensure effective messaging.

EMERGENCY PLANNING

Jurisdictions adapted their current ICS structures in the EOC and DOC to create groups dedicated to addressing equity and inclusion planning for specific aspects of the response, including vaccination, testing, case investigations and contact tracing. These sometimes took the form of a **dedicated Equity Officer**, and other times as **committees or Policy Group assignments**. One jurisdiction established an Access and Functional Needs Multiagency Coordination (MAC) Group as part of recovery planning, which has enabled expanded planning efforts while reducing vulnerability to hazards.

ACCESSIBLE SERVICES

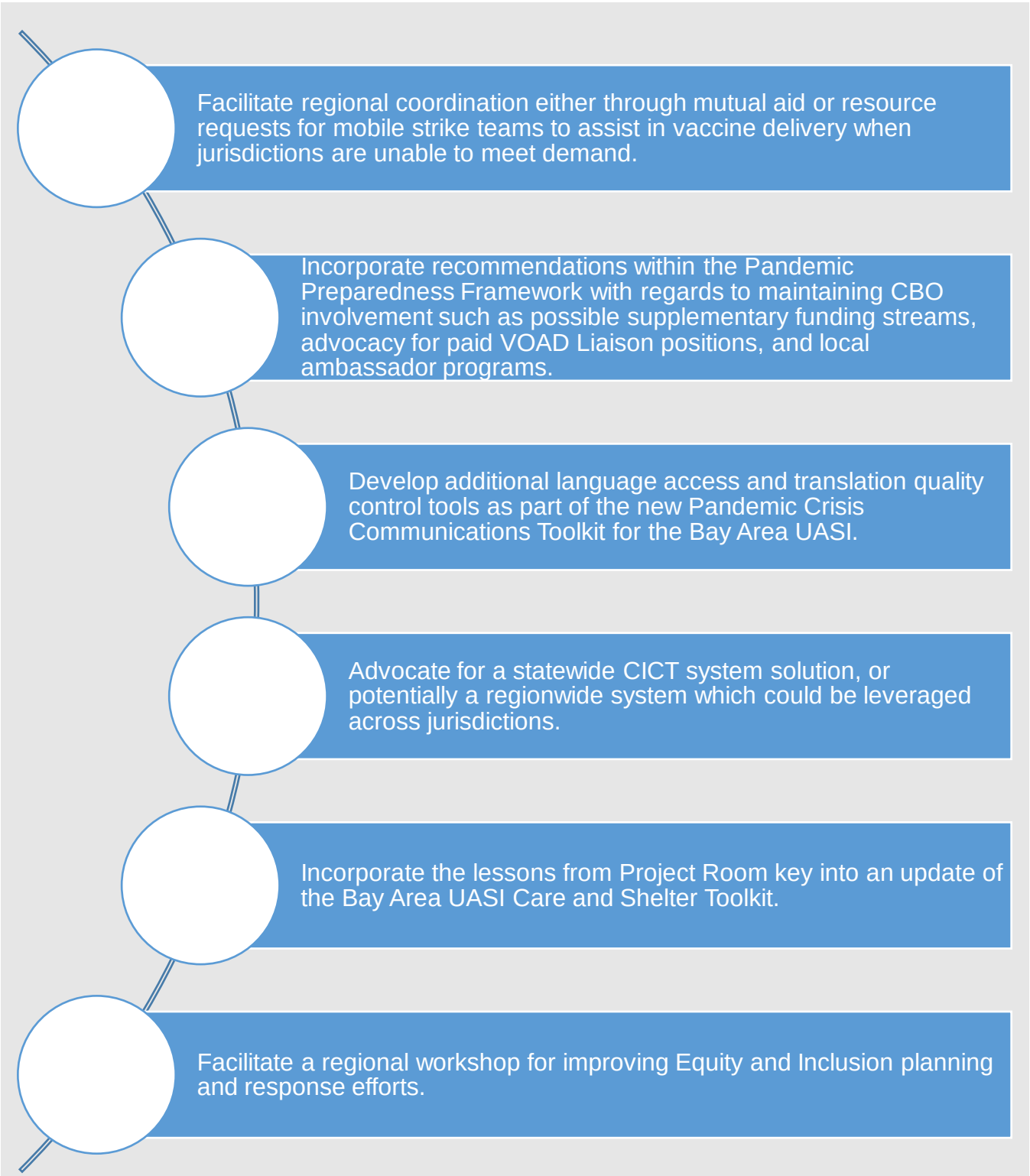
Several jurisdictions created dedicated response teams and/or strike teams to visit neighborhoods experiencing higher COVID-19 case rates than average. **Mobile vaccination vans and at-home vaccine strike teams helped to deliver targeted services to those with limited access or resources.** When determining which sites to activate or use for mass vaccination or mass testing, many BAUASI jurisdictions used social vulnerability index (SVI) data and/or anecdotal data from their VOAD/COAD partners to identify vulnerable communities most in need of a local site

COMMUNITY PARTNERSHIPS

Several jurisdictions relied on community partners and nonprofit organizations to provide **a list of individuals within the community who needed assistance**, such as at-home vaccination services, since state and/or federal lists (e.g., EmPOWER data) were often out of date or not comprehensive enough. Some jurisdictions had success using ambassador programs with adults and youth and partnered with CBOs to expand outreach and spread information as far as possible to previously unreached population groups.

Best Practices – Public Health, Healthcare, and EMS		
Vaccination Management	**CICT**	**Equity and Inclusion**
Implementing dedicated mobile strike teams to vaccinate high-risk and home-bound populations and partnering with CBOs/MRCs to use these visits for outreach regarding other support services.	Creating expedited hiring and contracting processes for surge support staff for CICT functions.	Adding an Equity and Inclusion section, role, or committee to address specific aspects of response and provide critical input.
Utilizing EMS Agencies, EMTs, and Paramedics to deliver vaccines and staff vaccine sites.	Training MRC and other volunteer groups (e.g., local nursing and public health programs) on contact tracing and establishing partnership programs ahead of time with local Epidemiology	Creating dedicated roles for Language Access, specifically culturally competent communications and multilingual outreach.
Planning for volunteers as supplementary staffing for PODs not primary.	Encouraging remote function expansion for CICT to increase available surge capacity.	Investing in paid and full-time VOAD liaison roles as well as directing funding to critical CBOs within local vulnerable communities.

Regional Recommendations – Public Health, Healthcare, and EMS



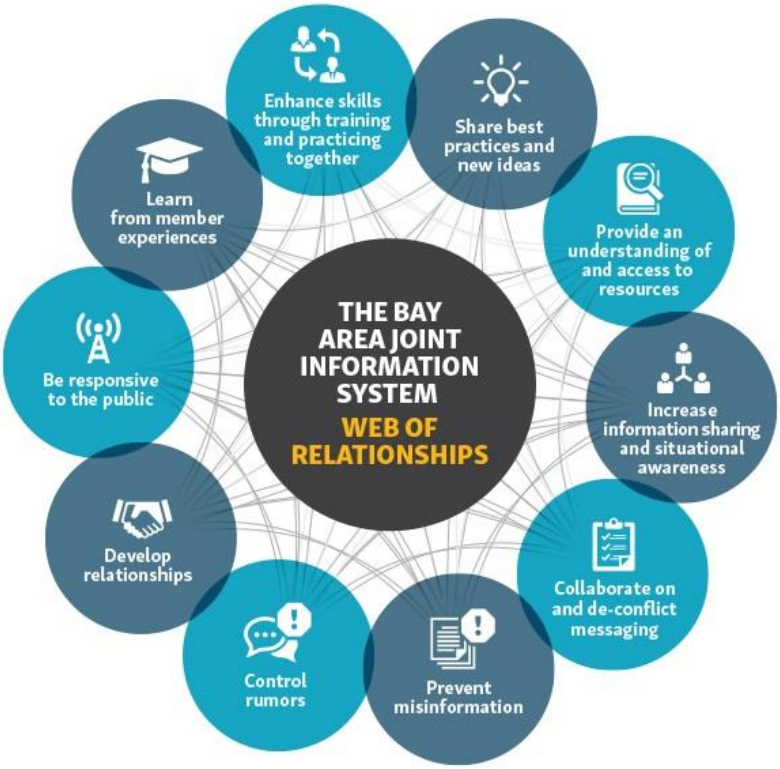
Public Information and Warning

Capability Definition

This refers to the ability to deliver coordinated, prompt, reliable, and actionable information to the whole community through the use of clear, consistent, accessible, and culturally or linguistically appropriate methods to effectively relay information regarding any threat or hazard, as well as the actions being taken and the assistance being made available, as appropriate.

Joint Information System (JIS) Activation and Operations

A JIS integrates incident information and public affairs into a unified organization that provides consistent, coordinated, accurate, accessible, timely, and complete information to the public and stakeholders during incident operations.[14] Based on this format, the Bay Area JIS is structured as a voluntary network of individuals with emergency public information and warning responsibilities from multiple agencies, disciplines, and jurisdictions throughout San Francisco and Monterey Bay areas. The Bay Area JIS members work in collaboration to coordinate public information and warning efforts before, during, and after disasters. The JIS was established in 2014 with support from the Bay Area UASI.[15]

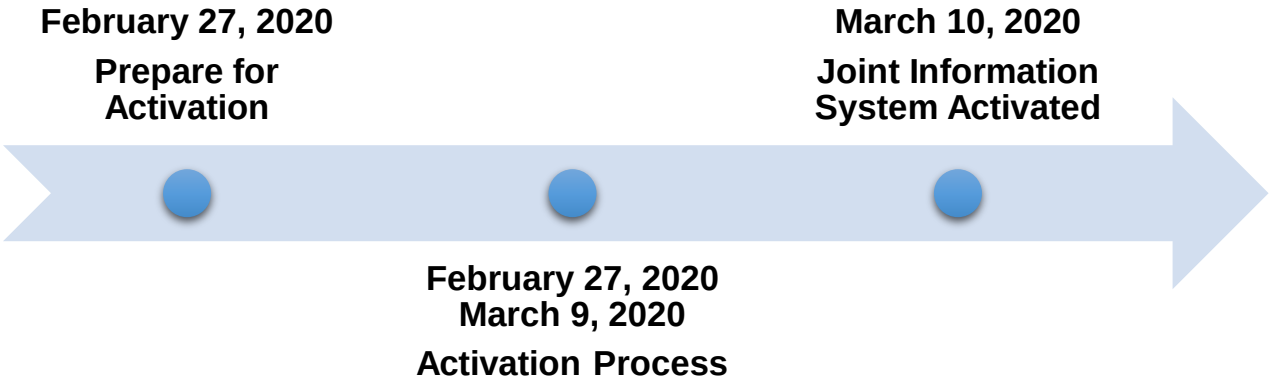


14 Federal Emergency Management Agency (FEMA). (n.d.) Joint Information System (JIS) Purpose. Retrieved from https://emilms.fema.gov/is_0700b/groups/95.html#:~:text=JIS%20integrates%20incident%20information%20and,and%20stakeholders%20during%20incident%20operations.

15 Bay Area Urban Areas Security Initiative (2018). The Bay Area Joint Information System (JIS) Retrieved from http://www.bayareauasi.org/node/2298.

Activation

On February 27, 2020, the Bay Area JIS began preparing for response efforts in response to the looming COVID-19 pandemic. Response preparations included creation of a channel on the Bay Area JIS Slack team site to exchange information concerning the novel coronavirus. JIS members provided updates as their agencies and jurisdictions began to activate their EOCs/DOCs. As the threat continued to increase, the Bay Area JIS was officially activated on March 9, 2020. Activation operations occurred over 12 consecutive days from February 27th to March 9th. The goal was to activate the JIS in a timely manner to coordinate public information and warning efforts across the Bay Area jurisdictions and relevant agencies in support of local response efforts. The activation period included activation in incremental steps made toward the official activation. The activation followed a methodical approach aiming for a scalable and deliberate activation structure to coordinate public information and warning efforts across the Bay Area and relevant agencies in support of local response efforts.



The current Bay Area JIS Framework does not have an established timeframe for activation. Jurisdictions noted that while a prescribed timeframe for activation is likely not suitable for an all-hazards approach, a window of time activation timeframe may be beneficial. The activation of the JIS may differ depending on the type of threat, such as if it is a notice or no-notice incident as well as the geographic reach of the incident. For example, a timeframe for a notice slow evolving incident such as a pandemic could be tied to when a regional or statewide emergency is declared versus a no notice incident where activation would be immediate. Jurisdictions also noted the benefit of having a virtual JIS platform would allow for this type of incident specific activation timeframe framework collaboratively across the region.

The Regional Coordinator implemented the JIS Framework appropriately as regional-level functions scaled up. On March 10, 2020, Bay Area JIS members initiated what eventually became daily coordination calls. These calls included updates, information, and resource needs across member jurisdictions and agencies. An example of a resource shared was the COVID-19 Public Information Toolkit.

Operations

The COVID-19 pandemic is the first activation of the Bay Area JIS during a long-term (multi-month) public health disaster response. Members used the JIS consistently for the duration of the COVID-19 pandemic response. The JIS strived to provide their members with information opportunities and important updates during the incident.

Technology and virtual platforms were a vital component of the JIS operations framework. Participating members used existing, practiced, and exercised technologies to communicate via virtual modalities. The Bay Area JIS utilized their Slack Platform to create a channel for members and it was developed during the JIS activation phase early in the response operations. Emails amongst the group were also used to communication information and updates. The Bay Area JIS Coordination call cadence and frequency were increased and decreased throughout the response based on the needs of the incident. For example, in early June 2020 the calls were scheduled for three times a week instead of daily, additionally in mid-November 2020 the calls were decreased to twice per week.

The structure of the JIS Framework operates from the assumption of participation from its member agencies including the member liaisons. The role of the JIS Liaisons is to facilitate coordination between the JIS and the local EOC or JIC, and additionally coordinate between the Bay Area JIS and a jurisdiction's Lead Public Information Officer (PIO)/JIC or equivalent. Many factors affected the ability of members to participate in the JIS, especially limited staff time constraints. While the JIS requested a liaison from each member organization be identified early in the activation, jurisdictions noted the lack of representation from all counties was the most significant gap in Operational Coordination of the JIS.

Jurisdictions noted that having a designated liaison supports the consistent exchange of information across the regions and having inconsistent participation and identification of Liaison made it difficult for other JIS members to know who to contact for information concerning response efforts in other counties.

Jurisdictions noted several benefits and gaps concerning the Bay Area JIS operations such as:

Benefits	Gaps
The JIS provided a regional avenue for information sharing and important updates. Sharing situational awareness strengthened the response of members. For example, notifying jurisdictions when essential services suddenly closed or were unavailable to the community. The option to collaborate with other PIOs from other counties and county departments. Members benefited from hearing what other cities and counties were dealing with concerning public information efforts.	At times, information was conflicting and did not aid in addressing misinformation. There were varying levels of participation on conference calls due to conflicting meetings. Jurisdictions noted specifically that the ABAHO MAC call was at the same time as the JIS call prompting some members to choose the MAC meeting because the information was broader than public information and difficult to miss.

Benefits	Gaps
PIOs were able to relay information directly to each other, reducing inaccurate information. The Regional Coordinator was an active and consistent presence who coordinated JIS communication and coordination activities. A summary of weekly JIS calls were documented and posted on the JIS Google Drive for members to reference or review if they missed a meeting. JIS included PIOs and communications executives from higher education, California cities beyond the Bay Area, and other industries.	While the Regional Coordinator role was vital in the success of the JIS, the role was not supported with a team to rotate the position for the first several months of the pandemic. The information was sometimes too overarching and not specific enough to be relevant to all jurisdictions.

Messaging

Accurate and timely public messaging was a vital component of the pandemic response. Information was dynamic and sometimes contradictory. The public was flooded with information from government departments, media, and political and social figures. The public was often left with more questions than answers demanding clarification and further information, which was at many times unavailable to PIOs in the moment. PIOs were faced with many challenges as they strived to keep their communities safe by providing vital public health information.

Coordination of Public Messaging

Information was a primary method of saving lives throughout the COVID-19 pandemic. PIOs strived to provide the most accurate and timely information to their communities. Challenges in coordinating public messaging arose due to the unprecedented, prolonged, and dynamic incident response environment. Jurisdictions noted multiple challenges such as:

- Coordination of information from multiple sources.
- Coordination of information from conflicting sources.
- Evolving information on the disease, its transmission, and its health impacts.
- Purposeful or accidental wide-spread misinformation veiled as accurate messaging.
- Limited resources to provide messaging to vulnerable communities.
- Limited resources to provide messaging to those who needed translations.
- Limited resources to provide messaging in alternative modalities such as American Sign Language (ASL) or alternative accessible formats.
- Utilization and monitoring of multiple communication modalities such as the latest social media platforms.

- Differences in operations and cultures caused some friction during the development of public messages between EOCs and DOCs which negatively affected the ability to formulate and disseminate public information.

Regional public information collaboration proved to be an important function of both the Bay Area JIS and the ABAHO PIO Group. Many jurisdictions noted the benefit of coordinating public messaging in concert with the public information efforts of the other Bay Area counties starting with the early COVID-19 cases. This coordination supported the dissemination of consistent and clear messaging through the Bay Area.

Additionally, the ABAHO PIO group worked concurrently during the pandemic to coordinate regional public information efforts between public health departments across the Bay Area. However, members of both noted that while there was beneficial collaboration between the members within each group, there was a gap in overall collaboration and coordination between the JIS and the ABAHO PIO Group. Coordination between these two groups would have further supported the dissemination of consistent and clear messaging throughout the Bay Area. One of the main challenges was staff time, as participating in coordination calls for both groups in addition to the other regular calls at the state, regional, and county level was simply not feasible.

Social media was used more than ever before during an infectious disease incident response. These social media platforms included but were not limited too; Facebook, Twitter, Instagram, YouTube, Nextdoor, etc. Many jurisdictions commented on a need to have staff dedicated solely to social media communications and monitoring during a large-scale event.

One jurisdiction capitalized on social media influencers by engaging them to be liaisons to foster trust within the communities.

Public Messaging Campaigns

PIOs utilized established relationships, communications platforms, as well as innovative communication modalities to reach as many members of their communities as possible. Specific campaigns were developed by many jurisdictions to target disadvantaged communities, non-English speaking communities, and those with AFNs.

Many jurisdictions noted their limited resources to translate documents in the appropriate language and modality to be able to reach all who needed to hear the message in an accurate and timely manner. Additionally, there was a gap in overall coordinated community engagement outreach in the response efforts early in the pandemic. It was difficult to find ASL interpreters as many press conferences across the region needed their expertise. Some jurisdictions recalled the consistent need to identify ASL interpreters, and then execute a contract to have them available for press conferences and other public information events in the future. Language interpreters also became a sought-after commodity for press conferences, social media livestreams, and interfacing with non-English speaking media.

Disseminating vaccination information was challenging amid misinformation circulating amongst communities with an agenda to counteract vaccination efforts. One jurisdiction partnered with two large healthcare systems to identify and specifically communicate with members of the community who, based on their political affiliation and vaccination status, may have had distrust

of public health officials and were hesitant to receive the vaccine. Understanding the contextual and historical reasons for distrust of public health and government officials, this jurisdiction opted to share vaccination information through the hospital system and primary care providers who had established relationships with these individuals. All the information was constructed by PIOs and the public health department such as the design work, campaign structure, and branding. However, the information was disseminated through the healthcare systems and not associated with the public health department to aid in the reception of the information by the target audience.

In another innovative push to reach all members of the community, one jurisdiction developed a community advisory group for vaccine public information. The jurisdiction noted how successful this approach was and how they wished they had started the group at the beginning of the pandemic. The group was a successful tool for keeping the community informed and creating a platform for community feedback concerning the public information available to them. The community advisory group consisted of representatives from healthcare agencies, private practices, community health centers, and other community-based organizations. This jurisdiction noted the limited staffing for their communications team, and this community advisory group helped bridge this gap in staffing resources. This also helped the jurisdiction make a case for increasing their staff, and they have since hired dedicated staff members for social media and digital communications.

In addition to public information for COVID-19, other disasters and emergencies occurred in parallel that required public information campaigns such as:

- On May 25, 2020, George Floyd was killed by police officers during an arrest in Minneapolis, Minnesota. In the days following his death, protests erupted across the country and internationally. A federal officer was killed at the Federal Building in Oakland, CA during the protests. Through this period of civil unrest, the Bay Area JIS members coordinated public information efforts such as curfew orders and messages encouraging peaceful protests following public health pandemic related guidance.
- On June 22, 2020, a 5.8 magnitude earthquake struck southeast of Fresno, California. Bay Area JIS members coordinated public information related to the incident.
- In July 2020, Bay Area JIS members coordinated public information efforts concerning wildfire preparedness and Public Safety Power Shut Offs (PSPS).
- In September 2020, due to the wildfires, air quality in the Bay Area was among the worst levels since tracking began in 1999 and remained high for an unprecedented length of time.[16]

[16] Kellie Hwang. *Yes, the Bay Area just suffered some of its worst-ever air quality days: Charts show how bad*. Accessed December 9, 2022 from https://www.sfchronicle.com/california-wildfires/article/Yes-the-Bay-Area-just-suffered-some-of-its-15567137.php

Dynamic Information Environment

Information flow was dynamic in nature during the COVID-19 pandemic response, particularly in the beginning of the response and with each new variant and wave of the virus. Accurate and timely information was lifesaving, and the dynamic nature of changing guidance on COVID-19 presented several challenges for PIOs. Jurisdictions noted information would at times move so quickly it felt as if, for example, the Governor would make an announcement and it would be implemented or occur in the next hour. This made it especially challenging when the media would immediately ask for clarification and feedback and the communications team received the information from the Governor at the same time as the community.

Public messaging was also only as accurate as the information the jurisdictions had available to them at that time of its release. Jurisdictions noted that while they believed there was relative consistency in the *frequency* of their public messaging, it was challenging to keep the messaging consistently *timely* and *accurate*.

During the first several months of the response, jurisdictions noted most of the public information involved disseminating legal information such as city ordinances and public health directives. Jurisdictions often had different or conflicting public information. For example, one jurisdiction would not allow the public to engage in certain outdoor athletic activities due to public health concerns, while a neighboring jurisdiction would allow the public to engage in those same activities, stating there were no public health concerns. This type of inconsistency and contradiction led to a lack of public trust in public information. It also made it difficult for PIOs to formulate messaging to answer questions from the public. In some instances, there were scientific and data-driven reasons for the differences, and others it was difficult to identify the reasoning. Additionally, information from state agencies would sometimes contradict federal guidance. This also made public information challenging when the state or federal government's messaging was different or contradicted the local jurisdiction's messaging.

Best Practices – Public Information and Warning	
Joint Information System	**Messaging**
Activating the Bay Area JIS early in the pandemic (as early as late February), including creation of a Bay Area JIS Slack team site and regular coordination calls.	Coordinating public messaging in concert with the public information efforts of the other Bay Area counties.
Including PIOs and communication executives from other sectors and geographies in the Bay Area JIS.	Developing a community advisory group for vaccine public information.
Scaling the frequency of coordination calls and meetings according to group sentiment and surges in demand	Bolstering separate (but coordinated) pathways for public health PIOs to coordinate (ABAHO PIO Group) versus general emergency management and partners (Bay Area JIS)
Using social media influencers to be liaisons and foster trust within communities.	Leveraging healthcare partners to disseminate public health messaging, particularly to those who may have distrust of public health or other government officials

Regional Recommendations – Public Information and Warning

- Explore possible options for bolstering the ABAHO PIO coordination technology platforms and creating environments for cross-sharing of information between the Bay Area JIS and ABAHO PIO groups, as well as other potential subgroups such as private sector PIOs.
- Create a language access assessment for the Bay Area to further identify gaps in translation capabilities and possible surge capacity.
- Continue to advocate for funding and technical assistance to help jurisdictions build their communications teams with additional funded positions, DSW training, and/or volunteers or student intern programs.
- Facilitate regional coordination meetings for health and emergency communication and information sharing during emergencies with wider impact than a single jurisdiction.
- Continue to improve and expand the Bay Area JIS membership and JIS Framework updates.
- Expand Bay Area JIS participants to include private and government sector communication professionals who may be valuable during large scale response efforts.

Final Thoughts

The findings in this report are not unique to the Bay Area and the member jurisdictions, as the pandemic has affected government entities at the local, tribal, territorial, state, and federal levels in a similar manner. 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 trends outlined in this report highlight opportunities to build upon and grow from and would not have been possible without the input of staff and stakeholders. These findings can be utilized to create new and innovative ways to invest in pandemic preparedness 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. The Bay Area UASI looks forward to continuing regional discussions and identifying opportunities to implement the recommendations compiled in this report.

Recommendation Summary

Core Capability	Recommendation
Operational Coordination	Conduct a regional workshop for MHOACs and RDMHC/Ss to facilitate regional coordination.
Operational Coordination	Compile a list of infectious disease subject matter experts located in the region accessible by jurisdictions.
Operational Coordination	Create a local policy group and/or local MAC activation toolkit or recommendations specific to a pandemic or novel infectious disease emergency as part of the Pandemic Preparedness Framework.
Operational Coordination	Convene a workshop dedicated to discussing coordination structures between public health and emergency management during a large-scale pandemic to inform the Pandemic Preparedness Framework.
Operational Coordination	Incorporate complex incident scenarios into future Bay Area Trainings and Exercises.
Operational Coordination	Create a repository for jurisdictions to share their best practices (job action sheets for contract tracers, plans, training videos, etc.).
Planning	Coordinate a regional exercise with jurisdictions activating their pandemic plans due to a region level outbreak.

Core Capability	Recommendation
Planning	Review the current Bay Area UASI Disaster Service Worker Toolkit and continue to add additional training modules in crisis communications, EOC operations, shelter operations, Point of Dispensing (POD) operations or mass testing/vaccination, and ICS/NIMS/SEMS. Provide technical assistance to local jurisdictions in advocating for more routine DSW training and integration during the planning phase.
Planning	In the Pandemic Preparedness Framework, incorporate recommendations for how EOCs and DOCs can adapt the IAP development process, Unified Command structure, and Planning P "cycle" for a long-term emergency.
Planning	In future Bay Area UASI workshops, have jurisdictions share the most common updates and changes they are making to Pandemic Plans / Infectious Disease Response Plans, best practices, job action sheets, training, and other relevant response documentation. These should be stored in a repository with access for all jurisdictions.
Planning	Promote training opportunities or distribute guidance through Bay Area UASI regarding crisis standards of care and promote the best practice of sending outreach teams to smaller healthcare facilities early during a pandemic to evaluate infection prevention practices and teach on crisis standards of care.
Environmental Response/Health and Safety	Develop a reference document for telework/remote work.
Environmental Response/Health and Safety	Conduct PFA training for jurisdictions within the Bay Area. Include recommendations for the integration of PFA principles into EOC/DOC and other response operations in the Pandemic Preparedness Framework.
Environmental Response/Health and Safety	Conduct a workshop for public health and emergency management leaders regarding employee wellness and best practices for extended response operations.
Environmental Response/Health and Safety	Address Span of Control monitoring and principles in EOC/DOC recommendations in the Pandemic Preparedness Framework.
Logistics and Supply Chain Management	Recommend for inclusion in local plans potential warehousing space that can be activated via mutual aid or resource requests to support a local jurisdiction or regional logistics and supply operations. .
Logistics and Supply Chain Management	BAY AREA UASI advocate on behalf of member jurisdictions with Cal OES and CDPH for a resource information sharing dashboard.

Core Capability	Recommendation
Logistics and Supply Chain Management	Consider hosting local or regionwide workshops focused on MOUs and contract vendor sharing. These workshops should incorporate both emergency planners and contracting/procurement personnel to discuss resource competition in a future disaster. Incorporate this planning into the Scarce Resource Allocation Framework.
Logistics and Supply Chain Management	Compile a regional list of recommended requirements for Inventory Management Systems (IMS) as part of the Scarce Resource Allocation Framework to encourage regionwide integration and collaboration.
Logistics and Supply Chain Management	Using the Functional Assessment Support Team (FAST) model, review the feasibility of creating Logistics / Warehouse Support Teams or a strike team within the Bay Area to deploy to jurisdictions needing assistance in scaling up operations.
Logistics and Supply Chain Management	Identify the most frequent "scarce" resources and supplies during the pandemic and dedicate regional resources towards identifying backup suppliers or stockpiling options for these supplies.
Public Health, Healthcare, and Emergency Medical Services	Facilitate regional coordination either through mutual aid or resource requests for mobile strike teams to assist in vaccine delivery when jurisdictions are unable to meet demand.
Public Health, Healthcare, and Emergency Medical Services	Develop additional language access and translation quality control tools as part of the new Pandemic Crisis Communications Toolkit for the Bay Area UASI.
Public Health, Healthcare, and Emergency Medical Services	Facilitate a regional workshop for improving Equity and Inclusion planning and response efforts.
Public Health, Healthcare, and Emergency Medical Services	Incorporate recommendations within the Pandemic Preparedness Framework with regards to maintaining CBO involvement such as possible supplementary funding streams, advocacy for paid VOAD Liaison positions, and local ambassador programs.
Public Health, Healthcare, and Emergency Medical Services	Advocate for a statewide CICT system solution, or potentially a regionwide system which could be leveraged across jurisdictions.
Public Health, Healthcare, and Emergency Medical Services	Incorporate the lessons from Project Room key into an update of the Bay Area UASI Care and Shelter Toolkit.
Public Information and Warning	Facilitate regional coordination meetings for health and emergency communication and information sharing during emergencies with wider impact than a single jurisdiction.

Core Capability	Recommendation
Public Information and Warning	Continue to improve and expand the Bay Area JIS membership and JIS Framework updates.
Public Information and Warning	Expand Bay Area JIS participants to include private and government sector communication professionals who may be valuable during large scale response efforts.
Public Information and Warning	Explore possible options for bolstering the ABAHO PIO coordination technology platforms and creating environments for cross-sharing of information between the Bay Area JIS and ABAHO PIO groups, as well as other potential subgroups such as private sector PIOs.
Public Information and Warning	Create a language access assessment for the Bay Area to further identify gaps in translation capabilities and possible surge capacity.
Public Information and Warning	Continue to advocate for funding and technical assistance to help jurisdictions build their communications teams with additional funded positions, DSW training, and/or volunteers or student intern programs.

Appendix A: Acronyms List

Acronym	Definition
AAR	After Action Report
ABAHO	Association of Bay Area Health Officials
ACS	Alternate Care Site
AFN	Individuals with Access and Functional Needs
ASL	American Sign Language
ASPR	Office of the Assistant Secretary for Preparedness and Response
BAY AREA UASI	Bay Area Urban Areas Security Initiative
BIPOC	Black, Indigenous, and People of Color
Cal OES	California Governor's Office of Emergency Services
CASPER	Community Assessment for Public Health Emergency Response
CBO	Community-Based Organization
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CICT	Contact Investigation and Contact Tracing
CMS	Centers for Medicare and Medicaid Services
COAD	Community-based Organizations Active in Disaster
CONSTANT	Constant Associates, Inc.
COVID-19	Coronavirus Disease 2019
CSOST	Care Site Outreach Support Teams
DOC	Department Operations Center
DSW	Disaster Service Worker
EMS	Emergency Medical Services
EMSA	California Emergency Medical Services Agency
EOC	Emergency Operations Center
ESF	Emergency Support Function
EUA	Emergency Use Authorization
FAST	Functional Assessment Support Team
FBO	Faith-Based Organization
FEMA	Federal Emergency Management Agency
HCC	Healthcare Coalition
HEPA	High Efficiency Particulate Absorbing
HHS	United States Department of Health and Human Services
HPP	Hospital Preparedness Program
IAP	Incident Action Plan
ICS	Incident Command System

Acronym	Definition
ICU	Intensive Care Unit
IMS	Inventory Management System
IMT	Incident Management Team
JIC	Joint Information Center
JIS	Joint Information System
LEP	Limited English Proficiency
LTCF	Long-Term Care Facility
MAC	Multi-Agency Coordination
MAR	Mid-Action Report
MHOAC	Medical and Health Operational Area Coordinator
MOU	Memorandum of Understanding
MRC	Medical Reserve Corps
NIMS	National Incident Management System
OAFN	Cal OES Office of Access and Functional Needs
OSHA	Occupational Safety and Health Administration
PFA	Psychological First Aid
PHEP	Public Health Emergency Preparedness
PIO	Public Information Officer
POD	Point of Dispensing Site
PPE	Personal Protective Equipment
PSPS	Public Safety Power Shutoff
REOC	Regional Emergency Operations Center
RDMHC/S	Regional Disaster Medical Health Coordinator / Specialist
SFO	San Francisco International Airport
SNF	Skilled Nursing Facility
SNS	Strategic National Stockpile
SVI	Social Vulnerability Index
SEMS	Standardized Emergency Management System
VOAD	Voluntary Organizations Active in Disaster

Appendix B: Participating Organizations

The following organizations participated in the development of this AAR in the various methods described in the methodology section.

Jurisdiction	Agency/Organization
Alameda County	Alameda Health System
Alameda County	City of Albany Fire Department
Alameda County	City of Fremont Fire Department
Alameda County	Eden I&R, Inc. (2-1-1)
Alameda County	Emergency Medical Services
Alameda County	Health Care Services Agency
Alameda County	Public Health Department
Bay Area	Association of Bay Area Health Officials
Bay Area	Center for Volunteer & Nonprofit Leadership
Bay Area	Independent Living Resources of Solano & Contra Costa Counties
California	Albertsons Companies
California	American Medical Response
California	C&S Wholesale Grocers
California	California Resiliency Alliance
California	California Shock Trauma Air Rescue Air Ambulance
California	Department of Public Health
California	Department of Social Services
California	First Tech Federal Credit Union
California	Hospital Council of Northern & Central California
California	Kaiser Permanente
California	Medic Ambulance
California	Northern California Regional Intelligence Center
California	United Parcel Service
City and County of San Francisco	CommonSpirit Health
City and County of San Francisco	Community Agencies Responding to Disaster
City and County of San Francisco	Department of Emergency Management
City and County of San Francisco	Department of Public Health
City and County of San Francisco	San Francisco VA Medical Center
City and County of San Francisco	Emergency Medical Services
City and County of San Francisco	Healthcare Coalition
City and County of San Francisco	Human Rights Commission
City and County of San Francisco	Human Services Agency
City and County of San Francisco	Mayor's Office on Disability
City and County of San Francisco	Municipal Transportation Agency

Jurisdiction	Agency/Organization
City and County of San Francisco	Public Works
City and County of San Francisco	San Francisco Paratransit
City and County of San Francisco	Transdev
City and County of San Francisco	University of California, San Francisco Police Department
City and County of San Francisco	Zuckerberg San Francisco General Hospital and Trauma Center
City of Berkeley	Public Health
City of Richmond	Office of Emergency Services
City of San Jose	Office of Emergency Management
City of San Ramon	Office of Emergency Management
Contra Costa County	Health Services
Contra Costa County	San Ramon Regional Medical Center
Contra Costa County	San Ramon Valley Fire District Emergency Medical Services
Marin County	County Administrator's Office
Marin County	Emergency Medical Services
Marin County	Health & Human Services
Marin County	North Marin Community Services
Marin County	Novato Fire Protection District
Marin County	Sheriff's Office - Office of Emergency Services
Marin County	Voluntary Organizations Active in Disaster
Monterey County	Community Hospital of the Monterey Peninsula
Monterey County	County Administrative Office
Monterey County	Emergency Medical Services
Monterey County	George L. Mee Memorial Hospital
Monterey County	Health Department
Monterey County	Montage Health
Monterey County	Natividad Medical Center
Monterey County	Office of Emergency Services
Monterey County	Salinas Valley Memorial Healthcare System
Napa County	Emergency Medical Services
Napa County	Health and Human Services Agency
San Benito County	Emergency Medical Services
San Mateo County	Department of Emergency Management
San Mateo County	Emergency Medical Services
San Mateo County	Executive's Office
San Mateo County	Health Department
San Mateo County	Healthcare Coalition
Santa Clara County	Emergency Medical Services
Santa Clara County	Healthcare Coalition

Jurisdiction	Agency/Organization
Santa Clara County	Office of the County Executive
Santa Clara County	Public Health Department
Santa Clara County	Santa Clara Valley Health and Hospital System
Santa Clara County	Social Services Agency
Santa Clara County	Stanford Health Care
Santa Cruz County	Emergency Medical Services
Santa Cruz County	Health Services Agency
Santa Cruz County	Human Services Department
Santa Cruz County	Watsonville Community Hospital
Solano County	Emergency Medical Services
Solano County	Health and Social Services
Solano County	Public Health
Solano County	Travis Air Force Base - David Grant Medical Center
Sonoma County	Department of Health Services
Sonoma County	Public Health Division

Appendix C: Interview Summaries

Below are summaries from the small group interviews conducted in support of data collection. Note: there was a separate interview conducted for the San Mateo County PIOs, there content was incorporated into the ABAHO PIO summary.

EMS Agency

Interview Description:

The Bay Area UASI facilitated a small group interview on March 22, 2022, with representatives of EMS agencies and partners across the region who supported the ongoing COVID-19 response. The interview discussion focused on issues and best practices in medical surge, the Medical and Health mutual aid systems in place, vulnerable population support, responder safety/health, staffing shortages, and vaccine distribution. Overall, the interview hosted 36 stakeholders across the Bay Area.

Summary:

- EMS, public health, and emergency management agencies did activate pandemic plans, emergency operations plans, mass immunization plans, and more during the pandemic, but these plans needed significant updates as federal/state guidance changed frequently for COVID. Plans did set a framework for the response, but often did not have the specific levels of detail needed to help significantly decrease the impacts of surge. Plans needed to be more operational, concise, actionable, and user-friendly.
- Many EMS agencies created or drafted expanded scope of practice for providers locally or adjusted critical ambulance demand policies to allow them to flex operations if needed for surges. They created standard dispatch orders or standard responses to calls so they could bring others into dispatch at any time. They adjusted treatment guidelines to mitigate exposures as well. Volunteers and interns were critical and in short supply.
- The role of the Medical and Health Operational Area Coordinator (MHOAC) expanded significantly during the pandemic and proved to be critical to the success of the response overall. The strong relationships between the MHOACs and the jurisdictions as well as the Regional Disaster Medical Health Specialists (RDMHS) were instrumental throughout the state, and the group agreed those relationships were a huge success. They were also a critical touchpoint for healthcare providers throughout the pandemic.
- Some jurisdictions struggled with integrating emergency response structures and activities between EMS and public health and/or emergency management, particularly regarding mass vaccination. When some agencies were using ICS and/or Unified Command and others were not or were not activated, it made it difficult to align efforts or avoid duplication.

- EMS agencies provided critical staffing and support to keep Skilled Nursing Facilities operating during the pandemic and to keep them from evacuating. Yet, EMS agencies felt they were sometimes not recognized as a critical part of healthcare and as medical/clinical providers.
- The group agreed there is a need for more expansive Local Emergency Medical Services Agency (LEMSA) mutual aid systems in place at a regional level, especially for large-scale events.
- EMS agencies were challenged to create contingency plans and innovative approaches to tackle PPE and staffing shortages for their staff. One best practice identified was to create workgroups with EMS providers to identify solutions and forecast needs for upcoming surges and shortages.

Access and Functional Needs (AFN)

Interview Description:

The Bay Area UASI facilitated a small group interview on March 24, 2022, with AFN representatives across the region who supported COVID-19 response. The interview discussion focused on how jurisdictions addressed AFN and equity planning in the pandemic response to include: non-pharmaceutical interventions, access to testing services, vaccine planning and management, mental health and wellness, barriers to technology, and disruption of AFN services. Overall, the interview hosted 19 stakeholders across the Bay Area.

Summary:

- Weekly calls with Cal OES Office of Disability and Access and Functional Needs were helpful in learning about AFN best practices for the COVID-19 pandemic response.
- Plans and procedures involving AFN or accessibility were created ad-hoc when gaps were identified by the community or EOC.
- Work from home policies needed to be adapted for several organizations like Transdev as there were no protocols to lean on.
- People with limited or no access to the Internet were directed to 3-11 phone lines where assistance could be provided for variety of services, like transportation to testing or vaccine sites.
- Project RoomKey became a vital outreach program for several jurisdictions in addressing the needs of people experiencing homelessness during the pandemic.
- Several jurisdictions engaged with trusted community-based organizations (CBOs) to help conduct outreach and provide services for hard-to-reach or underserved

communities experiencing inaccessibility with Internet, transportation, County services, etc.

- The pandemic response helped develop specific workgroups within the community, to include servicing older adults, people with disabilities, and homebound individuals.
- The COVID-19 pandemic response forced significant disruptions in transportation, which made it difficult for many communities to gain access to the services they relied on (i.e.: food and water, medical or health appointments, and etc.).
- There was success in coordinating with CBOs and community clinics to set up mobile vaccinations to bring vaccines to homebound or older adults as opposed to have them coordinate transportation to a larger site.
- One jurisdiction noted a great practice and accommodation in having one dialysis center take on the role of caring for COVID-19 positive patients to create access in a time where the health risks were high, and services were limited.
- Participants noted that it would be beneficial to create a master list of AFN emergency coordinators in other jurisdictions for coordination of priorities and gaps.
- There is an overall need to coordinate training for emergency responders about the principles of AFN to create a more inclusive and culturally competent response.

Hospital

Interview Description:

The Bay Area UASI facilitated a small group interview on March 25, 2022, with hospital representatives across the region who support local jurisdictions COVID-19 response. The interview discussion focused on hospitals involvement and experiences responding to the pandemic. Themes included interagency coordination, medical surge, vaccine planning and management, mental health and wellness, equity planning, and non-pharmaceutical interventions. Overall, the interview hosted 51 participants across the Bay Area.

Summary:

- Prior to the pandemic, hospitals had at least some form of a plan that was utilized and adapted to fit the needs of the pandemic response. CMS and Joint Commission requirements were highlighted as very helpful. Exercises in flu response specific infectious disease plans were highlighted as helpful in preparation for the COVID-19 response. While they were not specific to COVID-19, they at least provided a baseline for operations.
- Collaboration between healthcare facilities and EMS, Public Health, and other agencies was highlighted as a strength. From small to large jurisdictions, agencies were willing to collaborate and communicate flexibly, meeting often to provide guidance and speed along

necessary information. Communication was especially a strength throughout the pandemic between these agencies.

- Communication with the MHOAC was a strength, as the supply chain challenged testing and PPE supplies. Hospitals took innovative approaches to respond to supply chain shortages including creating a dashboard of supplies and N95 reuse programs for hospitals.
- The supply chain presented a significant challenge, as hospitals lacked the equipment and supplies needed to respond. They quickly ran out of space and beds to take care of patients, alongside PPE shortages.
- Communication between hospitals and EMS could have been stronger. EMS was slower to communicate which was especially difficult given hospitals were saddled with immediate response operations due to cruise ships being docked with COVID-19 positive patients.
- Alternate Care Sites (ACS) were a challenge, due to the lack of capacity to handle patients. ACS models had to be adapted to meet an infection control model. Patient surge challenged staffing, and required equipment for amenities like warming tents, outdoor portable restrooms, and more.

Allied Health

Interview Description:

The Bay Area UASI facilitated a small group interview on March 29, 2022, with representatives in allied health across the region who supported local jurisdictions COVID-19 response. The interview discussion focused on several common themes including interagency coordination, medical surge, vaccine planning and management, mental health and wellness, equity planning, and non-pharmaceutical interventions. Overall, the interview hosted 16 participants across the Bay Area.

Summary:

- Communicating and collaborating with new partners helped to address needed resources such as outreach, rapid guidance updates, and education/support initiatives.
- Coalition relationships were very strong, and facilities worked together to try and address issues before they became serious challenges.
- Call lines were helpful in communicating rapid changes in guidance for communities.
- The provider guidance and resource hotline provided a resource for facilities to get information quickly.

- To address staffing needs, counties tried innovative approaches. For example, some used cohorts to provide staffing surge.
- Others used nursing registries and vendors to fill staffing needs. Volunteers through EMS agencies provided support in dire situations.
- PPE and staffing were consistently the most needed requests throughout the COVID-19 response.
- The MHOAC was helpful in providing resources, but some facilities did not know where to turn for things like PPE.
- Frequency of changes to guidance caused confusion for healthcare facilities, who came to the coalition for clarification and support. This was ameliorated somewhat by increased communication, but also led to communication overload in some cases. Coordination and timing of sharing information could be improved.

Warehousing & Supply Chain

Interview Description:

The Bay Area UASI facilitated a small group interview on April 18, 2022, with public health and emergency management representatives or partners involved in Warehousing and Supply Chain Management or Logistics who supported the ongoing COVID-19 response in the Bay Area. The interview discussion focused on plans and polices activated for resource management, warehouse activation and setup protocols, warehouse operations, supply chain disruptions, and scarce resource allocation policies. Overall, the interview hosted 55 stakeholders across the Bay Area.

Summary:

- Most agencies had to develop some sort of new scarce resource allocation protocols during the COVID-19 pandemic to account for the sheer volume of resource requests coming not only from county departments or healthcare, but also from community-based organizations and outside partner agencies or mutual aid requests. While previous plans provided a strong foundation, most had to be adjusted significantly.
- Most public health departments were not prepared to receive the sheer volume of resources and supplies that they did during the pandemic, or to receive the volume of requests that were processed.
- Most jurisdictions had to spend time finding and securing additional warehouse space and staff, either through private sector partnerships, MOUs, contracts, or by reallocating county properties and Disaster Service Workers or volunteers.
- Most health and medical resource distributors place limitations on order size and quantity, which inadvertently encourages others to over-order even in times when they may not

need supplies, to account for these limitations later on. Pandemic events also impact absenteeism at every stage of the supply chain, which further limits capacity.

- Some jurisdictions were able to create a dashboard or shared information platform to track supply levels and create a priority-based system where they could identify when response activities needed to be adjusted to account for limited supplies.
- Other jurisdictions created scarce resource allocation committees or working groups to help create and apply criteria to decisions about PPE, medical equipment, staffing, and crisis standards of care.
- One best practice was open communication and transparency with local healthcare facilities through the healthcare coalitions regarding the supply chain impacts and levels, so that facilities could participate in countywide dialogues regarding impacts and forecasting future needs.
- Almost every jurisdiction in the Bay Area struggled with finding an ideal inventory management system or software solution during the COVID-19 pandemic. Most eventually relied on simple but effective excel spreadsheets in their warehouse, though by the end of the pandemic some had identified other technological solutions.
- There was a nationwide shortage of staff with experience in and knowledge of inventory management or warehouse operations. Many jurisdictions reported a need for full-time staff with expertise in logistics management to build future capabilities, or a regional logistics team that could be deployable.

Private Sector Partners

Interview Description:

The Bay Area UASI facilitated a small group interview on April 19, 2022, with private sector partners across the region who supported local jurisdictions COVID-19 response. The interview discussion focused on how private sector partners were impacted by the COVID-19 pandemic response and their involvement with local jurisdictions. This included discussion about information sharing, business operations impact, supply chain, and resources. Overall, the interview hosted 12 stakeholders across the Bay Area.

Summary:

- During the early stages of the pandemic, grocery stores experienced panic buying from the community as they were stocking up on resources.
- It would have been beneficial to coordinate with local jurisdictions to reinforce messaging about how to avoid panic buying or resource hoarding.
- Private businesses coordinated with local departments to donate items to support the pandemic response. Items included snacks, toiletries, water, coffee, etc.

- There was a lot of coordination with CBOs to assist in food delivery and wellness checks, which resulted in a great relationship that many felt should be continued long after the pandemic response.
- City/County response operations helped support local businesses in various aspects, including ordering catered meals for responders to assist the local restaurant business.
- Businesses have a broad geographic footprint. Within California, it was difficult to stay updated with the most current guidelines, especially as it crossed into local jurisdictions.
- Private businesses also had difficulty interpreting local health guidance as it came across vague.
- Other local/state agencies, like OSHA, contributed to further confusion as several private businesses were under the threat of being shut down if they were not able to accommodate new guidance within a short turnaround.
- There were not many business representatives or liaisons within local EOCs when they were being stood up, which complicated coordination and communications.
- Private businesses benefitted from high levels of coordination and communication with their local health jurisdictions to ensure that they were aligned with the guidelines as much as possible.
- Work capacity was an issue for private businesses as large businesses with a small crisis management team had to perform outreach to hundreds or thousands of jurisdictions regarding health guidelines.
- Business crisis managers had to respond to multiple incidents across the country (i.e.: COVID-19, wildfire, civil unrest, etc.), which was overwhelming.

Mental Health Partners

Interview Description:

The Bay Area UASI facilitated a small group interview on April 25, 2022, with mental health partners across the region who support local jurisdictions COVID1-9 response. The interview discussion focused on how partners were able to provide support on responder/staff health, wellness, and safety, resources, and long-term concerns. Overall, the interview hosted 19 participants across the Bay Area.

Summary:

- Behavioral health services were emphasized during the response on the same level as physical health, which was a huge success.

- Equity was highlighted in planning efforts. Partners worked hard to prioritize equity in testing and vaccines, reaching out to people experiencing high barriers in access and working to address those barriers and find workarounds such as creating vaccine strike teams to address specific populations.
- Virtual alternatives to in-person service provision provided flexibility that helped digitize processes and promote wider outreach. Partners were able to reach a larger population and provide weekly virtual meetings to spread information and answer questions efficiently.
- Agencies sought to support their staff by recognizing staff at town halls and offer extended COVID-19 sick leave. They also provided specific support groups to address issues that arose alongside the pandemic to address burnout.
- Access to personal protective equipment (PPE) was difficult especially early-on in the pandemic. Adult care facilities experienced significant challenges in finding PPE for staff. As a result, partners had to find alternative ways to acquire masks and other supplies.
- Staffing shortages were a hurdle due to staff members being activated/deployed to the emergency response. Staff exposures, burnout, and new obligations outside of work such as childcare contributed to a lack of surge support.
- Burnout among staff is widely felt. Employee Assistance Programs (EAP) had to adapt to meet the needs of staff during the pandemic. The services and providers in some EAPs were not up to date, which was frustrating for staff. Some staff were unable to telecommute, which caused burnout for staff that had to be physically on-site.

CBO/VOAD/COAD Partners

Interview Description:

The Bay Area UASI facilitated a small group interview on April 26, 2022, with representatives and partners of Community-Based Organizations (CBOs), Voluntary Organizations Active in Disasters (VOADs), and/or Community Organizations Active in Disasters (COADs) who supported the ongoing COVID-19 response alongside public health and emergency management. The interview discussion focused on key activities conducted by CBO/VOAD/COAD partners, emergency plans, coordination structures with local government, outreach to hard-to-reach populations, and successful partnerships leveraged during COVID-19. Overall, the interview hosted 17 stakeholders across the Bay Area.

Summary:

- CBO/VOAD/COADs served as critical surge support throughout the pandemic and contributed to activities such as public messaging, rumor control, community outreach, volunteer recruitment, resource procurement, training, translation, call center

management, testing and vaccination, social services, mass feeding, information sharing, data collection, and surge staffing.

- One of the most important successes to come out of the pandemic was the transition to remote work and remote services for many of these organizations. They were able to continue critical functions with regional partners in a completely new remote environment and were proud of their ability to adjust to new operating procedures that were not previously exercised or tested.
- One best practice was to engage a fully funded, paid CBO/VOAD liaison or team as part of the EOC early on in a response as well as creating smaller "sub" VOAD groups by city or community to conduct targeted, more meaningful outreach directly in their own communities.
- While the pandemic did make it difficult to conduct face-to-face outreach with local community groups, it also created a heightened awareness of and interest in emergency management for private sector and community-based partner organizations. This did lead to many new partnerships and VOAD members throughout the Bay Area.
- Jurisdictions tackled equity and accessibility planning in different ways, but all made significant efforts to address it. One jurisdiction had a dedicated Equity and Neighborhoods Team in their EOC which helped identify gaps in culturally/linguistically competent materials and outreach strategies. Another had an Access and Functional Needs Workgroup which met weekly to collaborate on current issues in accessibility.
- Medical Reserve Corps (MRC) provided another crucial source of staffing support particularly for testing and vaccination services. Implementing vaccination strike teams to conduct in-home vaccination services was quickly recognized as a best practice.

EMS and Ambulance Providers

Interview Description:

The Bay Area UASI facilitated a small group interview on May 5, 2022, with EMS and ambulance providers across the region who supported local jurisdictions COVID-19 response. The interview discussion focused on how providers were impacted by the COVID-19 pandemic response and their involvement with local jurisdictions. This included discussion about public health guidance, critical resources, responder safety, and staffing. Overall, the interview hosted 30 stakeholders across the Bay Area.

Summary:

- Several pandemic related plans (i.e.: Infectious Disease, H1N1, and etc.) were activated to assist in the operational response.

- Many agencies and organizations acknowledged that the plans did not address the complexity and duration of the COVID-19 pandemic, which prompted updates and ad-hoc solutions throughout the response.
- Some jurisdictions developed a transport hub to alleviate acute care hospitals during surge periods in allowing people with lower-level medical needs to different facilities without impacting EMS care and transport.
- It was difficult to access PPE to maintain daily standard practices and protect staff responding on the frontline.
- EMS and ambulance providers pivoted to support local pandemic response operations, to include testing and vaccines.
- The stay-at-home order forced clinical programs to pivot to online instruction which led to complications with hands-on training experience when providers were looking to fulfill staffing.
- Communication between agencies and providers was regarded as a strength in being able to address concerns about local public health guidance.
- EMS and ambulance providers did experience challenges with incorporating guidance into their daily operations, especially with providers who crossed jurisdictions or facility types.
- The pandemic highlighted EMS and Fire capabilities outside of medical transport, with their ability to assist inside healthcare facilities directly such as hospitals, emergency departments, and nursing homes.
- The risk of COVID-19 led to isolation and quarantine of EMS personnel, which was challenging for individuals who were cut off from the community which had a direct impact on morale.
- Overall, there were great partnerships developed with community partners and providers because of the increased engagement during the response.
- The group recommend more training and exercises which incorporate the full spectrum of the medical system for disaster health emergencies that provide patient care.

ABAHO PIO Group

Interview Description:

The Bay Area UASI facilitated a small group interview on June 2, 2022, with Public Information Officers (PIOs) and their partners engaged with public health as part of a standing Association of Bay Area Health Officials (ABAHO) PIO Group meeting, to collect input on their perspectives on public health messaging during COVID-19 response across the region. The interview discussion focused on how PIOs were able to coordinate across EOC/DOC structures, within

Joint Information Systems (JIS), and on timely and accurate messaging. Overall, the interview hosted 17 participants across the Bay Area.

Summary:

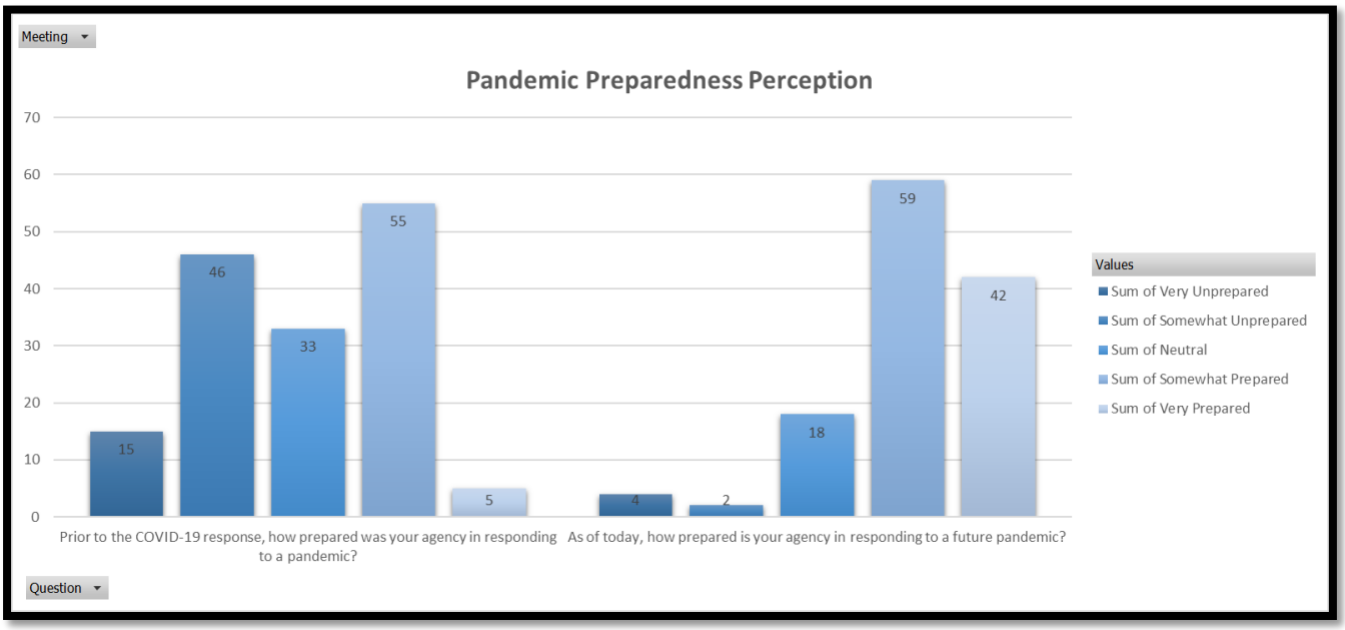
- There were huge demands on public health or other departmental PIOs during COVID-19 as many of them were deployed to the EOC and dedicated to their response, which often left critical gaps in public messaging efforts for public health departments and/or other county departments.
- The frequent disconnects between EOCs and Public Health DOCs on decision-making or information sharing made it extremely difficult to release accurate, consistent messaging in a timely manner. Instead, PIOs and their partners were reacting to new information on guidelines or policy changes when they heard about it in the media, alongside the public, instead of getting "in front of" those updates and changes.
- It did help when DOCs had a physical presence within or near the EOC, as they could coordinate information better. However, this was difficult to maintain in the long-term.
- The group felt that public health needed their own dedicated channel or platform to coordinate amongst public health PIOs and their partners. While some did participate in the Bay Area Joint Information System (JIS) coordination calls and felt that the information presented was helpful, they often still leveraged the ABAHO PIO group to share resources specific to public health. At one time there was an ABAHO PIO group Slack channel, but there were problems with permissions and sharing files and it was not a long-term solution.
- Much of the first year was spent on coordinating and releasing messaging concerning legal health orders and deconflicting the various policies across different jurisdictions, such as mask-wearing or outdoor events, etc. These differences from jurisdiction to jurisdiction made it especially difficult from a public information standpoint.
- Many of the PIOs celebrated some of the new partnerships they were able to build during the COVID-19 pandemic amongst their healthcare systems, private sector partners, and community-based organizations. The outreach and messaging these partners helped to create and disseminate was critical for increasing the accessibility of information and resources. If anything, these PIOs noted that it would have been ideal to have those relationships in place before COVID-19, and so should be in place before the next pandemic.
- The group was concerned about the lack of adequate public information resources at the county level in many Bay Area jurisdictions. There are many counties who rely on one PIO and who did not have the staffing capacity for the surge of needs during the pandemic. This has caused severe burnout amongst PIOs. One suggestion was to encourage rotations of Disaster Service Workers into Joint Information Center roles more frequently to build a baseline of trained staff.

Appendix D: Polling Data

The below data was collected in each of the small group interviews to represent the perceived change in preparedness in responding to pandemic prior to the COVID-19 pandemic to the small group interview.

Meeting	Question	Very Unprepared	Somewhat Unprepared	Neutral	Somewhat Prepared	Very Prepared
ABAHO PIO	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	0	0	1	5	1
ABAHO PIO	As of today, how prepared is your agency in responding to a future pandemic?	0	0	1	5	3
Allied Health	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	0	1	3	2	0
Allied Health	As of today, how prepared is your agency in responding to a future pandemic?	0	0	1	6	0
CBO VOAD COAD Partners	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	1	6	1	0	0
CBO VOAD COAD Partners	As of today, how prepared is your agency in responding to a future pandemic?	0	0	1	4	2
AFN	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	1	4	3	5	0
AFN	As of today, how prepared is your agency in responding to a future pandemic?	0	0	4	4	1

Meeting	Question	Very Unprepared	Somewhat Unprepared	Neutral	Somewhat Prepared	Very Prepared
EMS	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	1	7	5	6	0
EMS	As of today, how prepared is your agency in responding to a future pandemic?	1	0	1	8	6
EMS Ambulance Providers	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	4	7	4	7	4
EMS Ambulance Providers	As of today, how prepared is your agency in responding to a future pandemic?	2	0	1	6	10
Hospital	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	2	9	5	14	0
Hospital	As of today, how prepared is your agency in responding to a future pandemic?	0	1	1	16	7
Mental Health Partners	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	2	4	4	4	0
Mental Health Partners	As of today, how prepared is your agency in responding to a future pandemic?	0	0	5	3	3
Warehouse and Supply Chain	Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?	4	8	7	12	0
Warehouse and Supply Chain	As of today, how prepared is your agency in responding to a future pandemic?	1	1	3	7	10


Meeting
Pandemic Preparedness Perception
70
60
50
40
30
20
10
0
15
46
33
55
5
4
2
18
59
42
Prior to the COVID-19 response, how prepared was your agency in responding to a pandemic?
As of today, how prepared is your agency in responding to a future pandemic?
Values
Sum of Very Unprepared
Sum of Somewhat Unprepared
Sum of Neutral
Sum of Somewhat Prepared
Sum of Very Prepared
Question