



August 10, 2022

TARRANT COUNTY
COVID-19 AFTER ACTION AND INCIDENT
RESPONSE REPORT



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1. Incident Overview

Report Name	Tarrant County COVID-19 Response and Incident Response Report
Dates Reviewed	March 2020–September 2021
Scope	This after-action report (AAR) and associated improvement plan (IP) are based on operational (actual) events, specifically the COVID-19 pandemic and its impacts on the protests of 2020, Hurricane Laura sheltering operations, and the winter weather response in February 2021. This report is limited to the response and recovery actions of the Tarrant County Administration to sustain critical county functions, support testing and vaccination efforts, and collaborate with local jurisdictions.
Mission Area(s)	Response and Recovery (Core Capabilities and Public Health Emergency Preparedness and Response Capabilities are outlined in the body of the report).
Threats and Hazards	Pandemic: COVID-19 Protests Hurricane Winter weather
Incident Description	The global COVID-19 pandemic began in January 2020, and it had direct impacts on Tarrant County beginning in March 2020. Tarrant County's response to the COVID-19 pandemic has been ongoing since March 2020, and it continues beyond the publication of this report. During the period of this report, the county faced several other large incidents that were complicated by the COVID-19 pandemic. These incidents included large-scale protests related to the murder of George Floyd in the summer of 2020, sheltering evacuees from Hurricane Laura in August 2020, and a historic winter weather storm in February 2021. This report examines the county-wide impacts of the COVID-19 pandemic and the additional challenges created by the pandemic when the county was responding to other events.
Participating Organizations	Primary agencies engaged in the development of this report were Tarrant County Public Health (TCPH), Tarrant County Office of Emergency Management (TCOEM), and Tarrant County Administration. Additional input was provided by representatives from other county departments, local jurisdictions, hospitals, regional organizing agencies, volunteer organizations, and independent school districts.
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1. Introduction

On March 11, 2020, the World Health Organization (WHO) recognized a novel coronavirus (SARS-COVID-2), which causes the respiratory disease known as COVID-19 (or the “coronavirus”), as creating a global pandemic. On March 13, 2020, in response to the spread of COVID-19, Honorable Judge B. Glen Whitley issued a Declaration of Local Disaster due to Public Health Emergency for Tarrant County¹. As the pandemic evolved, Tarrant County partnered with local jurisdictions to provide strategically placed mass testing and vaccination sites, and it enacted county executive orders to implement protective measures, support the reopening of businesses, and provide guidance for limiting the spread of COVID-19.

In addition, Tarrant County responded to multiple incidents while facing the COVID-19 pandemic, specifically the protest marches in summer 2020, sheltering operations from Hurricane Laura in August 2020, and Winter Storm Uri in February 2021. The impacts of the COVID-19 pandemic on these responses are outlined in the Incident Response Report (see Section 5).

1.1. County Response

Tarrant County Office of Emergency Management (TCOEM) did not activate a traditional emergency operations center (EOC) for this incident. TCOEM initially supported the Joint EOC (JEOC) with the city of Fort Worth and other local departments. However, the regional operation quickly shifted to virtual activation to monitor, coordinate, and assist with the issuance of public messaging in support of the COVID-19 response.

The Tarrant County Public Health Department (TCPH) is the designated public health agency for the county, and it became engaged in the COVID-19 response when Dallas-Fort Worth (DFW) International Airport was identified as one of 15 screening airports for international travelers returning from China in January 2020. TCPH supported the screening, testing, and movement of suspected COVID-19 cases during the initial screening operations conducted by DFW Airport.

The primary goal of Tarrant County’s response to COVID-19 is to coordinate efforts with state and local agencies, provide guidance on protective measures by issuing executive orders, provide funding to support county organizations and local jurisdictions, provide clear and consistent messaging to the public, lead testing and vaccination efforts, and coordinate the fulfillment of local resource requests.

To date, approximately 30 agencies and community partner organizations have supported the county’s response to the COVID-19 pandemic. TCOEM and TCPH continue to coordinate the response to COVID-19. As of the publication of this report, the COVID-19 crisis continues to pose an unprecedented challenge to the health and well-being of every community across the United States, and it continues to pose a clear and direct danger to the health of Tarrant County

¹ <https://www.tarrantcounty.com/content/dam/main/global/Covid-19/TarrantCountyEmergencyDeclaration3-18-20.pdf>

residents. As of June 10, 2022, the county has had over 576,843 total cases of COVID-19, with 570,900 individuals recovered and 5,943 confirmed deaths.

The *Tarrant County COVID-19 After-Action Report (AAR)* and the *Incident Response Report (IRR)* were developed through the combined efforts of TCOEM and TCPH, numerous Tarrant County departments, local jurisdictions, faith-based (FBOs) and community-based organizations, nonprofit organizations, and health system partners. Their focus is on evaluating the strengths, areas for improvement, corrective actions, and steps necessary to advance the county's preparedness based on the response to the COVID-19 pandemic and other large-scale incidents that have occurred since the coronavirus appeared. The full overview of the county's response to COVID-19 pandemic and other incidents are listed in Appendix B: Incident Timeline.

1.2. After-Action Review

The magnitude and length of the ongoing crisis and the resulting emergency response by the county and its partners established the need for an after-action review of lessons learned, best practices, and areas for improvement during the long-term response to COVID-19. This review represents information regarding the county's emergency response and recovery efforts related to the COVID-19 pandemic during the 18 months between March 2020 and September 2021, and it serves as a tool to guide updates as response and recovery efforts continue.

1.2.1. Primary Strengths

The major strengths in Tarrant County identified thus far in the continuing COVID-19 pandemic are as follows:

- **Communication and coordination** with local jurisdictions, community-based organizations, nonprofits, and volunteer organizations;
- Frequent and proactive **messaging to the public** on constantly evolving guidance, direction, and executive orders;
- Expedited development of multiple **public health dashboards** for testing, vaccination, and numbers of confirmed COVID-19 cases; and
- Ability to dynamically shift the county's strategic approach based on the evolution of the pandemic through **policy, guidance, and operational adjustments**.

1.2.2. Primary Areas for Improvement

The primary areas for improvement in Tarrant County identified thus far in the continuing COVID-19 crisis are as follows:

- Incorporating a **formalized command and control structure** and Incident Command System (ICS) principles;
- Clarifying expectations regarding **daily confirmed COVID-19 case counts, number of tests and vaccines provided, and updates to the corresponding dashboards**;

- Consolidating **appointment registration platforms with the county’s electronic health record (EHR)** system to reduce duplicative paper and human workloads; and
- Standardize the county’s **telework policy** and subsequent technology needs.

Table 1 summarizes the strengths and areas for improvement organized by topic, which are further detailed in the analysis section of this report. The full list of areas of improvement and the associated corrective actions are listed in Appendix A: Improvement Plan.

Table 1: Summary of Strengths and Areas for Improvement

Topic	Strength	Area for Improvement
Policy and Executive Leadership	Local jurisdiction and elected officials’ coordination calls	Implementation of a work-from-home policy
	Executive orders	
Multi-Agency Coordination	Strong collaboration with external partners	
	Communication with external partners	
Internal Coordination	Development of a first-responder notification process	Command and control structure
		Incorporation of ICS principles
		Staffing challenges
Critical County Functions	Continuity of operations plans for select departments	County continuity of operations planning process
Public Information and Warning	Proactive messaging to the public	Equitable access to information
Procurement, Resource Requests, and Cost Recovery	Normal purchasing process waived for expedited purchases	Familiarization of the resource management process
	Early use of WebEOC by Tarrant County jurisdictions	Role of the strategic national stockpile (SNS) in response
	Pivot to an alternate platform for recurring requests for PPE	
Testing Sites and Public Health Laboratory Capacity	Mass testing sites	Training of contract staff
		Laboratory capacity challenges
	Third party partnership to expand laboratory capacity	Public health nursing home testing
		Coordination of new testing sites
Non-pharmaceutical Interventions	Implementation of protective measures in county facilities	
Vaccination	Vaccine distribution efforts	Duplicative registration platforms
	Just in time training	
	Mobile Vaccination Efforts	Operational delays at vaccination sites

Tarrant County COVID-19 After-Action Report and Incident Response Report

Topic	Strength	Area for Improvement
Health and Medical Systems	North Central Texas Trauma Regional Advisory Council (NCTTRAC) coordination of nursing home testing	Communication between TCPH, University Health Systems, and area hospitals
	Coordination of resources for area hospitals	Coordination between county and hospital vaccination systems, including registrant pre- and post-vaccination tracking
	Homeless shelter and hotel isolation process	
Technology	Expedited purchase of registration platform	Timeline for dashboard updates
	Development of public health dashboard	Telework equipment and software
		Cross-jurisdictional situational awareness platform

3. Analysis

This section reviews the major strengths and areas for improvement identified by the after-action review. Each observation is presented as a strength or an area for improvement, and it identifies core capabilities associated with the National Preparedness Goal established by the Federal Emergency Management Agency (FEMA). Each observation is also aligned with the Public Health Emergency Preparedness and Response (PHEP) capabilities defined by the Centers for Disease Control and Prevention (CDC). The analysis is based on the data collection and document review described in Appendix C. Where appropriate, the analysis presents specific and actionable recommendations. The observations are presented in 11 sections based on the topics in Figure 1, with the full list of corrective activities and responsible departments listed in Appendix A: Improvement Plan.



Figure 1: Topics in After-Action Report



3.1. Policy and Executive Leadership

This section reviews the strengths and areas for improvement related to policy and executive leadership during the COVID-19 response.

3.1.1. Strength: Coordination calls for local jurisdictions and elected officials

Observation: During the early response to the pandemic, Judge Whitley initially held daily calls to provide local jurisdictions, school districts, mayors, city managers, and other stakeholders updates on the state of the county and coordinated resource needs from local jurisdictions.

Core Capabilities: Operational Coordination, Operational Communications, Situational Assessment

PHEP Capabilities: Emergency Operations Coordination, Information Sharing

Analysis: Due to the dynamic nature of the pandemic and evolving guidelines and protocols, stakeholder coordination calls were conducted with representatives from across the county. The inclusion of mayors, city managers, school superintendents, volunteer organizations, and health and medical partners provided a comprehensive and collaborative forum for the county's response to the COVID-19 pandemic. The purpose of the coordination calls was to allow for two-way communication, with the County Judge and his administration sharing information with stakeholders and encouraging feedback from participants. The information gathered and discussed during the coordination calls was used to shape county executive orders, determine local jurisdictions' resource needs, and identify mitigation tactics related to public health and safety guidelines. The frequency of the calls varied according to the level of involvement required to meet operational demands and the needs of stakeholder organizations. The original daily frequency of these coordination calls was reduced to weekly as the operational demands slowed, and coordination calls are currently scheduled as needed.

Recommendations

- a. Continue the stakeholder coordination calls to retain engagement from participating organizations.
- b. Codify and integrate coordination call procedures into county emergency plans and annexes.
- c. Incorporate best practices for soliciting feedback on executive orders.

3.1.2. Strength: Issuance of executive orders

Observation: Executive orders issued by the Commissioners Court were aligned with executive orders from the State of Texas and guidance from the U.S. Centers for Disease Control and Prevention (CDC).

Core Capabilities: Operational Coordination, Situational Assessment

PHEP Capabilities: Emergency Operations Coordination, Information Sharing

Analysis: The Commissioners Court regularly issued and updated executive guidance that provided direction for county businesses, hospitals, school districts, and jurisdictional departments regarding operating parameters and protective measures. Adjustments to policies and executive orders were based on guidance from the federal and state governments, such as executive orders by the State of Texas and evolving guidance from the CDC related to protective measures such as face coverings and social distancing.

In May 2021, Governor Abbott issued Executive Order 36, which restricted the ability of county governments to issue executive orders that were contradictory to the state's guidance. However, the Commissioners Court was able to work within the limitations set by the Governor's executive order to best serve the residents of Tarrant County.

Recommendation

- a. Codify and integrate the issuance of executive orders in plans.

3.1.3. Area for Improvement: Implementation of a work-from-home policy

Observation: The implementation of the county's work-from-home policy was applied at each department director's discretion and applied only to exempt employees. Hourly employees were required to continue to report to work.

Core Capabilities: Operational Coordination

PHEP Capabilities: Emergency Operations Coordination

Analysis: The county implemented a work-from-home policy during the early response to COVID-19. Each county department's director was responsible for identifying employees who were eligible to work from home and employees who were required to report to their work location.

Employees eligible to work from home often lacked the technology to telework successfully, since most county employees use desktop computers in their offices. Although the county's Information Technology (IT) department attempted to migrate employees to laptops quickly to support the transition to virtual work, supply chain issues created challenges in providing all employees with the tools and resources they needed.

Employees required to continue to report to work were frequently exposed to COVID-19, and the subsequent quarantine periods created staffing challenges for vital positions, such as employees of TCPH's Epidemiology Division and the Medical Examiner's Office. Both specialized

groups provided vital services during the pandemic response, and their capabilities cannot be backfilled by other employees. This created significant capability gaps for extended periods.

Hourly employees were not eligible to work from home, even with newly implemented technology that would enable them to do so. Due to the limited personnel and the need for the work to be done in person, employees were faced with the choice to come to work and potentially be exposed to COVID-19 or lose employment.

Recommendations

- a. Clarify and expand the current county-wide telework policy with clear thresholds, applicable job classes, and expectations.
- b. Identify alternative work models for small, specialized groups comprising staff who have significant responsibilities during disaster/emergency response operations.
- c. Develop guidance for county departments and agencies for the appropriate and equitable implementation of telework policies.
- d. Encourage standardization of telework strategies and guidance.
- e. Consider a transition from desktop computers to laptop computers for all staff.



3.2. Multi-Agency Coordination

This section reviews the strengths and areas for improvement related to multi-agency coordination during the COVID-19 response.

3.2.1. Strength: Strong collaboration with external partners

Observation: TCPH and the Tarrant County Administration coordinated and collaborated with local and state volunteer agencies, healthcare providers, nonprofits, community- and faith-based organizations, and city departments to provide comprehensive protective health measures for Tarrant County residents.

Core Capabilities: Operational Coordination

PHEP Capabilities: Emergency Operations Coordination, Mass Care, Volunteer Management

Analysis: Survey feedback highlighted that Tarrant County Administration and TCPH coordinated with local, state, and national organizations to augment and expand support service using funding from the Coronavirus Aid, Relief, and Economic Security Act (CARES). That funding was used to provide COVID-19 testing, small business assistance, and social services, such as rental assistance, and it was also distributed to local municipalities. The distribution of CARES funding aided in the COVID-19 response, and it supported the purchasing of resources that could be used for future responses, such as refrigerators, as well as leasing the building for expansion in the TCPH workforce in response to the pandemic.

The county partnered with and received support from a wide range of organizations to fill gaps in lifesaving resources and critical support functions. One example of this partnership was the collaboration between the county and the Northeast Fire Department Association (NEFDA). NEFDA agencies supported mass testing and vaccination sites by committing resources and personnel. The TCPH vaccine outreach and distribution team worked closely with state partners to provide vaccinations throughout Tarrant County. In addition, the local Emergency Management Coordinators (EMCs) worked together to sustain staffing at vaccine sites and initially provided full-time on-site support.

Another example of strong collaboration occurred in the JEOC in Fort Worth. Representatives from Voluntary Organizations Active in Disaster (VOAD) in the area helped staff the JEOC, resulting in cohesiveness and support between city and county VOADs. In the JEOC, Tarrant County VOADs worked together and assisted with information dissemination.

Recommendations

- a. Conduct regional training with county departments and VOADs to encourage familiarity and cohesiveness.
- b. Coordinate with Tarrant County VOADs to develop or update regional plans, including establishing roles and responsibilities in the Tarrant County Emergency Operations Plan (EOP).
- c. Review and update mutual aid agreements and develop new mutual aid agreements based on the partnerships created during the COVID-19 response.
- d. Incorporate Tarrant County VOAD into EOC activations in future county responses.

3.2.2. Strength: Communication with external partners

Observation: The Tarrant County Administration and TCPH established open lines of communication with external partners and stakeholder groups early in the pandemic.

Core Capabilities: Operational Coordination, Operational Communications, Planning

PHEP Capabilities: Emergency Operations Coordination

Analysis: Survey and interview responses noted that communication with partners and stakeholders was frequent and consistent. In addition to the stakeholder coordination calls that were hosted by the County Judge (see Section 3.1.1.), the county held two additional calls: a regular operational coordination call for local partners and a weekly health coordination call with the hospitals' chief executive officers. The operational coordination calls focused on response activities by the Tarrant County Homeless Coalition, hospitals, and local response agencies to provide updates and coordinate resources. The operational coordination call was held on a consistent schedule, with the frequency increasing or decreasing as required by the operational demands. Weekly health coordination calls with the hospitals' chief executive officers and public health and emergency management representatives provided insight into

hospital capacity, and they provided the North Central Texas Trauma Regional Advisory Council (NCTTRAC) with timely information.

Recommendations

- a. Continue the operational and health coordination calls to maintain engagement from participating organizations.
- b. Codify and integrate coordination call processes in procedures in county emergency plans and annexes.
- c. Continue to engage external partners in decision-making and communications during the ongoing COVID-19 response.
- d. Incorporate template agendas for coordination calls into standard operating procedures and job aids.
- e. The county administration should maintain contact lists and provide updates as needed.



3.3. Internal Coordination

This section reviews the strengths and areas for improvement related to internal coordination during the COVID-19 response.

3.3.1. Strength: Development of a first-responder notification process

Observation: Multiple divisions in TCPH effectively coordinated information related to confirmed cases, updated the appropriate dashboard(s), and geotagged individuals' locations for notification to the local jurisdiction's dispatch center.

Core Capabilities: Situational Assessment, Environmental Response/Health Safety

PHEP Capabilities: Information Sharing, Responder Safety and Health

Analysis: In April 2020, TCPH compliance, biostatistics, informatics, and geographic information systems (GIS) teams cross-referenced positive cases for consistency between the case dashboard and the information shared with first responders. County staff validated each person's jurisdiction of residence to share with local dispatch should first responders be called to that residence. The TCPH compliance team ensured that the sharing of information complied with the Health Insurance Portability and Accountability Act (HIPAA). Furthermore, positive cases were updated on the TCPH COVID-19 case dashboard to document community spread in specific zip codes. The shared information allowed first responders to make informed decisions on appropriate levels of personal protective equipment (PPE) when responding.

Recommendations

- a. Document the incoming data cross-referencing process in public health standard operating procedures (SOPs).
- b. Establish a training program with junior public health staff to assist in data collection.
- c. Provide drills and tabletop exercises for staff to validate the data cross-referencing process.

3.3.2. Area for Improvement: Tarrant County's lack of a formal command structure negatively impacted the response

Observation: Tarrant County's response lacked a formal, operational command structure with a clear Incident Commander or Unified Command with supporting Command and General Staff. The county's response was often disjointed, specifically in the management of logistical issues.

Core Capabilities: Operational Coordination, Planning

PHEP Capabilities: Emergency Operations Coordination

Analysis: Though County leadership had a clear and defined role in leading the county's response to COVID-19, interview feedback noted that the county's response lacked a clear operational organization, including a command structure, with defined roles and responsibilities to implement COVID-19 response activities. The lack of an identified Incident Commander or Unified Command and Command and General Staff and the absence of a traditional Emergency Operations Center (EOC) led to reactive problem solving of individual issues rather than proactive planning for evenly distributed responsibilities and a uniform, strategic, and solution-oriented approach. The absence of a clear Incident Command Structure (ICS) structure with identified command staff directly contributed to a lack of coordination for major response components and duplication of efforts by multiple county departments.

Some roles and responsibilities, such as administrative, logistical, and operational support, were not effectively delegated to capable county departments. Instead, individuals who were already heavily involved in the response were required to take on additional tasks. One example cited during interviews was that a site manager was designated as the responsible party for all logistics of ordering supplies for testing, vaccination, and PPE throughout the response. In ICS, this responsibility would have been maintained by the logistics section, with the site manager responsible only for reporting the daily burn rate for replenishment. Identifying an Incident Commander and Command and General Staff according to the ICS and establishing a typical EOC would have clarified responsibilities by providing a bridge between tactical response and strategic decisions, establishing clear lines of communication, and including support departments to ease the burden of responsibility.

National Best Practice for ICS:
Use of the Incident Command System during a Public Health Emergency provides a common language and top-down modular organization to best support the size and complexity of the incident.

Recommendations

- a. Establish a formal approach for the county's emergency response.
- b. Include a county-wide command structure in this formal approach.
- c. Identify departments with limited response roles and incorporate them into the incident management structure to augment staff.
- d. Determine the minimum qualifications for staffing each Command and General Staff position, and train and assign staff accordingly.
- e. Provide ICS training and opportunities to exercise key skills to develop Incident Commanders and Command and General Staff personnel.

3.3.3. Area for Improvement: ICS Principles were not incorporated into the response

Observation: County leadership did not fully incorporate the principles of ICS into the COVID-19 response.

Core Capabilities: Operational Coordination, Planning

PHEP Capabilities: Emergency Operations Coordination

Analysis: TCPH and TCOEM have operations plans that complement each other. TCPH operates the Medical Countermeasures and Pandemic Plan, while TCOEM oversees the county's All-Hazards EOP. During the COVID-19 response, the EOPs were not followed. The EOP and Medical Counter Measures plans have identified command structures, recommended training, and applicable actions for the involved departments. ICS training is required for all county employees; however, leadership did not use the plans or principles of ICS during the response.

Interviewees and survey respondents indicated that while ICS training is required for county employees, it is not a requirement for elected officials. Elected officials' lack of understanding of existing plans and ICS principles led to confusion, and it created the need for an emergency revision of the county's EOP. Interviewees stated that most leaders completed ICS training when they were hired, but they did not take refresher training recently. Implementing refresher training and other trainings and exercises may increase staff understanding and knowledge of ICS terminology, structures, principles, and readiness of staff to respond.

Recommendations

- a. Develop a training plan with both required and recommended trainings for county staff.
- b. Establish a county-wide planning team to provide updates, revisions, and clarification for the county EOP and associated annexes, including the definition of organizational structure and department/agency-specific roles and responsibilities.
- c. Ensure training assignments and schedule for leadership is compliant with Chapter 418 of the Texas Government Code.

- d. Track departmental leadership and staff completion of the training required for their positions.
- e. Offer refresher training that is specific to ICS and the county EOC for internal and external staff.
- f. Develop and deliver EOC position-specific training.
- g. Conduct EOC drills and exercises, including pandemic response scenarios.
- h. Conduct regional training for key departments and agencies.
- i. Incorporate departments that are traditionally underutilized during emergency response to support operations.
- j. Provide *G402: NIMS Overview for Senior Officials* to members of the Commissioners Court and Department Leaders.
- k. Incorporate elected officials into training and exercise opportunities.

3.3.4. Area for Improvement: Prolonged response led to staff vacancies and low employee morale

Observation: Sustaining operations for the long period of the response and recovery was challenging because of staff vacancies and employee burnout.

Core Capabilities: Operational Coordination, Planning

PHEP Capabilities: Emergency Operation Coordination

Analysis: Maintaining adequate staffing under the conditions of the pandemic challenged departments engaged in the response. Vital positions were filled with inexperienced staff, and experienced staff were moved to different positions with which they were less familiar. As a result, some divisions had minimal staff, even though they had most of the responsibility for addressing the pandemic. Personnel-heavy operations, like testing and vaccination, were operational 7 days a week for multiple months. Furthermore, individuals who were engaged in their usual roles were expected to expand their responsibilities based on the evolving needs of the response. The lack of staff, coupled with poor direction and the lack of a coordinated command structure, resulted in staff members working triple their normal workload and being denied time off. This greatly depleted morale.

Moving staff to different positions also affected normal duties in less critical county services. For example, staff who routinely provide immunizations were re-assigned to support epidemiology, creating a delay in provided preventative immunizations.

The county did hire contract and temporary staff to backfill vacancies. However, onboarding new staff often took far longer than anticipated. Once on board, contract and temporary staff had to wait for IT hardware and profiles to be established, further delaying their ability to relieve the strain on staff.

Recommendations

- a. Develop and implement training opportunities for management and staff to recognize and mitigate staffing challenges and employee burnout during ongoing and future response/recovery efforts.
- b. Prepare appropriate rotation schedules to provide adequate rest for staff in long-duration response and recovery activities.
- c. Establish departmental plans and identify flexibilities in staffing and provide personnel in such positions with the trainings and capabilities needed to address emergency duties while maintaining normal operations.
- d. Identify positions that can be backfilled by less-experienced staff during staffing challenges.



3.4. Critical County Functions

This section reviews the strengths and areas for improvement related to critical county functions during the COVID-19 response.

3.4.1. Strength: Continuity of operations plans for the Public Health and Information Technology Departments

Observation: TCPH and the IT department developed and implemented separate continuity of operations (COOP) plans.

Core Capabilities: Operational Coordination

PHEP Capabilities: Emergency Operations Coordination

Analysis: Many county departments do not have COOP plans, or their plans are not regularly updated. However, the county's information technology department had an independent COOP, which they implemented for this incident. That plan helped the department implement the grab-and-go program, which provided a way to provide laptops to many county employees in place of their assigned desktop computers. In addition, the program allowed employees to take their desktops home and receive IT support for setup.

TCPH has a COOP plan for sustaining critical public health functions, in addition to the response actions needed during the COVID-19 pandemic. Implementing TCPH's COOP plan sustained vital clinical treatment for Tarrant County residents, and it also supported the staffing of mass testing and vaccine sites during most of the response.

Recommendation

- a. Establish a county-wide approach for developing and maintaining departmental COOP plans so they can be easily implemented during future responses. Build on the approaches of TCPH and the IT department in developing their COOP plans.

3.4.2. Area for Improvement: Continuity of operations planning and identifying mission essential functions

Observation: Tarrant County has not developed a county-wide COOP plan with identified mission-essential functions.

Core Capabilities: Operational Coordination

PHEP Capabilities: Emergency Operations Coordination

Analysis: Tarrant County has not implemented a county-wide COOP planning process, and many departments either do not have COOP plans or the existing departmental COOP plans are outdated. Furthermore, staff have not been trained on the plans, so that most employees are unsure how to respond during an incident that disrupts normal operations. Identifying mission-essential functions (MEFs) is a key element of continuity planning, and doing so would help the county prioritize capabilities, resources, staff, and efforts during response and recovery operations with long-lasting and wide-ranging impacts, such as the COVID-19 pandemic.

Recommendations

- a. Establish a county-wide approach for developing and maintaining departmental COOP plans on a consistent basis so they can be easily implemented during future responses. Build on the approaches of TCPH and the IT department in developing their COOP plans.
- b. Develop departmental COOP annexes to establish a consolidated approach and identify MEFs for each county department.
- c. Ensure county COOP plans establish a consolidated approach and identify key data and decision-making points regarding the need for COOP and prioritization of MEFs for the county (e.g., based on legal or state-mandated requirements).
- d. Provide discussion-based exercises to test and validate COOP plans.
- e. Identify areas to incorporate COOP planning and processes into the county's daily operations.
- f. Based on identified MEFs, coordinate with associated departments (e.g., IT) to ensure staff have the resources they need to enact their COOP plans (e.g., moving to an alternate work location).

3.5. Public Information and Warning



This section reviews the strengths and areas for improvement related to public information and warnings during the COVID-19 response.

3.5.1. Strength: Proactive messaging

Observation: Proactive messaging to the public was provided frequently on multiple platforms, including social media, a designated COVID-19 website for the county, and weekly press briefings.

Core Capabilities: Public Information and Warning, Situational Assessment

PHEP Capabilities: Emergency Public Information and Warning, Information Sharing

Analysis: Frequent, timely, and user-friendly messaging was disseminated by county leadership. The county's goal was to provide information in plain language at the third grade reading level. Multiple methods and platforms were used, including the county's COVID-19 website, which was updated frequently with vital incident information. Traditional and social media messaging was used to direct residents to the COVID-19 website. Comprehensive stakeholder meetings and regular community briefings were used to provide proactive messaging to the public. Weekly court briefings allowed time at the end for public comments, and town hall meetings were held with community focus groups. Press conferences and media releases were used to provide information to community members regarding the different roles of county government and TCPH. These communication strategies gave the county an opportunity to proactively share information regarding actions taken and the information used to drive key decisions. Regularly issued and updated executive guidance provided direction for county businesses, hospitals, school districts, and jurisdictional departments. Proactive messaging allowed for public-facing actions (e.g., guidance for schools, guidance on gatherings, testing and vaccination, and face-covering policies) to be implemented in a timely and effective manner.



Figure 2: TCPH COVID-19 Testing

Recommendations

- a. Continue to provide timely, accurate, and frequent messaging to the public on multiple platforms throughout the COVID-19 response and recovery efforts.
- b. Develop a public information plan to define the county's processes for collecting, verifying, and disseminating public information. Include messaging templates developed during the COVID-19 pandemic.

3.5.2. Area for Improvement: Equitable access to information

Observation: A more strategic approach is needed to ensure equitable and far-reaching public messaging, including individuals with disabilities and access and functional needs, and those with specific cultural needs in hard-to-reach communities.

Core Capabilities: Public Information and Warning

PHEP Capabilities: Emergency Public Information and Warning, Information Sharing

Analysis: Based on the population of Tarrant County, county communications are typically provided in English, Spanish, and Vietnamese, and some local jurisdictions provide versions in Chinese, Filipino, French, German, Hindi, Italian, and Korean. Interview and survey feedback indicated that the county did translate most public messaging into Spanish, but fewer messages were translated into Vietnamese. Furthermore, American Sign Language (ASL) interpretation was not provided at the weekly Commissioners Court meetings and the press conferences that followed them. The needs of people with disabilities and access and functional needs were not sufficiently met. In addition, hard-to-reach areas, such as disadvantaged communities, were not engaged.

The interviews also highlighted TCPH had limited contact with rural areas and underserved communities, where misunderstanding of COVID-19 protective measures and vaccine hesitancy were both high. Area hospitals highlighted TCPH requested area hospitals be the conduit for public outreach to these communities, since they did not have established contacts.

Recommendations

- a. Provide emergency public information in English, Spanish, and Vietnamese, at a minimum.
- b. Incorporate translation services into the county public information plan.
- c. Explore opportunities to translate emergency public information into other languages.
- d. Ensure that the needs of people with disabilities and access and functional needs are considered during the development and dissemination of public messages. For example, information could be made more accessible to some using an ASL interpretation during press conferences.
- e. Develop and test strategies for public messaging that account for people with disabilities and access and functional needs in the county's emergency communications and public information plans.

- f. Consider connecting with trusted community messengers through community- and faith-based organizations, especially in hard-to-reach areas, and develop a plan that uses best practices in messaging.



3.6. Procurement, Resource Requests, and Cost Recovery

This section reviews the strengths and areas for improvement related to procurement, resource requests, and cost recovery during the COVID-19 response.

3.6.1. Strength: The Tarrant County Purchasing Department waived traditional purchasing processes

Observation: Following the Declaration of Local Disaster Due to Public Health Emergency Executive Order on March 13, 2020, the Tarrant County Purchasing Agent waived the usual purchase order process and increased credit card limits in line with the emergency purchasing policy.

Core Capabilities: Logistics and Supply Chain Management

PHEP Capabilities: Medical Material Management and Distribution

Analysis: The initial response to the COVID-19 pandemic included a massive increase in demand for PPE, which severely outpaced supply. Therefore, the county's purchasing department adopted an open purchasing process that allowed for quicker acquisition of PPE. Normal purchasing processes were waived so staff could purchase refrigerators for vaccine storage and testing site materials, such as tents and portable toilets. By allowing county employees to purchase PPE with a purchasing card, the county could buy PPE when they found it, and they did not need to source vendors when the demand was high.

Recommendations

- a. Identify essential response departments and assign purchasing cards to department heads for use in line with the county's emergency purchasing policy.
- b. Socialize emergency purchasing processes with all county departments.
- c. Streamline purchasing processes during normal and emergency operations to encourage efficient purchases.

3.6.2. Strength: Early use of WebEOC by Tarrant County jurisdictions

Observation: Tarrant County jurisdictions submitted PPE requests through WebEOC, providing a singular, centralized process for submitting resource requests.

Core Capabilities: Situational Awareness, Logistics and Supply Chain Management

PHEP Capabilities: Information Sharing, Medical Materiel Management and Distribution

Analysis: At the beginning of the pandemic, centralizing PPE requests through WebEOC increased the county's situational awareness of the resources needed most. The convenience of having one system allowed NCTTRAC to fill requests for PPE, since they had user access to WebEOC. Jurisdictions sent a State of Texas Assistance Request (STAR) through WebEOC, which were assigned to NCTTRAC to fulfill. If NCTTRAC could not support the request, it was sent to the state. Although another platform was eventually used for managing recurring requests for resources, WebEOC should continue to be used for future disaster incidents to maintain a single submission process to request resources.

Recommendations

- a. Standardize and socialize the resource request process in WebEOC with county departments and local jurisdictions, including existing and new EMCs.
- b. Develop and provide training to WebEOC users to increase their familiarity with resource request processes.

3.6.3. Strength: Pivot to an alternate platform for recurring requests for PPE

Observation: Regional jurisdictions, including those in Tarrant County, transitioned to another platform for recurring requests for PPE.

Core Capabilities: Situational Awareness, Logistics and Supply Chain Management

PHEP Capabilities: Information Sharing, Medical Materiel Management and Distribution

Analysis: Many of the earliest requests for resources made to the county were for recurring needs like PPE. The established process for receiving jurisdictional resource requests via WebEOC was overwhelmed by recurring requests for PPE. The established WebEOC board, though effective during most disasters, was not designed to receive and process the volume of requests and was quickly considered nonfunctional.

NCTTRAC identified challenges with using WebEOC for recurring requests and developed a PPE-only tool to handle these requests. Various organizations submitted requests for PPE using the newly developed online platform. Once NCTTRAC received such a request, it was entered into the STAR platform for submission to the state. This process has since been replicated for other resources, including staffing, and it has made it easier for entities to make recurring requests.

Recommendations

- a. Codify the use of the platform for recurring requests for use in future responses.

- b. Socialize this platform to all Tarrant County departments, especially TCOEM.
- c. Provide training and exercises on the recurring request platform for end users.

3.6.4. Area for Improvement: Socializing and training on resource management processes

Observation: The county's emergency resource management process was not well socialized with county departments or external partners.

Core Capabilities: Logistics and Supply Chain Management

PHEP Capabilities: Information Sharing, Medical Materiel Management and Distribution

Analysis: While many partners used WebEOC to request resources, others were unfamiliar with it, or they did not have access to the WebEOC platform. Moreover, some partners submitted requests both on WebEOC and on other platforms, leading to "double dipping" into supplies. This presented additional challenges when elected officials or other county leaders asked for status updates. There was no single point for requesting resources, and many entities worked in the resource management space.

Recommendations

- a. Tarrant County and partner agencies should standardize one process to ensure accurate situational awareness of needs and requests for resources and overall resource management.
- b. Develop a resource management plan to codify the resource management process for county departments.
- c. Convene a county-wide working group to identify, agree upon, and obtain buy-in for utilizing one database for resource requests and resource management of emergency-related resources.
- d. Develop training modules to socialize resource request processes and educate appropriate partners on plans and procedures to support resource management.
- e. Establish a training schedule to socialize the resource request process, including the use of WebEOC.
- f. Test WebEOC processes and related procedures during exercises and/or drills to increase user familiarity with the platform.

3.6.5. Area for Improvement: Update Tarrant County's plan for the Strategic National Stockpile (SNS)

Observation: The initial response to the pandemic highlighted the county's lack of planning related to the SNS.

Core Capabilities: Logistics and Supply Chain Management

PHEP Capabilities: Information Sharing, Medical Materiel Management and Distribution.

Analysis: TCPH is responsible for the county’s planning efforts related to the SNS. The SNS program provides pre-identified locations, staffing, and resources for responding to the pandemic, such as PPE and antiviral medications. SNS program planning identifies areas critical to the success of the COVID-19 response, such as pre-identified locations for points of distribution, warehouse operations, command and control, medical materiel management and distribution, and dispensing and administering medical countermeasure. Preparing for these components of the SNS would have made it less difficult to stand up testing and vaccination sites, as processes would have been pre-identified. However, most of those locations were based in schools, which were not available because the schools were still in session. In addition, the closed Points of Distribution (PODs) could not be used, as they are designed for distributing oral prophylaxis. Most organizations lacked the medical staff required to provide vaccinations and testing. The decline in coordination between TCPH and TCOEM regarding the SNS program impacted the initial response capabilities.

Recommendations

- a. Update and revise the TCPH SNS plan to incorporate best practices and lessons learned during the COVID-19 pandemic and update the roles of TCPH and TCOEM in the SNS program.
- b. Identify staff to support POD operations and Command and General Staff roles.
- c. Provide training and exercise opportunities for designated county employees and volunteers on all facets of the SNS
- d. Identify opportunities to enhance critical areas of the SNS program, such as warehouse operations, materiel management and distribution, and dispensing and administering medical countermeasures.



3.7. Testing Sites and Public Health Laboratory Capacity

This section reviews the strengths and areas for improvement related to all testing sites and public health laboratory capacity during the COVID-19 response.

3.7.1. Strength: Mass testing sites

Observation: Early in the response to the COVID-19 pandemic, the county identified the need to provide residents with free access to testing.

Core Capabilities: Mass Care Services

PHEP Capabilities: Non-pharmaceutical Interventions

Analysis: TCPH, TCOEM, and multiple local jurisdictions partnered to establish mass testing sites, using a drive-thru model. Though initially difficult to find testing site venues that were not still open or in use, this challenge was overcome, and testing sites were strategically placed throughout the county to provide coverage for residents and easy access to free testing. To aid residents in identifying testing locations, TCPH established a testing site dashboard that included pertinent operational information for each location, such as address, hours of operation, testing types (e.g., rapid test, PCR, nasal swab, etc.), testing model of either a drive thru or walk-in clinic, and weblink to schedule an appointment if required.

During the initial mass testing sites, staff from multiple local jurisdictions collaborated with TCPH and TCOEM. This allowed TCPH staff to oversee the testing sites and provide direction and training to supporting agencies. Site management prioritized public safety by ensuring social distancing was maintained throughout the testing site.

Recommendations

- a. Document and incorporate collaborative strategies in the county’s pandemic plan for use during future testing operations, including timely and consistent communications between off-site managers and on-the-ground staff.
- b. Provide training to responsible county staff and staff/volunteers of external partners to support the developed concept of operations for mass testing sites.
- c. Incorporate planning for people with disabilities and access and functional needs to provide all individuals with equal access to and within testing sites.

3.7.2. Strength: Partnerships with third-party laboratories for diagnostic testing

Observation: When the TCPH laboratory was overwhelmed by the volume of tests, the county partnered with multiple third-party labs to conduct COVID-19 diagnostic testing.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Public Health Laboratory Testing

Analysis: Using multiple third-party labs increased the capacity to process COVID-19 test results. As a result of this increased capacity, tests were processed more quickly. Many third-party labs were also responsible for notification of test results, which reduced the burden on county call center staff to call and/or mail out notifications. Lab processing times varied, which created a challenge for the county related to identifying test result turnaround times and communicating accurate expectations to the public.

Recommendations

- a. Create lab surge infrastructure in the county to handle high volumes of tests.
- b. Establish standby contracts for expanding lab capacity for use in future laboratory diagnostics.
- c. Maintain daily communication with third-party labs for current processing times.
- d. Manage public expectations for testing and receiving results, including daily updates of public dashboard with both the number of tests conducted during that operational period and the range and average of current processing times.
- e. Incorporate planning for individuals who cannot access results via computer, such as call center providing test results.

3.7.3. Area of Improvement: TCPH staff had to train contractors and temporary staff on testing processes.

Observation: TCPH contracted with a third party to supplement county staff at testing sites. The contract staff were unfamiliar with the testing procedures and had to be trained by TCPH staff.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services, Mass Care

PHEP Capabilities: Medical Surge

Analysis: Contractors were hired to supplement county staff at various testing sites. TCPH did not receive advanced notice of the dates to expect testing contractors, who arrived on any and all days during a week. Since contractors received just-in-time training from TCPH staff at each testing site, the uncertainty of when contractors would be presented created a strain on staffing and ensuring trainers were available when contractors were present. The lack of information regarding contractor schedules caused disruption and created a strain on TCPH staff, as they were pulled away from their other duties to provide training.

Also, the county received testing equipment from this vendor as part of a contract. Contractor personnel supplied were unfamiliar with the equipment their employer had provided to TCPH, and TCPH staff had to train contractors on the equipment supplied through the contract.

Recommendations

- a. Ensure contractors are incorporated early in public health responses, including as trainers, so TCPH staff can continue with regular and non-training emergency responsibilities.
- b. Include contract staff training among the responsibilities of vendors awarded future contracts.
- c. Develop and document training programs for other external partners based on best practices and lessons learned from the COVID-19 response.

3.7.4. Area for Improvement: The TCPH laboratory lacked the ability to process the volume of testing kits initially submitted for diagnostics.

Observation: At the beginning of the pandemic, the TCPH laboratory attempted to conduct diagnostic processing of all the COVID-19 tests for the county, but due to the high volume, the laboratories' capacity was overwhelmed.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Public Health Laboratory Testing

Analysis: Normally, the TCPH North Texas Regional Laboratory provides testing for communicable diseases, tests drinking water and milk, provides quality assurance testing for dairy products, and regular surveillance and confirmatory testing for emerging infectious diseases. During the early phase of COVID-19 testing, the TCPH laboratory was tasked with conducting diagnostic processing for all COVID-19 tests in the county. As community spread escalated, the laboratory was quickly overwhelmed by the volume of tests submitted for diagnosis. The lab was challenged by the restricted availability of reagents and testing supplies during the response. The lack of available resources and the volume of testing kits exceeded the capacity of the TCPH laboratory. As a result, the time to notify individuals of a confirmed case, and subsequent contact tracing, was significantly delayed, with some positive case names being provided to contact tracers up to seven days after the confirmed positive case was identified.

Recommendations

- a. Expand TCPH laboratory capacity by investing in additional space, equipment, and recruitment of qualified staff.
- b. Formalize contracts with third-party vendors to rapidly expand TCPH laboratory capacity.
- c. Establish thresholds within TCPH laboratory Standard Operating Procedures (SOPs) to enact the contracts with third-party vendors to quickly expand capacity.

3.7.5. Area for Improvement: Ad hoc process creation for nursing home COVID-19 testing

Observation: In May 2020, Governor Abbott directed the Texas Health and Human Services Commission, the Texas Division of Emergency Management (TDEM), and the Texas Department of State Health Services to test all nursing home residents and staff for COVID-19. TCPH coordinated testing for all Tarrant County nursing home residents and staff.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Public Health Laboratory Testing

Analysis: Following the Governor’s May 11, 2020 directive, the TCPH Director offered TCPH to conduct testing of staff and residents in Tarrant County nursing homes. At the peak, the county was conducting testing for up to 16 establishments a week, with up to 250 collections at each establishment. Initially, TCPH established an ad hoc process, requiring significant effort from support staff to coordinate logistics, including acquisition of personnel lists from the nursing homes requesting testing, preprinting requisition forms and labels for test tubes, and coordinating with an external agency to perform the testing. Support staff packed necessary printed and support materials into coolers to be picked up by the Fort Worth Fire Department or the local jurisdiction’s fire department to conduct testing the following day. If personnel from either fire department were unavailable, the medical staff at the nursing home transported the samples. The coordination of efforts was performed seven days a week from May 2020 through December 2020. Later, it transitioned to the NCTTRAC for coordination (see Section 3.10.1).

Recommendations

- a. Using the operational approach established in the county’s EOP, leverage the county’s EOC with a clear command and control structure to support future county emergency operations.
- b. Support training, exercises, and laboratory participation in preparedness and response operations for designated staff at nursing homes and for Community Emergency Response Team (CERT) and Medical Reserve Corps (MRC) volunteers.
- c. Codify processes used to support the county’s mass testing operations for long-term care facilities in the TCPH pandemic plan to establish procedures for sample collection, triage, labeling, packaging, shipping, transport, handling, storage, and disposal to guide future testing operations.

3.7.6. Area for Improvement: Coordination with TCPH and TCOEM staff while coordinating new testing sites

Observation: TCPH and TCOEM planners who were responsible for establishing testing locations were not notified of new testing locations that were briefed to the Commissioners Court. This led to an incomplete concept of operations and fruitless and duplicative planning efforts for testing sites.

Core Capabilities: Operational Coordination, Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Emergency Operations Coordination

Analysis: As part of the planning and coordination of COVID-19 testing sites, county leadership often identified testing sites and coordinated directly with TDEM to establish the sites without input from TCOEM and TCPH planners, who had the responsibility of ensuring locations were operationally feasible. As a result of this lack of coordination, partial Concept of Operations (ConOps) were developed for multiple sites and then abandoned as the list of testing locations expanded. In addition, TCOEM and TCPH planners regularly learned that previously identified

locations were removed or replaced by other locations during Commissioners Court presentations. This lack of communication and coordination with the operational staff created confusion about what efforts were being made and by whom.

Recommendations

- a. During a public health incident/emergency, TCPH and TCOEM should establish a unified command, including their leaders, decision-makers, and subject matter experts, to coordinate operational needs with strategic direction.
- b. Develop guidelines and thresholds for public health incidents that relate directly to establishing and operating testing sites that are managed by TCPH or TCPH partners and supported by TCOEM and/or the county's EOC.
- c. Establish an operational planning cycle, as defined in the county's EOP, to establish a clear planning process, operational objectives, and resulting plans (e.g. Incident Action Plans) that provide a shared approach for operations, including future testing sites during public health incidents.
- d. The development of the mission and objectives for daily/operational period incident action plans should be determined by Incident Command and disseminated to all operational staff before the start of that period.
- e. For future mass testing operations, establish a Testing Site Assessment Task Force to document criteria for testing site locations, develop a site Concept of Operations, and identify staffing needs, including the types of skills/certifications required.



3.8. Non-pharmaceutical Interventions

This section reviews the strengths and areas for improvement related to non-pharmaceutical interventions during the COVID-19 response.

3.8.1. Strength: Protective measures implemented in county facilities

Observation: Early in the response to COVID-19, Tarrant County implemented protective measures in all county facilities, including requiring face covering and social distancing and upgrading ventilation systems.

Core Capabilities: Environmental Response and Health Safety

PHEP Capabilities: Responder Safety and Health

Analysis: Tarrant County implemented a variety of measures in county facilities to protect employees and patrons. The county provided hand sanitizer and face coverings at the entrances to each facility, installed plexiglass barriers for customer-facing positions, and ensured that social distancing was possible by limiting the number of persons allowed into a facility. In the

county jail, a congregate facility where the threat of spreading COVID-19 was higher, the sheriff's office implemented PPE procedures for employees and 14-day quarantines for incoming inmates to help limit the spread of the virus.

Recommendations

- a. Update Tarrant County's pandemic plan with best practices for protective measures.
- b. Develop a PPE cycling program in coordination with area hospitals. The county would sell PPE nearing expiration to local hospitals and replenish its supply. The hospitals would use the PPE prior to their expiration dates.
- c. Ensure that the county has a stockpile of PPE and related resources that can be ready for future pandemics. The county could avoid increased prices for PPE when demand is high during an initial response.



3.9. Vaccination

This section reviews the strengths and areas for improvement related to vaccination efforts during the COVID-19 response.

3.9.1. Strength: Extraordinary efforts by county staff and local jurisdictions to provide COVID-19 vaccination to residents

Observation: Providing COVID-19 vaccines required enormous effort by TCPH, TCOEM, and supporting local jurisdictions, including coordinating staffing and resources, developing unique concepts of operations by location, and maintaining mass vaccination operations over a very long period.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration

Analysis: TCPH staff established and operated multiple mass vaccination sites. The effort to provide vaccines to the residents of Tarrant County outside of normal operations required a large investment of time and effort by county staff, local jurisdictions, and contractors. Each vaccine site required a concept of operations tailored to the nuances of the location. While the sites had similar command structures, TCOEM staff and managers worked directly with local agencies to provide additional staff for documentation, wayfinding, and vaccine administration. The support provided by the local jurisdictions through the fire departments and administrative staff was essential for the success of the mass vaccination sites. Without such support, TCPH would not have had the capacity to expand and maintain vaccination efforts.

Vaccination site managers were empowered to make ad hoc adjustments to the distribution mode. One site simultaneously ran a walk-in and drive thru clinic by using the parking garage attached to the main facility. Staff triaged individuals coming to the site and redirected those

with limited mobility who would struggle to stand in line for a prolonged period to remain in their vehicles to receive a vaccine.

Recommendations

- a. Update the TCPH Pandemic Plan and the Medical Counter Measures Plan to include the concepts of operations developed for establishing and operating mass vaccination sites.
- b. Provide training and conduct exercises on the concepts of operations for establishing and operating mass vaccination sites to increase preparedness for future public health incidents. These exercises may also be built on existing POD operations.
- c. Establish, train, and develop a task force that would coordinate mass vaccination efforts and/or staff sites for medical countermeasures.
- d. Establish processes to determine the best use of volunteers based on mission priorities and capabilities.

3.9.2. Strength: Mobile Vaccination Efforts

Observation: TCPH and Trinity Metro developed a mobile vaccine clinic in a Trinity Metro bus to provide COVID-19 vaccine to underserved populations.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration

Analysis: In April 2021, around the time the fixed vaccination site at Farrington Field closed, TCPH created a mobile vaccination team to serve homebound individuals and nursing homes. In October 2021, the VaxMobile, a city bus converted into a mobile vaccine clinic, was deployed to facilitate the distribution of vaccines in underserved populations. TCPH worked with school districts to identify zip codes with lower vaccination rates to focus mobile efforts. The mobile clinic visited specific locations regularly, such as local food banks and the YMCA. TCPH leaders reviewed vaccination rates in communities and shifted efforts to address needs. The clinic could also be requested to visit other sites, such as vaccination events hosted by local businesses and private organizations. The mobile team also set up at Sundance Square to offer vaccination to visitors as well as residents. With this targeted yet flexible approach, TCPH could reach individuals who had yet to receive a vaccine, due either to lack of access or scheduling conflicts. The mobile clinic was in service for only a few days each week because there were not enough staff resources for full-time deployment.



Figure 3: The VaxMobile

Recommendations

- a. When possible, staff of mobile vaccination units should be representative of the populations they serve, in language, cultural, race, and ethnicity considerations. This can help ensure that all individuals in Tarrant County receive equitable information and services, and it may also increase vaccination rates in these populations.
- b. Develop mobile vaccine deployment strategies and provide training to responsible county departments, including site selection criteria and the request process.
- c. Coordinate with schools, libraries, and other organizations, as well as trusted community messengers, to educate the community about mobile opportunities for vaccination.
- d. Use State of Texas Emergency Assistance Registry (STEAR) data to identify individuals who may require additional support in receiving a vaccine and provide vaccines to the elderly, those who are immune-compromised, and individuals with disabilities and access and functional needs.

3.9.3. Strength: Using an established vaccination site for just-in-time training for new staff members

Observation: TCPH used the Hurst vaccination site for just-in-time training.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services, Operational Coordination, Mass Care Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration, Volunteer Management

Analysis: TCPH immunization staff conducted just-in-time training, and other computer-based training was set up in a conference room and could be accessed at any time at the Hurst vaccine site. By using both training approaches, the county ensured that vaccinators, regardless of when they arrived (such as FEMA staff), received the same training on vaccination information and procedures. Each day, staff would incorporate lessons learned from that day into the training for the following days.

Recommendations

- a. Secure written agreements (e.g., memoranda of understanding [MOUs]) with jurisdictional or regional volunteer sources.
- b. Create a system to track the number of registered volunteers by profession, certification or licensure status, and skill or training level, hours of volunteer services performed, and previous volunteer activities in incident responses.

3.9.4. Area for Improvement: Duplication of effort to submit daily vaccine records to Immtrac2

Observation: TCPH used one electronic system for scheduling appointments and a separate electronic health record (EHR) system. The two systems do not interface on the administrative side, so patients were required to hand write information to supplement the data fields in the appointment registration system. TCPH staff then manually entered the information into the county's EHR system.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services, Intelligence and Information Sharing, Health and Social Services, Situational Assessment

PHEP Capabilities: Medical Countermeasure Dispensing and Administration, Information Sharing

Analysis: Duplicative efforts created additional work for the TCPH staff to compile vaccination data. The back ends of the Quickbase appointment registration system and the county's EHR system could not communicate with each other, so information for the day's appointments was not pulled into the EHR system to update whether the individual received a vaccine that day. Handwritten information had to be manually entered into the Tarrant County EHR system. Although most mass vaccination clinics were open from 9 a.m. to 6 p.m., administrative staff typically worked two to four hours after clinic closure until the last month of operation inputting data into the county's EHR system. Additionally, this process created a HIPAA oversight challenge, as handwritten health information needed to move multiple times for processing. This documentation process had to be done each day so that the county could push the records in the EHR system to the state's Immtrac2 system overnight. The latter directly informed the state's situational awareness regarding the county's vaccination efforts.

Recommendations

- a. Create and implement a single system that integrates registration information into the county's EHR system for easy upload to the state's Immtrac2 systems.
- b. Create and provide comprehensive training on new systems to all TCPH staff, as well as CERT, MRC, and other volunteer groups.
- c. Create just-in-time training for surge staff, including contractors and temporary workers.
- d. During future mass vaccination efforts, conduct daily meetings with operational and county leadership to discuss and address challenges.

3.9.5. Area for Improvement: Appointment registration process and on-site documentation process created significant delays

Observation: Once registrants were at the vaccine sites, additional paperwork was needed, creating significant delays for the recipients, and increasing the workload of the administrative staff at the sites.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration

Analysis: The vaccine registration process used two technology systems. The public-facing system, built in QuickBase, allowed residents to document their eligibility and schedule appointments if approved. On this system, registrants provided their name, date of birth, address, and any preexisting conditions that may have affected their ability to receive a vaccine during the phased vaccine rollout. Once registrants with appointments arrived at the vaccination site, they were asked to submit additional documentation, including their insurance information, prior to receiving a vaccine. Some people did not have their insurance information with them. Others were reluctant to provide it since the vaccine was being provided free of charge. The cumbersome paperwork, coupled with the recipients not being aware of the additional documentation required, created bottlenecks in the operation before individuals received the vaccine. The staff at the vaccination sites made ad hoc adjustments to the process to reduce wait times, but inevitably, individuals were required to stand in line, sometimes outdoors and exposed to the elements, longer than preferred.

Recommendations

- a. Ensure the Incident Command Structure includes leaders and decision-makers from the county's IT Department and Public Health Informatics.
- b. TCPH leaders, in collaboration with other operational leaders, should draft and document vaccine site procedures, including requirements for registrants' data to be collected.
- c. Disseminate procedures to vaccine site staff prior to the public event/vaccination clinic.
- d. Work with the county's IT department to build appropriate internal systems to collect all required data for registrants.
- e. Work with Health Informatics to ensure the collected data can be easily analyzed and presented for public consumption and reported to state or federal partners.
- f. Inform registrants of all paperwork and documentation requirements prior to their appointments. If using an online registration system, ensure that this information is provided prominently and more than once to ensure that registrants are aware of the documentation requirements.



3.10. Health and Medical Systems

This section reviews the strengths and areas for improvement related to Health and Medical Systems during the COVID-19 response.

3.10.1. Strength: Nursing home testing program through NCTTRAC

Observation: NCTTRAC coordinated the emergency management medical task force to test all nursing home personnel following the Governor’s directive.

Core Capabilities: Operational Coordination

PHEP Capabilities: Public Health Surveillance and Epidemiological Investigation

Analysis: TCPH initially established an ad hoc process for nursing home testing, which required significant staff time to coordinate logistics and supplies. These efforts occurred 7 days a week from May 2020 through December 2020 until the process transitioned to NCTTRAC, which quickly developed a medical task force to complete these efforts (see Section 3.7.5).

Recommendations

- a. TCPH and TCOEM should strengthen relationships with NCTTRAC to make it easier to create task forces as needed.
- b. Include NCTTRAC in TCPH and TCOEM in future planning efforts.

3.10.2. Strength: Coordination of resources for area hospitals

Observation: TCPH, in coordination with the NCTTRAC, was able to source additional resources needed by area hospitals.

Core Capabilities: Operational Coordination

PHEP Capabilities: Public Health Surveillance and Epidemiological Investigation

Analysis: During the early response of COVID-19, JPS needed additional resources, such as patient beds, to expand their capacity during times of increased patient loads. This support for sourcing supplies allowed hospitals to focus solely on the ability to treat and care for incoming patients.

Recommendation

- a. N/A

3.10.3. Strength: Shelter at the Fort Worth Civic Center and Hotel System for Isolation for Tarrant County's Homeless Population

Observation: TCPH, City of Fort Worth, JPS, and other partners worked together to establish an overflow shelter for the homeless population and identified hotels for use to isolate potential positive cases.

Core Capabilities: Operational Coordination, Mass Care Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration

Analysis: Tarrant County's homeless population experienced decreased access to shelter beds during the early days of the pandemic. The need to further distance individuals and populations, a recommended protection measure to help protect them from COVID-19, decreased the availability of beds. TCPH, Fort Worth, JPS and other local non-profits partnered together to provide a safe, viable solution to increase the homeless population's access to beds. Further, a process was developed in coordination with area hotels was developed to isolate homeless persons who were potential positive cases. Area hospitals, specifically JPS, were included in this process to provide treatment and care to homeless individuals.

Recommendation

- a. Codify the hoteling process for use during future emerging infectious disease outbreaks.

3.10.4. Area for Improvement: Communication between TCPH, Universities, and Area Hospitals

Observation: The university health systems and area hospitals were contacted by multiple people from Tarrant County Administration and Public Health with requests for support or changes in direction. These multiple points of communication created confusion regarding what the request or direction was at times.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services, Situational Assessment, Health and Social Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration, Information Sharing

Analysis: Due to the county's lack of a formal command structure, the communication to area hospitals and university health systems was not coordinated in a manner that was supportive or collaborative. The inconsistent, segmented, and at times confusing communication resulted in the need for coordination beyond gauging what healthcare partners were doing. The university health systems and area hospitals identified that TCPH needed a more robust and dynamic approach for coordination among the health and medical systems.

Recommendations

- a. Identify communication channels and mechanisms from the county to the health and medical systems.
- b. Test the communication channels and mechanisms from the county to the health and medical systems.
- c. Establish a consolidated, coordinated approach to collaboration among the hospitals and university health systems to support the county in response.

3.10.5. Area for Improvement: Coordination between county and hospital vaccination systems, including registrant pre- and post-vaccination tracking

Observation: Better coordination and integration of county and hospital vaccine registration and reporting systems is needed to ensure accurate reporting of the vaccinations provided.

Core Capabilities: Public Health, Health Care, and Emergency Medical Services, Situational Assessment, Health and Social Services

PHEP Capabilities: Medical Countermeasure Dispensing and Administration, Information Sharing

Analysis: During the push for mass vaccination, the county deferred some registrants to local hospitals for vaccination. The hospitals were not expeditious in reaching out to individuals to schedule a vaccination appointment. As a result, some individuals who were deferred to local hospitals went instead to mass vaccination sites, without a scheduled appointment. At times, these individuals were turned away due to the lack of available appointments. In addition, the vaccines that were provided at local hospitals were not consolidated with the vaccine doses provided through the county for reporting.

Recommendations

- a. Determine a shared procedure and system for registration, enrollment, administration, and documentation of vaccines administered by both public- and private-sector partners.
- b. Establish a vaccination working group of public and private partners, including Texas Health Resources, to determine system and information-sharing needs.
- c. Secure written agreements (i.e., MOUs) with potential vaccination partners, such as hospitals, to define procedures for sharing information. Cite relevant laws and policies, such as emergency powers, for collecting and sharing public health data.



3.11. Technology

This section reviews the strengths and areas for improvement related to Technology during the COVID-19 response.

3.11.1. Strength: Quick purchases of new software platforms to streamline and speed up data management processes

Observation: Agencies that experienced significant complications with their existing software platforms were able to purchase more-efficient products quickly.

Core Capabilities: Operational Coordination

PHEP Capabilities: Emergency Operations Coordination

Analysis: At the beginning of the pandemic, both NCTTRAC and TCPH were using Excel spreadsheets to manage data, but they were able to purchase new software quickly. This increased efficiency and allowed for easier data-sharing. NCTTRAC purchased Power BI, which reduced the time for data compilation by 5 hours and allowed for sharing data with partners to use in their reports and analyses. TCPH purchased QuickBase, which is used for numerous operations, such as case management and vaccine registration, and it can be used by external partners while still protecting private health information.

Recommendation

- a. Continue training on new software platforms to ensure all end users in Tarrant County can effectively use them.

3.11.2. Strength: Developing various TCPH dashboards provided a central location for information on case counts, testing, and vaccinations

Observation: The dashboards developed and maintained by TCPH gave the public excellent situational awareness regarding case counts, testing site locations, and vaccination rates.

Core Capabilities: Operational Coordination

PHEP Capabilities: Emergency Operations Coordination

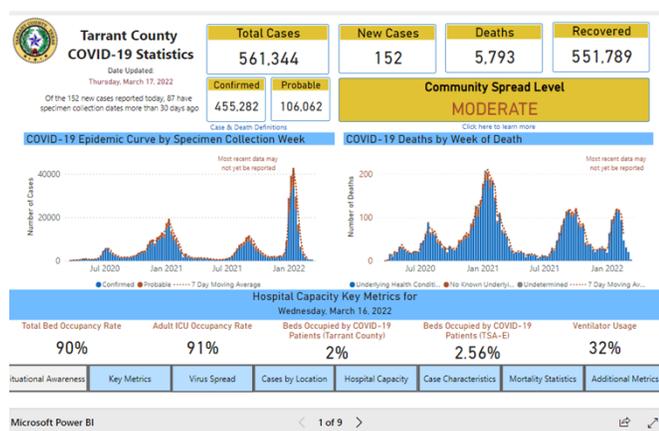


Figure 4: Tarrant County COVID-19 Dashboard

Analysis: TCPH developed public-facing dashboards as the response developed and guidance information changed. The dashboards showed case counts, testing sites and numbers, and vaccination locations and numbers, providing situational awareness to all users. This eliminated the need for a single contact person, as anyone—be it an elected official, hospital, or concerned citizen—could review the dashboard information.

Recommendations

- a. Incorporate the continued use of dashboards into TCPH plans and daily operations for Public Health Informatics.
- b. Continue training designated staff on dashboard operations to increase the number of people able to synthesize the large amount of data going into the dashboards.

3.11.3. Area for Improvement: Realistic expectations of the time processes need to ensure accuracy for public reporting

Observation: The information provided on the TCPH dashboards required 4–6 hours of data cleaning to ensure its complete accuracy.

Core Capabilities: Operational Coordination, Public Information

PHEP Capabilities: Emergency Operations Coordination, Emergency Public Information and Warning

Analysis: To ensure that the data supplied to the dashboard was accurate, TCPH employees had to remove duplicate case counts, identify incorrectly geotagged cases, and check various other measures that could make the information misleading. Initially, the only available method to check accuracy was manually reviewing all documentation, which was time consuming but necessary for providing the county with the highest-quality information.

This data cleaning and analysis made timeframes for reporting expected by TCPH leadership unattainable. Many employees completed their daily job duties and then worked into the night to meet these expectations. With a few exceptions for county holidays, numbers were reported seven days a week until November 2021. The workload was not sustainable, and had adverse effects on the staff involved.

Recommendations

- a. Ensure senior leaders understand the timelines and ability of staff to conduct data cleaning to set clear, realistic standards for reporting when the accuracy of the data is a high priority.
- b. Expand the county's data analysis capacity by hiring additional public health staff and training them on how to conduct analyses.
- c. Continue investing in software and technology to increase the efficiency of data analysis and decrease the demand on staff.

3.11.4. Area for Improvement: Continued enhancement of telework equipment and software

Observation: Many departments were not equipped with laptops and had to rely on paper copies for daily job responsibilities.

Core Capabilities: Operational Coordination, Planning

PHEP Capabilities: Community Preparedness, Emergency Operations Coordination

Analysis: Traditional government offices are equipped with standard desktop computers with towers, not laptops with docking stations. When the pandemic began, only a few employees had laptops to transition to remote work. While some departments had transitioned to online forms, many still operated with paper copies of forms and bids and did not use electronic programs. This further complicated the ability to telework despite teleworking being a best practice recommendation before vaccines became available. Many employees could have teleworked during the severe winter weather in February 2021.

Recommendations

- a. Transition essential staff (at minimum) to laptops with docking stations to allow for an easier switch to teleworking during a state of emergency, disaster declaration, or infrastructure failure.
- b. Require essential staff in all county departments to take their laptops home every evening. Consider providing laptops for other staff who operate from a desktop computer.
- c. Have the IT department assess the technology needs for all of Tarrant County to address all technology gaps and codify the approach of providing technology to employees.
- d. Develop processes that allow for the electronic submission of various forms and bids. Partner with departments that have implemented online forms to identify best practices.
- e. The IT department should purchase software to allow employees to complete their work online from various locations and reduce reliance on paper.

3.11.5. Area for Improvement: Better system for information-sharing platforms for cross-jurisdictional use

Observation: Agencies and jurisdictions use different information-sharing platforms, creating information silos and complicating situational awareness.

Core Capabilities: Situational Awareness, Operational Coordination

PHEP Capabilities: Information Sharing, Emergency Operations Coordination

Analysis: The region uses multiple platforms for incident management and sharing public health information. This makes it difficult to create a singular, cohesive database of information. Through Lonestar, the State of Texas' WebEOC, users have access to the jurisdictional information made available within Tarrant County. Often, elected officials requested updates regarding different aspects of the pandemic, and the lack of a standardized information-sharing platform created challenges in providing accurate answers.

Recommendations

- a. Tarrant County jurisdictions and partnering agencies should adopt one platform for all users to post, share, and sort information during response.
- b. Convene key partners, including emergency management, public health, and hospital systems, to determine the most suitable information-sharing platform.
- c. Socialize and train on the county-wide information sharing platform to increase situational awareness during a response.

4. AAR Conclusion

Tarrant County's response to the COVID-19 pandemic is continuing. This AAR provides key findings that demonstrate strengths for codification as best practices and areas for improvement that can be addressed immediately, improving the county's current response to the pandemic and future responses to emergencies and disasters.

Tarrant County's departments and partners are encouraged to use the findings in this report to further refine response and recovery efforts related to the COVID-19 pandemic, as well as the plans, procedures, and training needed to support other emergency response efforts. As the pandemic is an ongoing incident, the county will benefit from continually evaluating its response, making appropriate operational adjustments, and conducting a final assessment of the response to the pandemic after the public health emergency ends. The findings of this AAR have been incorporated into the attached improvement plan (IP), which will help guide efforts to build on the information identified and analyzed in this report.

5. Concurrent Emergencies Response Review

As the world enters the third year of the COVID-19 pandemic, communities no longer have the benefit of managing one disaster at a time, but must manage multiple disasters simultaneously. Increasingly disasters increasingly do not have defined start and end dates. Typically, when a disaster overwhelms a community's capacity to provide critical services, state and federal resources are available to support local emergency response and recovery efforts. However, as concurrent disasters require simultaneous support, state and federal capabilities may be strained, reducing their capacity to assist with ongoing recovery efforts and respond to additional incidents.² Tarrant County should defer to protest-specific AARs from local law enforcement agencies for a full understanding of the protests, operational responses, and impacts.

Certain disasters may negatively impact or intensify the needs resulting from other incidents. For example, the greater demand for PPE throughout the country due to the pandemic reduced its availability to first responders addressing hazardous materials incidents and wildfires.³ Similarly, the severe winter weather of February 2021 closed testing and vaccination sites across the State of Texas.

COVID-19 continues to impact Tarrant County, and the pandemic will continue to collide with other disasters. Because of this, Tarrant County Office of Emergency Management requested a review of the impact of the pandemic on the responses to three concurrent disasters experienced in 2020 and 2021. In chronological order, they were: 1) the protests of Summer 2020 following the death of George Floyd, 2) Hurricane Laura sheltering operations in August 2020, and 3) the severe winter weather of February 2021. The goal of reviewing these three overlapping emergencies is for Tarrant County to prepare better resource-deployment strategies, governance directives, and policy responses as concurrent disasters become more frequent. Flexible policies and the ability to continue to operate when normal operations are disrupted will continue to be important.

5.1. Summer of 2020 Protests

George Floyd's death in Minneapolis, Minnesota, in May 2020 sparked nationwide protests throughout much of the summer. Tarrant County was no exception, and experienced frequent protests, marches, and demonstrations in various locations within the county. Although there were arrests and property damage, the ability to respond to the protests is the focus of this review, not the actual events and impacts.

² Federal Emergency Management Agency, *National Preparedness Report*, December 202, https://www.fema.gov/sites/default/files/documents/fema_2021-national-preparedness-report.pdf

³ Federal Emergency Management Agency, *National Preparedness Report*, December 202, https://www.fema.gov/sites/default/files/documents/fema_2021-national-preparedness-report.pdf

Fortunately for Tarrant County, all feedback stated that the COVID-19 pandemic did not impact the ability of Tarrant County or law enforcement to respond to the 2020 protests. By this point in the pandemic, appropriate amounts of PPE were procured and distributed to law enforcement personnel, and the protests occurred outdoors. Both the general public and law enforcement personnel knew how to mitigate the risk of COVID-19 exposure, and they were capable of doing so. The protests did not impact Tarrant County facilities or any department's ability to provide services.

5.2. Hurricane Laura Sheltering Operations

Hurricane Laura made landfall as a Category 4 storm in Louisiana on August 27, 2020. However, the proximity to the Texas–Louisiana border and the destructive nature of the storm caused damage in various parts of East Texas. Moreover, projections of the landfall varied daily, as the storm oscillated in the Gulf of Mexico. This caused parts of Texas to issue voluntary evacuation orders, which only some residents heeded. Since residents of western Louisiana and eastern and coastal areas of Texas had to evacuate north and west of Houston. Tarrant County began receiving evacuees from Texas and Louisiana, even though it remained in the cone of uncertainty.

Traditional mass shelter plans involve operating congregate shelter sites. These sites tend to be spacious facilities capable of holding large numbers of people with space for mass-feeding operations. Congregate shelter sites require agencies and volunteers to devote both physical and personnel resources to manage large numbers of people in one location. Due to the COVID-19 pandemic, FEMA recommended that jurisdictions use non-congregate shelters, such as hotels, motels, and dorms. The American Red Cross, the traditional sheltering partner for much of the State of Texas, followed FEMA guidance and transitioned from operating congregate shelters to mitigating the spread of COVID-19 at the time Hurricane Laura made landfall. Tarrant County needed to house evacuees in hotels, something the county does not normally plan for, so it struggled with resource allocation and feeding operations. Partner volunteer organizations, such as the Red Cross and Catholic Charities, were operating in a fully virtual environment, complicating the coordination and distribution of information.

The State of Texas assisted Tarrant County with finding vacant hotels and placing evacuees. As a result, approximately 12 hotels needed partner agency support for feeding operations and transportation. Because evacuees were in numerous hotels, coordinating food and transportation resources to each hotel was initially chaotic, and disseminating information about available resources was difficult, as the evacuees were in individual rooms and multiple hotels—not in one location. Ultimately, the initial issues were resolved, and the evacuees experienced a safer sheltering situation than a congregate shelter would offer during a pandemic.

Some jurisdictions in Tarrant County found non-congregate sheltering to be easier and more efficient, as it freed up staffing resources for other response activities. Those jurisdictions tended to have one hotel instead of multiple locations, reducing staffing needs to one site manager and a few volunteers to help. These jurisdictions agreed that non-congregate sheltering was the best-case scenario for sheltering during a pandemic.

Ultimately, only a few Tarrant County agencies were affected by the change in sheltering operations, and the county as a whole remained functional throughout its response to Hurricane Laura. In addition, the affected agencies were able to pivot operations and were not rendered incapable of functioning. It is recommended that Tarrant County develop both congregate and non-congregate sheltering plans as COVID-19 continues to impact the region and to prepare for future disaster responses.

5.3. Severe Winter Weather of February 2021

By February 2021, Tarrant County was a year into its response to COVID-19, and the demands on staff and resources vastly exceeded normal operations. Many functions shifted to seven days a week to meet the demands of the COVID-19 response, and staff logged thousands of hours across multiple departments. The February 2021 severe winter weather crippled infrastructure and severely impacted Tarrant County's ability to operate COVID-19 testing and vaccination sites, which had just begun the previous month. Some COVID-19 measures implemented in 2020 allowed Tarrant County departments to continue operating in an altered state.

The most impactful COVID-19 policy that allowed for a winter weather response was the ability of Tarrant County employees to telework. Laptop distribution and increased virtual private network (VPN) capabilities allowed many employees to continue doing their jobs from home during the winter weather, even when they did not have power. Numerous interviewees included the phrase "the county doesn't close," and they noted that, with the telework policy and appropriate materials, employees could continue doing their jobs remotely, preventing a full work stoppage. Closing buildings during severe weather positively impacts the community by signaling that they too should stay home, and it discourages attempts to travel on unsafe roadways.

Further, for staff with a critical in-person role, TCOEM reserved hotel rooms, providing emergency response personnel the ability to safely access their building during winter weather operations. Prior to COVID-19, critical staff would often sleep in congregate settings, within the office during the lead up to severe weather.

Regardless of telework policies and equipment, agencies that continue to rely on paper products will struggle to remain fully operational. The Purchasing Department still accepts paper bids. TCPH uses paper forms for vaccine registration, which is a standard process for the State of Texas. These two agencies will not be fully operational while dependence on paper continues. It is recommended that the Purchasing Department develop a process for accepting online bids and TCPH move to online registration, with paper registration for equity purposes, if allowed by the State of Texas. Overall, Tarrant County's highest priorities should be employee safety and uninterrupted service to the public, as unprecedented events affecting all of Texas should be expected. Telework does not mean that the county is closed; rather, it helps ensure the safety of all Tarrant County residents, which is of the utmost importance.

Winter weather recovery operations were greatly impacted by COVID-19, as traditional assistance remained virtual. FEMA opened virtual disaster resource centers and, as in the Hurricane Laura response, communicating information and providing resources to the public was difficult while physical infrastructure remained inoperable and resources remained virtual. Sheltering operations were not as impacted during the severe winter weather as they had been during Hurricane Laura, partly due to the availability of vaccines, abundant PPE, and lower COVID-19 case counts. Jurisdictions that opened warming centers and transitioned them to overnight shelters were able to provide greater space between evacuees, supply PPE, and sanitize spaces. With a year's experience responding to COVID-19, people understood how to function appropriately, and jurisdictions felt confident that staff assigned to warming centers and shelters had the tools to protect themselves.

It was widely remarked that Tarrant County was able to continue functioning during the severe winter weather *because* of COVID-19. Had the county not adapted to the pandemic by adopting new policies and upgrading equipment, more departments and employees would have remained entirely unable to continue working in February 2021. Ultimately, Tarrant County will be able to operate during inclement weather events and disasters if telework policies continue to be refined and deployed as necessary and investments in necessary resources are made.

5.4. IRR Conclusion

Tarrant County will likely continue to experience concurrent disasters of escalating intensity. Future planning and preparedness measures should anticipate increasing severity and include significant enhancements. These measures include reviewing plans and identifying emergency response roles for Tarrant County departments; improving mass care, feeding, and sheltering operations; and upgrading equipment and infrastructure. Moreover, it is essential to set realistic expectations for the public regarding the services available during concurrent disasters.

Appendix A: Improvement Plan

This Improvement Plan (IP), including the observations and recommendations, was developed for Tarrant County as part of the process of developing the *Tarrant County COVID-19 After-Action Report*. Review dates have been established for evaluating the ongoing need for each recommended action.

Table 2: Improvement Plan

Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
3.1.1.a 3.1.1.b 3.2.2.a 3.2.2.b 3.2.2.d	Operational Coordination, Operational Communications, Situational Assessment	During the early response to the pandemic, Judge Whitley held daily calls to provide local jurisdictions, school districts, mayors, city managers, and other stakeholders updates on the state of the county and coordinated resource needs from local jurisdictions.	Codify and integrate procedures for operational and health coalition coordination calls into county EOPs and annexes to help ensure continued stakeholder engagement from participating organizations. Incorporate template agendas for coordination calls into standard operating procedures and job aids.	Tarrant County Administration Tarrant County Public Health			
3.1.1.c 3.1.2.a	Operational Coordination, Situational Assessment	Executive orders issued by the Commissioners Court were aligned with executive orders from the State of Texas and guidance	Incorporate best practices for soliciting feedback on executive orders. Codify and integrate the issuance of executive orders in plans.	Tarrant County Administration			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
		from the U.S. Centers for Disease Control and Prevention (CDC).					
3.1.3.a 3.1.3.c 3.1.3.d	Operational Coordination	The implementation of the county's work-from-home policy was applied at each department director's discretion and applied only to exempt employees. Hourly employees were required to continue to report to work.	Establish a county-wide telework policy with clear thresholds, applicable job classes, expectations, and standard guidance for departments/agencies to help ensure equitably implementation.	Tarrant County Administration			
3.1.3.b 3.3.4.c			Identify alternative work models for small, specialized groups comprising staff who have significant responsibilities during disaster/emergency response operations. Establish departmental plans and identify flexibilities in staffing and provide personnel in such positions with the trainings and capabilities needed to address emergency duties while	Tarrant County Administration			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			maintaining normal operations.				
3.1.3.e 3.11.4.a 3.11.4.b			Consider a transition from desktop computers to laptop computers for all staff. Transition essential staff (at minimum) to laptops with docking stations to allow for an easier switch to teleworking during a state of emergency, disaster declaration, or infrastructure failure. Require essential staff in all county departments to take their laptops home every evening.	Tarrant County Information Technology (IT)			
3.2.1.a 3.2.1.b 3.2.1.d 3.3.3.i	Operational Coordination	TCPH and the Tarrant County Administration coordinated and collaborated with local and state volunteer agencies, healthcare providers, nonprofits, community- and faith-based organizations, and city departments to provide	Coordinate with Tarrant County VOADs to develop or update regional plans, including establishing roles and responsibilities in the Tarrant County Emergency Operations Plan (EOP). Conduct regional training with county departments and VOADs to encourage familiarity and cohesiveness. Incorporate Tarrant County VOAD into EOC activations in future county responses, and	Tarrant County Office of Emergency Management			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
		comprehensive protective health measures for Tarrant County residents.	provide opportunities for exercise on a regional level.				
3.2.1.c 3.2.2.c 3.2.2.e			Review and update mutual aid agreements and develop new mutual aid agreements based on the partnerships created during the COVID-19 response. The county administration should maintain contact lists and provide updates as needed. Continue to engage external partners in decision-making and communications during the ongoing COVID-19 response.	Tarrant County Administration Tarrant County Office of Emergency Management			
3.3.1.a 3.3.1.b 3.3.1.c	Situational Assessment, Environmental Response/Health Safety	Multiple divisions in TCPH effectively coordinated information related to confirmed cases, updated the appropriate dashboard(s), and geotagged individuals' locations for notification to the local jurisdiction's dispatch center.	Document the incoming data cross-referencing process in public health standard operating procedures (SOPs). Establish a training program with junior public health staff to assist in data collection. Provide drills and tabletop exercises for staff to validate the data cross-referencing process.	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
3.3.2.a 3.3.2.b 3.3.2.c 3.3.2.d 3.3.2.e 3.3.3.i 3.3.4.a	Operational Coordination, Planning	Tarrant County's response lacked a formal, operational command structure throughout the response without a clear Incident Commander or Unified Command with supporting Command and General Staff. The county's response was often disjointed, specifically in the management of logistical issues.	Establish a formal approach for the county's emergency response. This should include a county-wide command structure; determination of minimum qualifications, training and exercise opportunities for each Command and General Staff positions; and identification of departments with limited response roles whose staff could be integrated to provide support and prevent burnout.	Tarrant County Administration Tarrant County Office of Emergency Management			
3.3.3.a 3.3.3.b 3.3.3.c 3.3.3.d	Operational Coordination, Planning	County leadership did not fully incorporate the principles of ICS into the COVID-19 response.	Establish a county-wide planning team to provide updates, revisions, and clarification for the county EOP and associated annexes, including the definition of organizational structure and department/agency-specific roles, responsibilities. Establish county staff training plans and method for tracking completion of required and recommended trainings. Ensure assignments and schedule is compliant	Tarrant County Administration Tarrant County Office of Emergency Management			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			with Chapter 418 of the Texas Government Code.				
3.3.3.e 3.3.3.f 3.3.3.g			Develop and deliver EOC position-specific training. Conduct EOC drills and exercises, including pandemic response scenarios. Offer refresher training that is specific to ICS and the county EOC for internal and external staff.	Tarrant County Office of Emergency Management			
3.3.3.j 3.3.3.k			Provide G402: NIMS Overview for Senior Officials to members of the Commissioners Court and Department Leaders. Incorporate elected officials into training and exercise opportunities.	Tarrant County Office of Emergency Management			
3.3.4.b 3.3.4.d	Operational Coordination, Planning	Sustaining operations for the long period of the response and recovery was challenging because of staff vacancies and employee burnout.	Prepare appropriate rotation schedules to provide adequate rest for staff during long-duration operations. Identify positions that can be backfilled by less-experienced staff during staffing challenges.	Tarrant County Administration			
3.4.1.a 3.4.2.a	Operational Coordination	TCPH and the IT department developed and implemented	Establish a county-wide approach for developing and maintaining departmental COOP plans so they can be	Tarrant County Administration			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
		separate continuity of operations (COOP) plans.	easily implemented during future responses. Build on the approaches of TCPH and the IT department in developing their COOP plans.				
3.4.2.b 3.4.2.c	Operational Coordination	Tarrant County has not developed a county-wide COOP plan with identified mission-essential functions.	Develop departmental COOP annexes utilizing a consolidated approach, identifying key data and decision-making points regarding the prioritization of MEFs for each county department (e.g., based on legal or state-mandated requirements).	Tarrant County Administration/Office of Emergency Management All County Departments			
3.4.2.d 3.4.2.e 3.4.2.f			Identify areas to incorporate COOP planning and processes into daily operations and also provide discussion-based exercises to test and validate COOP plans. Ensure staff have the resources needed to enact COOP plans (e.g. move to alternative location)	All County Departments Tarrant County Office of Emergency Management			
3.5.1.a 3.5.1.b	Public Information and Warning, Situational Assessment	Proactive messaging to the public was provided frequently on multiple platforms, including social media, a	Develop a public information plan to define the county's processes for collecting, verifying, and disseminating public information frequently, timely, and accurately. Include	Tarrant County Public Information Officer			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
		designated COVID-19 website for the county, and weekly press briefings.	messaging templates for multiple platforms developed during the COVID-19 pandemic.				
3.5.2.a 3.5.2.c 3.5.2.b 3.5.2.d 3.5.2.e 3.5.2.f	Public Information and Warning	A more strategic approach is needed to ensure equitable and far-reaching public messaging, including individuals with disabilities and access and functional needs, and those with specific cultural needs in hard-to-reach communities.	Provide emergency public information in English, Spanish, and Vietnamese, at a minimum, and explore opportunities to translate into other languages. Incorporate translation services, such as ASL and other considerations for people with disabilities and access and functional needs, into the county public information plan. Develop and test strategies to ensure information is accessible to all individuals in TC.	Tarrant County Public Information Officer			
3.6.1.a 3.6.1.b 3.6.1.c	Logistics and Supply Chain Management	Following the Declaration of Local Disaster Due to Public Health Emergency Executive Order on March 13, 2020, the Tarrant County Purchasing Agent waived the usual purchase order process and increased credit card	Streamline emergency purchasing processes, including identifying essential response departments and assigning purchasing cards, during normal and emergency operations and socialize processes with all county departments.	Tarrant County Budget and Purchasing			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
		limits in line with the emergency purchasing policy.					
3.6.2.a 3.6.2.b 3.6.3.a 3.6.3.b 3.6.3.c 3.6.4.a 3.6.4.b 3.6.4.d 3.6.4.e 3.6.4.f 3.6.4.c	Situational Awareness, Logistics and Supply Chain Management	Tarrant County jurisdictions submitted PPE requests through WebEOC, providing a singular, centralized process for submitting resource requests.	Convene a county-wide working group to identify and codify a standard resource management plan and resource request process. Develop training modules and a training schedule for county departments, local jurisdictions (including existing and new EMCs), and partner agencies. Test plan and processes during drills/exercises.	Tarrant County Budget and Purchasing			
3.6.5.a 3.6.5.b 3.6.5.c 3.6.5.d	Logistics and Supply Chain Management	The initial response to the pandemic highlighted the county's lack of planning related to the SNS.	Update and revise the TCPH SNS plan to incorporate best practices and lessons learned in warehouse operations, materiel management and distribution, and dispensing and administering countermeasures. Update the roles of TCPH and TCOEM. Identify and train designated staff and volunteers to support all facets of SNS, including PODs, Command, and General roles.	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
3.7.1.a 3.7.1.b 3.7.1.c 3.7.2.e	Mass Care Services	Early in the response to the COVID-19 pandemic, the county identified the need to provide residents with free access to testing.	Document county's pandemic plan for use during future testing operations. Include planning for people with disabilities or access and functional needs (e.g., individuals without computer access) and training for staff, volunteers, and external partners to ensure timely and consistent communications between off-site managers and on-the-ground staff	Tarrant County Public Health Tarrant County Administration			
3.7.2.a 3.7.4.a 3.7.2.b 3.7.4.b	Public Health, Health Care, and Emergency Medical Services	When the TCPH laboratory was overwhelmed by the volume of tests, the county partnered with multiple third-party labs to conduct COVID-19 diagnostic testing.	Create lab surge infrastructure in the county to handle high volumes of tests. Expand TCPH laboratory capacity by investing in additional space, equipment, and recruitment of qualified staff. Establish standby contracts for expanding lab capacity that can be rapidly formalized for future surge laboratory diagnostic needs.	Tarrant County Public Health			
3.7.2.c 3.7.2.d			Maintain daily communication with third-party labs for current processing times. Manage public expectations for testing and receiving results,	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			including daily updates of public dashboard with both the number of tests conducted during that operational period and the range and average of current processing times.				
3.7.3.a 3.7.3.b 3.7.3.c	Public Health, Health Care, and Emergency Medical Services, Mass Care	TCPH contracted with third party to supplement county staff at testing sites. The contract staff were unfamiliar with the testing procedures and had to be trained by TCPH staff.	Ensure contractors are incorporated early in public health responses, including as trainers, so TCPH staff can continue with regular and non-training emergency responsibilities. Develop and training programs for external partners.	Tarrant County Public Health			
3.7.5.a 3.7.5.b 3.7.5.c	Public Health, Health Care, and Emergency Medical Services	In May 2020, Governor Abbott directed the Texas Health and Human Services Commission, the Texas Division of Emergency Management (TDEM), and the Texas Department of State Health Services to test all nursing home residents and staff for COVID-19.	Using the operational approach established in the county's EOP, leverage the county's EOC with a clear command and control structure. Codify processes for mass testing (i.e., sample collection, triage, labeling, packaging, shipping, transport, handling, storage, disposal) in long-term care facilities in the TCPH pandemic plan. Support training, exercises, and	Tarrant County Office of Emergency Management Tarrant County Administration			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
		TCPH coordinated testing for all Tarrant County nursing home residents and staff.	laboratory participation in preparedness and response operations for designated staff at nursing homes and for Community Emergency Response Team (CERT) and Medical Reserve Corps (MRC) volunteers.				
3.7.6.a 3.7.6.b 3.7.6.e 3.9.1.c	Operational Coordination, Public Health, Health Care, and Emergency Medical Services	TCPH and TCOEM planners who were responsible for establishing testing locations were not notified of new testing locations that were briefed to the Commissioners Court. This led to an incomplete concept of operations and fruitless and duplicative planning efforts for testing sites.	During a public health incident/emergency, TCPH and TCOEM should establish a unified command, including their leaders, decision-makers, and subject matter experts, to coordinate operational needs with strategic direction. Develop guidelines and thresholds for public health incidents that relate directly to establishing and operating testing sites that are managed by TCPH or TCPH partners and supported by TCOEM and/or the county's EOC. Establish a Testing Site Assessment Task Force to document criteria for testing site locations, develop a site Concept of Operations, and identify staffing needs, including the types of skills/certifications required.	Tarrant County Public Health Tarrant County Office of Emergency Management			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
3.7.6.c 3.7.6.d			Establish an operational planning cycle, as defined in the county's EOP, to establish a clear planning process, operational objectives, and resulting plans (e.g., Incident Action Plans) that provide a shared approach for operations, including future testing sites during public health incidents. The development of the mission and objectives for daily/operational period incident action plans should be determined by Incident Command and disseminated to all operational staff before the start of that period.	Tarrant County Office of Emergency Management			
3.8.1.a 3.8.1.b 3.8.1.c	Environmental Response and Health Safety	Early in the response to COVID-19, Tarrant County implemented protective measures in all county facilities, including requiring face covering and social distancing and upgrading ventilation systems.	Update Tarrant County's pandemic plan with best practices for protective measures, including development of PPE cycling program in coordination with hospitals and a county stockpile of PPE and related resources.	Tarrant County Public Health			
3.9.1.a 3.9.1.b	Public Health, Health Care, and	Providing COVID-19 vaccines required	Update the TCPH Pandemic Plan and the Medical Counter	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
3.9.1.d	Emergency Medical Services	enormous effort by TCPH, TCOEM, and supporting local jurisdictions, including coordinating staffing and resources, developing unique concepts of operations by location, and maintaining mass vaccination operations over a very long period.	Measures Plan to include the concepts of operations developed for establishing and operating mass vaccination sites. Provide training and conduct exercises on the concepts of operations for establishing and operating mass vaccination sites and processing to determine the best use of volunteers based on mission priorities and capabilities.				
3.9.2.a	Public Health, Health Care, and Emergency Medical Services	TCPH and Trinity Metro developed a mobile vaccine clinic in a Trinity Metro bus to provide COVID-19 vaccine to underserved populations.	When possible, staff of mobile vaccination units should be representative of the populations they serve, in language, cultural, race, and ethnicity considerations. This can help ensure that all individuals in Tarrant County receive equitable information and services, and it may also increase vaccination rates in these populations.	Tarrant County Public Health			
3.9.2.b			Develop mobile vaccine deployment strategies and provide training to responsible county	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			departments, including site selection criteria and the request process.				
3.9.2.c			Coordinate with schools, libraries, and other organizations, as well as trusted community messengers, to educate the community about mobile opportunities for vaccination.	Tarrant County Administration Tarrant County Public Health			
3.9.2.d			Use State of Texas Emergency Assistance Registry (STEAR) data to identify individuals who may require additional support in receiving a vaccine and provide vaccines to the elderly, those who are immune-compromised, and individuals with disabilities and access and functional needs.	Tarrant County Public Health			
3.9.3.a	Public Health, Health Care, and Emergency Medical Services, Operational Coordination, Mass Care Services	TCPH used the Hurst vaccination site for just-in-time training.	Secure written agreements (e.g., memoranda of understanding [MOUs]) with jurisdictional or regional volunteer sources.	Tarrant County Public Health Tarrant County Office of Emergency Management			
3.9.3.b			Create a system to track the number of registered volunteers by profession,	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			certification or licensure status, and skill or training level, hours of volunteer services performed, and previous volunteer activities in incident responses.	Tarrant County Office of Emergency Management			
3.9.4.a 3.9.4.b 3.9.4.c	Public Health, Health Care, and Emergency Medical Services, Intelligence and Information Sharing, Health and Social Services, Situational Assessment	TCPH used one electronic system for scheduling appointments and a separate electronic health record (EHR) system. The two systems do not interface on the administrative side, so patients were required to hand write information to supplement the data fields in the appointment registration system. TCPH staff then manually entered the information into the county's EHR system.	Create and implement a single system that integrates registration information into the county's EHR system for easy upload to the state's Immtrac2 systems. Create and provide comprehensive training on new systems to all TCPH staff, as well as CERT, MRC, and other volunteer groups. Create just-in-time training for surge staff, including contractors and temporary workers.	Tarrant County Public Health			
3.9.4.d			During future mass vaccination efforts, conduct daily meetings with operational and county	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			leadership to discuss and address challenges.				
3.9.5.a	Public Health, Health Care, and Emergency Medical Services	Once registrants were at the vaccine sites, additional paperwork was needed, creating significant delays for the recipients, and increasing the workload of the administrative staff at the sites.	Ensure the Incident Command Structure includes leaders and decision-makers from the county's IT Department and Public Health Informatics.	Tarrant County Administration			
3.9.5.b 3.9.5.c			TCPH leaders, in collaboration with other operational leaders, should draft, and document, and disseminate vaccine site procedures, including requirements for registrants and data to be collected, prior to public event/vaccination clinic	Tarrant County Public Health			
3.9.5.d 3.9.5.e 3.10.2.a			Work with the county's IT department to build appropriate internal systems to collect all required data for registrants. Work with Health Informatics to ensure the collected data can be easily analyzed and presented for public consumption and	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			reported to state or federal partners. Share procedure and systems with public- and private-sector partners, i.e. hospitals, and encourage use of single system/procedure.				
3.9.5.f			Inform registrants of all paperwork and documentation requirements prior to their appointments. If using an online registration system, ensure that this information is provided prominently and more than once to ensure that registrants are aware of the documentation requirements.	Tarrant County Public Health Tarrant County IT			
3.10.1.a 3.10.1.b	Operational Coordination	NCTTRAC coordinated the emergency management medical task force to test all nursing home personnel following the Governor's directive.	TCPH and TCOEM should strengthen relationships with NCTTRAC to make it easier to create task forces as needed. Include NCTTRAC in TCPH and TCOEM in future planning efforts.	Tarrant County Public Health Tarrant County Office of Emergency Management			
3.10.2.b	Public Health, Health Care, and Emergency Medical Services, Situational	Better coordination and integration of county and hospital vaccine registration and reporting	Establish a vaccination working group of public and private partners, including Texas Health Resources, to	Tarrant County Public Health			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
	Assessment, Health and Social Services	systems is needed to ensure accurate reporting of the vaccinations provided.	determine system and information-sharing needs.				
3.10.2.c			Secure written agreements (i.e., MOUs) with potential vaccination partners, such as hospitals, to define procedures for sharing information. Cite relevant laws and policies, such as emergency powers, for collecting and sharing public health data.	Tarrant County Public Health Tarrant County Office of Emergency Management			
3.11.1.a 3.11.2.a 3.11.2.b 3.11.3.b 3.11.3.c	Operational Coordination	Agencies that experienced significant complications with their existing software platforms were able to purchase more-efficient products quickly. The dashboards developed and maintained by TCPH gave the public excellent situational awareness.	Continue investing in software and technology to increase the efficiency of data analysis and decrease the demand on staff. Continue training on new software platforms to ensure all end users in Tarrant County can effectively use them. Incorporate the continued use of dashboards into TCPH plans and daily operations for Public Health Informatics. Continue hiring PH staff and provide training to increase	Tarrant County IT			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
			capacity to conduct analyze and synthesize data going into dashboard.				
3.11.3.a	Operational Coordination, Public Information	The information provided on the TCPH dashboards required 4–6 hours of data cleaning to ensure its complete accuracy.	Ensure senior leaders understand the timelines and ability of staff to conduct data cleaning to set clear, realistic standards for reporting when the accuracy of the data is a high priority.	Tarrant County Public Health			
3.11.4.c	Operational Coordination, Planning	Many departments were not equipped with laptops and had to rely on paper copies for daily job responsibilities.	Have the IT department assess the technology needs for all of Tarrant County to address all technology gaps and codify the approach of providing technology to employees.	Tarrant County IT			
3.11.4.d 3.11.4.e			Develop processes that allow for the electronic submission of various forms and bids. Partner with departments that have implemented online forms to identify best practices. The IT department should purchase software to allow employees to complete their work online from various locations and reduce reliance on paper.	Tarrant County IT			

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Reference	Core Capability/ Capabilities	Observation	Recommended Action(s)	Assigned Agency/ Organization	Agency POC	Start Date	Review Date
3.11.5.a 3.11.5.b 3.11.5.c	Situational Awareness, Operational Coordination	Agencies and jurisdictions use different information-sharing platforms, creating information silos and complicating situational awareness.	Convene Tarrant County jurisdictions, public health, hospital systems, and partnering agencies to determine, adopt, and socialize one platform for all users to post, share, and sort information during response.	Tarrant County Administration (IT, PH, OEM)			

Appendix B: After Action Review Methods

The After-Action Report (AAR) and Improvement Plan (IP) involved a multistep process moving from data collection through establishing the IP. The approach was dictated by ongoing precautions and restrictions during the COVID-19 pandemic. The following overview notes the implementation of the approach.

Step 1: Data Collection

The AAR data collection process used a combination of online surveys, departmental documentation, roundtable discussions, and one-on-one interviews.

Survey Design

Tarrant County issued a survey to agencies and organizations that supported and continue to support the county's response to the COVID-19 pandemic. The survey was issued to agency and organization representatives on January 10, 2022, using an online survey tool. The survey remained open for 12 weeks, and 40 responses were recorded.

Survey Outline

Data fields in the survey were as follows:

Section 1: Survey Respondent Information

Please note that this information is optional, although respondents are asked to provide their name and contact information if they are comfortable so that follow up information can be obtained if needed.

1. Name
2. Email
3. Title
4. Jurisdiction, Department, Agency, Organization, or Company Name*
5. Please list your incident-specific position or role. If unknown, please describe the incident response or recovery actions you supported.

Section 2: Evaluation of Activities Specific to COVID-19

6. Rate Tarrant County's overall response performance related to the COVID-19 pandemic.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
7. Describe any strengths or best practices you observed related to the county's overall response to the COVID-19 pandemic.

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- a. Open ended comment box
8. Describe any areas for improvement or challenges you observed related to the county's overall response to the COVID-19 pandemic.
 - a. Open ended comment box
9. Rate Tarrant County's operational coordination during the COVID-19 pandemic, including various health orders and mandates and authority of various jurisdictions
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
10. Describe any strengths or best practices you observed related to the county's operational coordination.
 - a. Open ended comment box
11. Describe any areas for improvement or challenges you observed related to the county's operational coordination.
 - a. Open ended comment box
12. Rate Tarrant County's efforts to provide clear culturally and linguistically appropriate public information, guidance, and protective action recommendations to the public specific to the COVID-19 pandemic, including addressing misinformation and disseminating public information through channels and in formats and languages suitable for diverse audiences including people with disabilities and access and functional needs, limited English proficiency, low literacy, and people who face other challenges accessing information.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
13. Describe any strengths or best practices you observed related to the county's information sharing and public messaging.
 - a. Open ended comment box
14. Describe any areas for improvement or challenges you observed related to the county's information sharing and public messaging.
 - a. Open ended comment box
15. Rate Tarrant County's ability to maintain critical county functions during the pandemic, while faced with staff outages due to illnesses and dependent care. Please highlight items for staffing coverages, task support across departments, and transition to telework.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
16. Describe any strengths or best practices you observed related to the county's COOP/COG planning and implementation specific to the COVID-19 pandemic.
 - a. Open ended comment box

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17. Describe any areas for improvement or unmet needs you observed related to the county's COOP/COG planning and implementation specific to the COVID-19 pandemic.
 - a. Open ended comment box
18. Rate Tarrant County's implementation of effective procurement processes during the COVID-19 pandemic,
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
19. Describe any strengths or best practices you observed related to the county's procurement process specific to the COVID-19 pandemic.
 - a. Open ended comment box
20. Describe any areas for improvement or challenges you observed related to the county's procurement process specific to the COVID-19 pandemic.
 - a. Open ended comment box
21. Rate Tarrant County's implementation of effective resource ordering processes during the COVID-19 pandemic.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
22. Describe any strengths or best practices you observed related to the county's resource ordering process specific to the COVID-19 pandemic.
 - a. Open ended comment box
23. Describe any areas for improvement or challenges you observed related to the county's resource ordering process specific to the COVID-19 pandemic.
 - a. Open ended comment box
24. Rate Tarrant County's implementation of effective resource tracking processes during the COVID-19 pandemic.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
25. Describe any strengths or best practices you observed related to the county's resource tracking processes specific to the COVID-19 pandemic.
 - a. Open ended comment box
26. Describe any areas for improvement or challenges you observed related to the county's resource tracking processes specific to the COVID-19 pandemic.
 - a. Open ended comment box
27. Rate Tarrant County's facilitation of effective warehousing and distribution of resources during the COVID-19 pandemic.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent

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28. Describe any strengths or best practices you observed related to the county's warehousing and resource distribution process specific to the COVID-19 pandemic.
 - a. Open ended comment box
29. Describe any areas for improvement or challenges you observed related to the county's warehousing and resource distribution process specific to the COVID-19 pandemic.
 - a. Open ended comment box
30. Rate Tarrant County's monitoring of the supply chain, including working with the private sector and communicating any resource issues and challenges.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
31. Describe any strengths or best practices you observed related to the county's supply chain monitoring and communication process specific to the COVID-19 pandemic.
 - a. Open ended comment box
32. Describe any areas for improvement or challenges you observed related to the county's supply chain monitoring and communication process specific to the COVID-19 pandemic.
 - a. Open ended comment box
33. Rate Tarrant County's implementation and maintenance of an effective COVID-19 testing program, including establishment of testing sites that serve under-resourced populations, such as those with limited transportation options, disabilities, or those living in remote or low-income areas.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
34. Describe any strengths or best practices you observed related to the county's COVID-19 testing program.
 - a. Open ended comment box
35. Describe any areas for improvement or challenges you observed related to the county's COVID-19 testing program.
 - a. Open ended comment box
36. Rate the support provided by the county to people required to quarantine and/or isolate during the COVID-19 pandemic, including access to locations for self-quarantine and isolation.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
37. Describe any strengths or best practices you observed related to the county's support provided for those required to quarantine or isolate due to COVID-19.
 - a. Open ended comment box

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38. Describe any areas for improvement or challenges you observed related to the county's support provided for those required to quarantine or isolate due to COVID-19.
 - a. Open ended comment box
39. Rate Tarrant County's implementation and maintenance of an effective COVID-19 contact tracing program, including education of local communities about the importance of contact tracing and identification of barriers and challenges to contact tracing.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
40. Describe any strengths or best practices you observed related to the county's COVID-19 contact tracing program.
 - a. Open ended comment box
41. Describe any areas for improvement or challenges you observed related to the county's COVID-19 contact tracing program.
 - a. Open ended comment box
42. Rate the support provided by the county to health and medical systems in response to the COVID-19.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
43. Describe any strengths or best practices you observed related to support provided by the county to health and medical systems during the COVID-19 pandemic.
 - a. Open ended comment box
44. Describe any areas for improvement or challenges you observed related to support provided by the county to health and medical systems during the COVID-19 pandemic.
 - a. Open ended comment box
45. Rate the programs provided by Tarrant County related to social services and human needs to ensure that basic needs, such as food and shelter, were met throughout the COVID-19 pandemic.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
46. Describe any strengths or best practices you observed related support provided by the county specific to social services and human needs during the COVID-19 pandemic.
 - a. Open ended comment box
47. Describe any areas for improvement or challenges you observed related support provided by the county specific to social services and human needs during the COVID-19 pandemic.
 - a. Open ended comment box
48. Rate Tarrant County's tracking of spending and awareness of all available funding mechanisms to support effective disaster cost recovery.

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- a. Ratings: Did not observe, very poor, below average, average, above average, excellent
49. Describe any strengths or best practices you observed related to the county's cost recovery program.
 - a. Open ended comment box
50. Describe any areas for improvement or challenges you observed related to the county's cost recovery program.
 - a. Open ended comment box
51. Rate Tarrant County's implementation and maintenance of an effective COVID-19 vaccination program, including establishing accessible vaccination sites, reaching the homebound, and providing targeted culturally and linguistically appropriate public information to combat misinformation and vaccine hesitancy.
 - a. Ratings: Did not observe, very poor, below average, average, above average, excellent
52. Describe any strengths or best practices you observed related to the county's COVID-19 vaccination program.
 - a. Open ended comment box
53. Describe any areas for improvement or challenges you observed related to the county's COVID-19 vaccination program.
 - a. Open ended comment box

Section 3: Severe Winter Weather Response

If you were involved in a response to any concurrent disasters or emergency responses in the county during the COVID-19 pandemic, please provide answers to the appropriate questions in this section.

54. If you were involved with the response and/or recovery related to the Severe Winter Weather in February 2021, what are three strengths or best practices you observed related to the county's response?
 - a. Open ended comment box
55. If you were involved with the response and/or recovery related to the Severe Winter Weather in February 2021, what are three challenges or areas for improvement you observed related to the county's response?
 - a. Open ended comment box

Section 4: Additional Information

56. Describe any training requirements you feel may assist in improving future catastrophic disasters' response and recovery efforts.
 - a. Open ended comment box

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57. List any resource requirements (personnel or equipment) your department, agency, or organization may need to improve future response and recovery efforts.
 - a. Open ended comment box
58. Additional comments
 - a. Open ended comment box

Questions to be included in the American Rescue Plan Act Fiscal Recovery Funds Public Survey

59. If you needed to be tested for COVID-19, were you aware of the county's testing locations?
 - a. Yes
 - b. No
60. If you've used a county testing site, please use the Likert scale below to indicate the level of ease and effort each of the components required.
5-point Likert scale – (1) extreme effort (2) some effort (3) neutral (4) easy (5) very easy
 - a. Identification of testing sites near you
 - b. Transportation to and from testing site
 - c. Registration process
 - d. Vaccination appointment reminders
 - e. Ease of rescheduling to meet your availability
 - f. Testing site efficiency and speed
 - g. Notification of test results
61. If you've received a COVID-19 vaccine, were you vaccinated at a Tarrant County Public Health vaccine site?
 - a. Yes
 - b. No
62. Knowing that vaccination is a multistep process, please use the Likert scale below to indicate the level of ease and effort each of the components required.
5-point Likert scale – (1) extreme effort (2) some effort (3) neutral (4) easy (5) very easy
 - a. Identification of Vaccine Sites near you
 - b. Transportation to and from vaccination site
 - c. Registration process
 - d. Vaccination appointment reminders
 - e. Ease of rescheduling to meet your availability
 - f. Vaccine site efficiency and speed

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63. If you have not received a COVID-19 vaccine, please identify potential barriers to receiving a COVID-19 vaccine.
 - a. Transportation
 - b. Hesitancy
 - c. Lack of access to provider
 - d. Need additional information about vaccines
 - e. Other

Step 2: Interviews

Critical staff, primarily individuals who did not participate in the survey process, were selected for interviews to discuss the overall response, strengths, and areas of improvement. Eleven staff members were interviewed. Questions were tailored to individual positions, but they were generally based on the list below.

1. Think back to March 2020. What processes/systems/tools/plans did your agency implement that you believe improved the response?
2. Also thinking back to March 2020, what do you wish you knew then that you know now that might cause you to take a different course of action?
3. How would you rank testing and vaccination communication to the public? Elaborate.
4. Can you describe Tarrant County's efforts to provide clear culturally and linguistically appropriate public information, guidance, and protective action recommendations to the public specific to the COVID-19 pandemic, including addressing misinformation and disseminating public information through channels and in formats and languages suitable for diverse audiences including people with disabilities and access and functional needs, limited English proficiency, low literacy, and people who face other challenges accessing information.
5. Based on your role and observations, what are three things you believe Tarrant County did well during the response to COVID-19?
6. Based on your role and observations, what are three things you believe Tarrant County needs to improve for the next phase of COVID-19?
7. Describe your agency's role in the testing process.
8. Describe your agency's role in the vaccination process.
9. How did the COVID-19 pandemic affect your agency's ability to respond to other incidents, such as the protest marches in the summer of 2020, supporting sheltering during Hurricane Laura, and the winter weather storm of February 2021?
10. Describe any training requirements you feel may assist in improving future catastrophic disasters response and recovery efforts.
11. List any resource requirements (personnel or equipment) your department, agency, or organization may need to improve future response and recovery efforts.

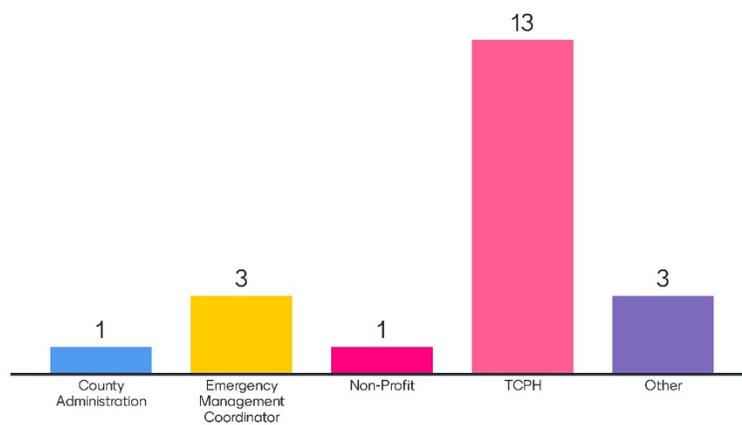
Step 3: Roundtables

Identified personnel contributed to a roundtable discussion regarding testing and vaccination efforts and how COVID-19 impacted winter weather and sheltering operations during Hurricane Laura. The use of Mentimeter, an online feedback tool, allowed real time input from the participants. Below are the results from the online tool.

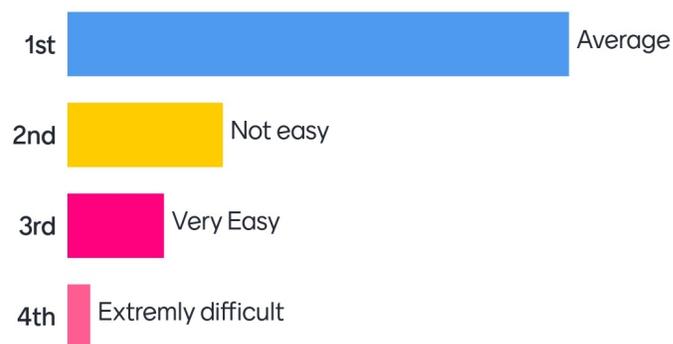
Testing and Vaccination Efforts Roundtable Mentimeter

Testing Questions

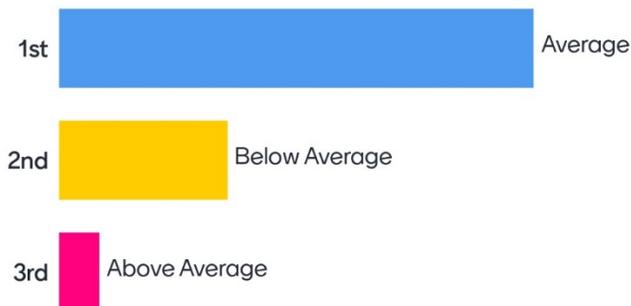
Participant Makeup:



How would you rate ease of scheduling for testing?



How would you rate communication about testing (site locations, criteria for testing, scheduling for test etc.) to the public?



Briefly describe your involvement in the Tarrant County testing efforts, including testing site support.

Logistics	Site Supervisor	assisted with volunteer and site worker check in.
Site planning, coordination/logistics	Site Supervisor	None aside from being aware of sites and directing those who inquired with us to the TC sites
LogisticsManpower	Provided contracts with various entities for testing efforts and communication efforts.	Procurement of the materials needed at the site.

Briefly describe your involvement in the Tarrant County testing efforts, including testing site support.

Fiscal	We were looking for volunteer opportunities to share with agencies, as well as getting the information out to the community. We were also getting information to faith community and churches to offer testing at their locations.	procurement
Not involved with testing site other than providing staff and referrals to site.	none	N/A
N/A	Was not at a testing site.	Traffic control and signage. Staffing shortage. Support to staff.

Briefly describe your involvement in the Tarrant County testing efforts, including testing site support.

site inspections and support PH staff	Provided medical oversight of all our mass testing and vaccines sites. Performed tests as well as gave vaccines as well.	logistics, coordination of supplies
We were getting the information out to other agencies. I appreciated that we changed the age restriction and opened testing to all instead of 18 and above.	Logistical support for set up	I worked directly at the testing sites from Sept 2020 until Jan 2021 and then supported testing sites logistically from Aug 2021 thru Mar 2022
I was apart of gathering of supplies and staffing small strike teams in the very beginning.	None other than informing my community of testing locations.	I was supervising the Call Center. The communication to the call center staff regarding testing sites/openings was not good. We were often the last to find out about changes, but we were the 1st to get questions

Briefly describe your involvement (if applicable) in the selection of fixed testing sites.

N/A	No involvement, done by Director	NA
I provided staffing	Worked with Director and EM for site selection.	N/A
none	Assisted in identifying potential sites	director chose

Briefly describe your involvement (if applicable) in the selection of fixed testing sites.

We were getting the information out about fixed sites to the community make sure community members were aware of testing locations.	Determined by Administrators	worked with Court Members to determine locations.
Sent information in to EM about sites available in my community.	Determined by Leadership/Emergency Management	I worked sites assisting the public with creating logins for the saliva tests. I assisted with creating logins and giving directions. I was one of a handful of bilingual staff so assisted at every stage.
Some input in sites but was done by PHD	The demand for testing immediately out weighed the time to properly plan for larger scaled operations.	The testing was available to the more outlying areas of the County

Briefly describe any best practices that were identified at testing sites.

Site setup flow	Early on we had very little if any wasting of vaccines, good control of vaccines from cold storage to injections. Good safety measures were in place	Drive up options, extending operation hours, increase small community testing sites versus large mass testing sites, testing children
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Briefly describe areas for improvement that were identified at testing sites.

Better equipped for weather conditions	Safety officer	continually changing site selection direction
Being consistent with community standards for administering vaccines and increasing throughput for community members receiving them	Yes, need for Safety Officer	Areas of improvement took place in real time for testing and vaccination sites. I heard many compliments at Hurst vaccine sites for indoor & drive thru sites. Sites worked very smoothly even at height of vaccine numbers in early 2021. No major issues
Need improvement for mobile impaired	Better messaging once vaccine numbers slowed down, however vaccine hesitancy largely due to national messaging in my opinion	Needed to keep call center staff better informed upfront rather than finding out information from the public

Briefly describe areas for improvement that were identified at testing sites.

Shortage of manpower	need more supportive items (food/water/shelter/rain coats) for workers	Traffic control
timely and consistent comm between upper management and ground	Need more support and staff	staffing availability
Staff shortage and traffic control - moving the line along.	People who showed up versus those who registered. People wanted immediate results.	Could have used medical volunteers in a more appropriate capacity rather than using them solely in administrative roles

Briefly describe areas for improvement that were identified at testing sites.

Working towards being more proactive with testing site locations, staff, and supplies	I wasn't aware that we did mobile testing
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Describe what worked well for mobile testing.

We had help from the FD's without them it would not have been doable.	Coordination with Fire /Emergency Responders to collect tests	Availability of testing throughout the County
Short amount of staff to coordinate the supplies and mailing if needed	seem to go alot smoother than standing in line testing.	Increased access to communities.
during first part of response, TCPH Medical Director's Office put in long hours and made themselves available 7 days a week! They made it happen!	2020 it was only clinical services and MDO's office that did testing at nursing homes	

Describe areas of improvement for mobile testing.

Issues with contract staff	Manpower Support	Proportionate allocation of workforce to provide timely testing and throughput for results.
Paper intensive process for submitting and receiving lab requests. Hours and hours. Alma was a trooper!! So were the Fire departments, hours printing and applying labels!	Emergency response teams could have been useful to lessen the burden on TCPH Leadership	communication on how results were given to patient
Better communication with contract staff.	Better training for contract individuals	have several locations available that would make it ready to go.

Describe areas of improvement for mobile testing.

Need electronic reporting for test results	return of test results from vendor
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Describe any strengths or best practices you observed related to the County's COVID-19 Contact Tracing program.

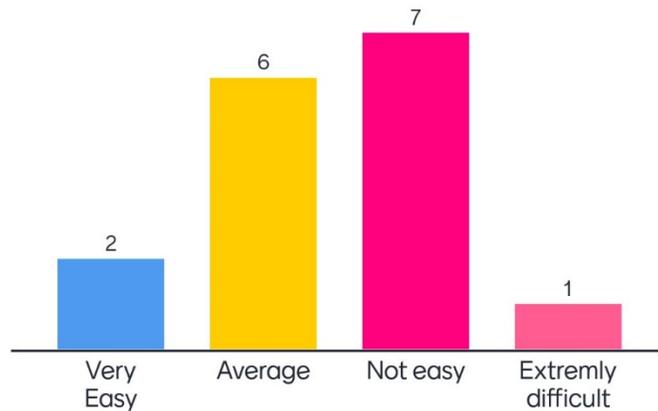
great collaboration with students to get the work done.	Our Epi Staff did an OUTSTANDING job with this and worked countless hours! Very DEDICATED team!!	Utilization of everbridge for notification of cases and contacts. Utilization of quickbase for a portal for self reporting of case information. Development of school reporting portal
They are very thorough, many of my nurses were involved in the beginning and they were so very passionate about ensuring these cases are followed through.	TCPH Epi Team repeatedly changed course to adjust to directives with grace and community-centered approaches. Thanks to Tal, Russ, Whitney and Abbie for all your hard work!	The heavy documentation that was needed for legal purposes.

Considering the overall County COVID-19 TESTING program, list any observed strengths or best practices to include in future response plans.

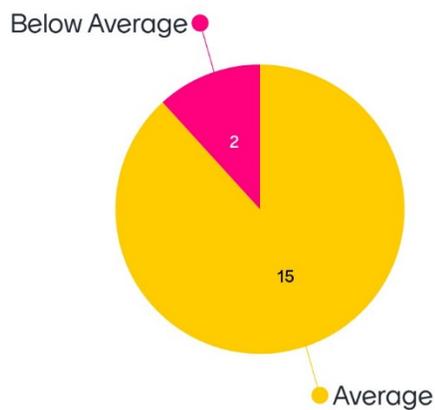
start talks with community partners sooner	Collaboration with local municipalities a must; they were the backbone during the initial response.	Be sure to include the integration of the hotline in providing test results. Not everyone is computer literate, and people need alternatives to get their results. People will call if they don't have their results!
Good selection of site locations	I know our medical volunteers coming through the TCPH MRC program, but if we can utilize other volunteer agencies to staff sites with volunteers that would be great as well.	Utilize the strengths of TC and engage more of our partners to collaborate in testing and not have the entire testing response be on TCPH. public health's role is to be the strategic collaborator for community partnerships
collaboration with municipalities.	The strong documentation that aided in legal situations	

Vaccination Questions

How would you rate ease of scheduling for vaccination?



How would you rate communication about vaccinations (site locations, criteria for eligibility, etc.) to the public?



Briefly describe your involvement in the Tarrant County vaccination efforts, including on-site support.

All things Call Center related	logistics and site selection	site supervisor
Developed vaccination registration portal, vaccination appointment messaging system, assisted in vaccine logistics	Site Development and Logistics	Credentialing and scheduling volunteers
Contract development	Fiscal Support	I was in charge of the overall management of the Vaccine operations of the 5 large TCPH sites

Briefly describe your involvement in the Tarrant County vaccination efforts, including on-site support.

Vaccine management and inventory control. Collaborations between FD, Medstar, PD, etc. Communication between clinic leads.	Bottlenecks were created in the clinic flow at the registration/data collection tables. Not enough landing/resting spots for elderly who were standing in long lines.
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Briefly describe your involvement in the Tarrant County vaccination efforts, including on-site support.

Provided site management for the city operations side of NETC	Communicating information out to the community. Listening for gaps in locations, community needs and vulnerable populations and helping fill those gaps	I assisted with the logistical support to include PPE, medical supplies, along with wearing other hats as needed.
logistics, supply management, staff management, completed every role expect vaccination at sites	Logistical support- providing adequate amounts of supplies for daily & weekly operations	Clinical supervisor, oversight of clinical staff, training of staff, provide immunizations and support.
North East Tarrant County mass vax site	Early on they were assigned, later on people signed up and picked their day, and finally it was all walk in	Quickbase

Briefly describe how you received vaccination appointments for each day.

quickbase	pulled list from QB system	Quick base gave us a number for each location
Our counts and appointment slots were found in Quickbase		

Briefly describe any identified best practices at vaccination sites, such as registration, traffic control , etc.

once again, collaborations with local PDs and FDs was crucial; they were amazing to work with!	site manager who communicated what was happening outside to inside staff	Signage was adequate
Good safety protocol for clients receiving vaccines. Minimal wasting of vaccines.	Creating a designated lane for those with mobility issues	The drive through site was run like a well oiled machine, they had a set up and tear down that was very well run. The Hurst site was also very streamlined and they had a morning huddle orientation each morning that was great training.
Collaboration between different agencies. Quickly modifying scheduled hours to meet publics needs especially at the beginning. Supplies were usually if not always plentiful	Everyone was a safety officer. If something seemed off (age, health status, initial dose date) anyone could voice a concern and let a manager assess.	Tailoring the process to what the layout of the site would allow

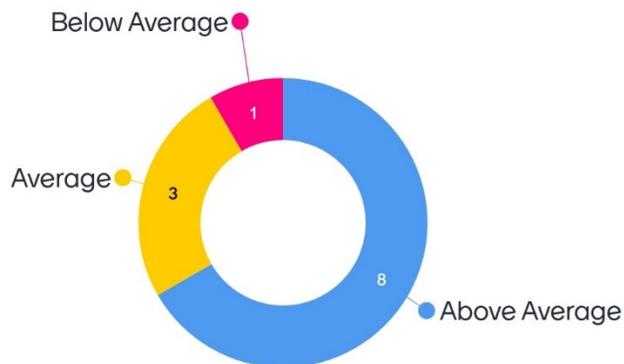
Briefly describe any identified best practices at vaccination sites, such as registration, traffic control , etc.

Vaccine waist was mitigated to a minimum by the Vaccine management teams at each site and that is due to great training.

Briefly describe any identified areas for improvement at vaccination sites.

more compliance/hipaa/safety oversight	Dealing with inclement weather when you have long lines, no place to stage people, or how to make people comfortable during long waits in line	Be consistent with the prevailing standards with other counties and partners that allows for streamlining and throughput of vaccines.
seeking insurance from individuals appeared to slow processing down	Resource center area of recovery did not have a great overflow area and the lay out needed work.	people resources. Used a lot of the same people for months on end working long hours
Improved messaging however this was an uphill battle from the national stage	How to temper expectations, this is not a personal appointment this is a mass clinic.	

Rate the support provided by Tarrant County to health and medical systems in response to the COVID-19.



Considering the overall County COVID-19 VACCINATION program, list any observed strengths or best practices to include in updated response plans.

As the local VOAD, I appreciate being added on to meetings like this. Communication and coordination is key and I am thankful to TCPH and TC OEM in including external voices to this conversation.	continued collaborations including table-top exercises with local first responders	Think big. There are lots of agencies willing to help if you ask. We utilized 35-40 local, state, and national agencies at our site alone.
Utilization of electronic systems for vaccine registration and appointment notification. Integrate municipal partners into vaccine dispensing program.	Collaboration with the other surrounding cities for the mass sites (i.e. Hurst site, Bolen, etc.)	Follow prevailing community and county standards on vaccine distribution. Have more communication with surrounding counties to come up with a unified vaccine distribution program.
Collaboration with other entities, Teamwork among the staff working the sites.	Once the mass vaccination sites slowed and shut down pop up sites were made available 7 days a week throughout the County with multiple community partners. There was not a place that would not be considered. This was a regular topic on local news	The partnership with the NE cities to establish and operate the vax center was great!

Considering the overall County COVID-19 VACCINATION program, list any observed strengths or best practices to include in updated response plans.

Collaboration in this County to care for this county will not be an issue in the future, however coming together and taking a little more time to properly plan may lend itself to better execution for the public. The mitigation of the vaccinations!

Overall County COVID-19 Response

List any resources (personnel or equipment) your department/agency/organization may need to improve future pandemic testing & vaccination efforts.

more personnel	Need Ample storage facilities to be added to our system	Staffing up is the biggest need. Infrastructure has been enhanced over the last 2 years
More personnel was needed in all areas (front line and behind the scenes), but was hard to find.	portable fridge and freezers, personnel.	Implement new electronic medical record, documentation in eCW was labor intensive and difficult for temps to learn. Look at other technology solutions to automate practices (connections to commercial labs). More staff, burnout was intense
Staffing at appropriate levels	Important to have future planning and preparation for pandemics. Global pandemics related to population problems are ubiquitous and need a global response across communities and not siloed.	Need to add more Logistical support personnel

Describe additional best practices/lessons learned to include in updated pandemic testing and vaccination plans.

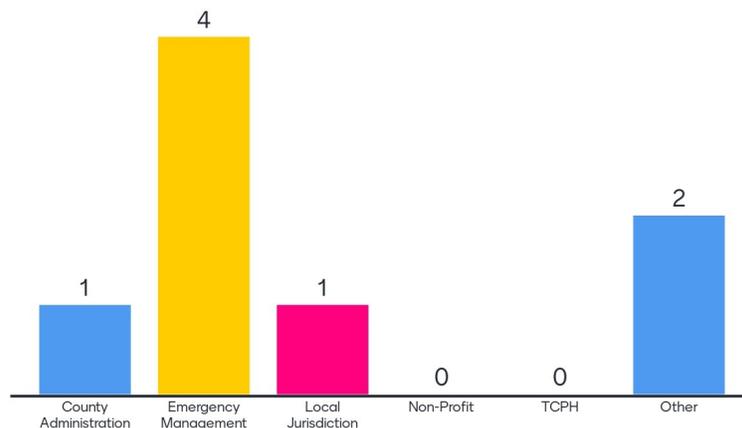
Enhance information systems / integration of information systems Enhance staffing	The lack of unique identifiers in appointment notices early on created confusion when we were limited on the amount of vaccine and had to strictly enforce appointments only. People used the same contact information and couldn't tell who the appt was	Staff deployment that is equitable during worst of the response; some staff spent significant time away from family that we don't get back.
Pandemic Plans are being updated this year with lessons learned being adapted especially in having the private sector playing such an important role beyond anticipated SNS involvement from the Fed Govt	plan for the state to change the plan on you at the last minute!	Identify how to fairly compensate exempt staff that work an insane number of hours
Follow prevailing community standards for vaccine distribution, electronic/written documentation and billing.	cross-sectional training for ALL staff to bolster surge response	Not necessarily training, but be flexible. We didn't know what we didn't know until we found out we didn't know it. Be able to adapt and overcome.

Describe any training you feel may assist in improving future pandemic testing & vaccination efforts.

ICS - staff need to be comfortable with reporting structures other than their normal day to day	Cross training other departments that have qualified staff that are clinical or other wise able to perform tasks. Perform drills that will allow for run throughs that keep the skills fresh.	Drills and walkthroughs. Rehearsal and review of structure.
ICS-10000 COVID-2030	Throughput instructions to improve timing for people	Not necessarily training, but be flexible. We didn't know what we didn't know until we found out we didn't know it. Be able to adapt and overcome.
Actual walk thru ICS exercises for TCPH staff. Some persons never realized the service model was the ICS model.	Purchasing / HR to know what is possible to be able to expedite in an emergency	

Winter Weather and Sheltering Operations Roundtable

Participant Makeup:



Winter Weather Questions

What services were provided by Tarrant County to ensure that basic needs, such as food and shelter, were met?

We did not request services, we met all needs locally	Agency support that allowed them to stay open and serve their clients.	provided bottled water to residents and FDs. Directed calls for shelter to FDs in their area.
Submitting STAR request, helped with setting up a vaccine site. and advertising of the vaccine site.	All needs were met locally, but the county consistently provided information on services.	Served as a clearing house for requests

Were there specific plans your agency implemented during winter weather to mitigate the effects of COVID-19?

No	Activated EOP	we were able to utilize our communication equipment to handle work either from home or in the field.
Staff worked from home	Implemented telework plan	Yes. Telework allowed staff to continue working while not traveling to the office
We used our plans to set up a warming center at the library. Used mass notifications to keep citizens aware	No, nothing specific, we just responded to needs as they arose during the winter weather event.	Congregate shelters were not available

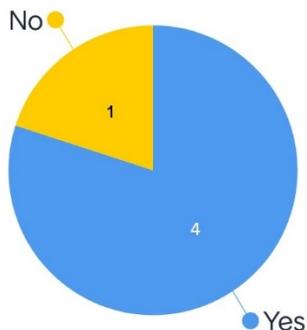
Were there specific plans your agency implemented during winter weather to mitigate the effects of COVID-19?

Most of our people reported to work.	Congregate shelters were not available	No
Getting field personnel to their locations		

How did COVID-19 mitigation measures, such as telework, impact operations for the winter weather storm?

No impact, those needed to effect a response were at work	Teleworking experience implemented from COVID 19 helped allow work to continue when we were all snowed in from winter weather	most of our work could be handled outside of the office and we communicated daily with our partners either while in the field or from home.
Most of our people reported to work	Shelters were not available	

Did your facility need back up power sources during the winter weather response?



Describe any other challenges that your organization faced during the response to the winter weather due to COVID-19.

Already strained supply chain were greatly impacted by COVID	COVID didn't really impact our response.	Covid really did not impact the response as those that were without heat were more concerned with being warm.
Nothing major	Purchased a portable generator to be able to provide backup power to specific locatins when needed	We are increasing our fuel capacity for generators from our standard 24 hours to 72 hours
Have a communication plan to keep your citizens aware. Have multiple vendors for fuel.	We only opened a warming center.	

Describe any best practices/lessons learned from the winter weather that you will be utilizing to improve future responses.

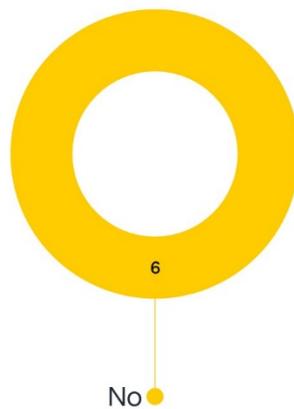
Telework	The use of teleworking was not an option before but proved useful for this event	Hotels for critical staff
Purchased a portable generator to be able to provide backup to failed generators or power sites without a generator	Congregate shelters were not available	Staffing challenges due to Covid

Hurricane Laura Sheltering Operations Questions

Were there specific plans your agency implemented during sheltering for Hurricane Laura to mitigate the effects of COVID-19?

No Maam	No	Congregate sheltering was not an option due to COVID
We only opened a warming center		

Did your facility need back up power sources during the Hurricane Laura response?



Describe any other challenges that your organization faced during the response to Hurricane Laura due to COVID-19.

No challenges	None	None
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Describe any best practices/lessons learned from Hurricane Laura Shelter Operations that you will be utilizing to improve future responses.

We did not really participate, there were no requests from local hotels	N/A	Would love the overall response to move towards sheltering in hotels, as local shelters can be a strain on local resources.
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Did your department identify additional resource requirements (personnel or equipment) to improve future response & recovery efforts? Please list.

Training for personnel. ICS, etc	No	Additional laptops
Continue to build relationships with other cities to help each other. Tarrant County does a great job!	Additional smaller generators, extra food and water on hand, surge personnel, training on dispatching out of our EOC to triage calls.	Have training very other year on the STAR request. We have a large number of new people

Describe any training requirements you feel may assist in improving future catastrophic disasters’ response and recovery efforts.

STAR Training for new EMCs

Step 4: Data Analysis

The collected data were analyzed to identify primary strengths and areas for improvement, and these were used to group key observations and document corresponding core capabilities under each focus area.

Survey Response Summary

- a. The Tarrant County COVID-19 After-Action Report survey received 41 responses.

Representation	#
County agency	11
Non-profit agency	9
Municipal government	18
Health and Hospital System	3
Total	41

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- b. Topical areas were rated by survey participants. The average rating for each topic is provided below. The rubric is as follows, with a maximum score of 5:

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

Response or Recovery Topic	Did Not Observe	Very Poor	Below Average	Average	Above Average	Excellent
Overall Response Performance	0%	5.1%	2.6%	12.8%	48.7%	30.8
Operational Coordination	2.6	7.7%	5.1%	12.8%	43.6%	28.2%
Public Information and Information Sharing	2.6%	0%	2.6%	28.2%	41%	25.6%
Critical County Functions	7.7%	0%	5.1%	20.5%	35.9%	30.8%
Procurement Process	30.8%	0%	0%	20.5%	28.2%	20.5%
Resource Ordering	28.9%	0%	0%	23.7%	26.3%	21.1%
Resource Tracking	26.3%	2.6%	2.6%	13.2%	36.8%	18.4%
Warehousing and Resource Distribution Process	41.7%	0%	0%	16.7%	27.8%	13.9%
Supply Chain	36.8%	0%	2.6%	26.3%	23.7%	10.5%
Testing	10.3%	2.6%	7.7%	15.4%	30.8%	33.3%
Quarantine and Isolation	41%	5.1%	7.7%	17.9%	20.5%	7.7%
Contact Tracing	26.3%	2.6%	5.3%	31.6%	21.1%	13.2%
Health and Medical Systems	23.7%	0%	0%	18.4%	34.2%	23.7%
Social Services and Human Needs	33.3%	0%	2.8%	11.1%	36.1%	16.7%
Cost Recovery	32.4%	0%	8.1%	10.8%	29.7%	18.9%
Vaccination Program	5.1%	0%	2.6%	17.9%	35.9%	38.5%

Survey outputs and interview notes were analyzed and sorted by topic area. Upon review, quarantine and isolation was merged with contact tracing for non-pharmaceutical interventions. Procurement process, resource ordering, resource tracking, warehousing and resource distribution process, cost recovery, and supply chain were consolidated into Procurement, Resource Request and Cost Recovery. Operational Coordination was split between multiagency coordination and internal coordination. Responses about social services and human needs and health and medical systems were distributed to multi-agency coordination. Interview notes were used to further build out observations and recommendations for all topics.

Resident Survey Response Summary

- a. In addition to the Tarrant County COVID-19 After-Action Report survey, there were multiple questions included in the Tarrant County American Rescue Plan Act (ARPA) Resident Survey related to COVID-19 testing and vaccination. The survey received 4,508 responses. Each question was optional and answered at the discretion of the respondents.

Representation	Number
Hispanic or Latino	566
Non-Hispanic or Non-Latino	3,864
Total	4,430
African American	282
American Indian/Alaska Native	79
Asian	121
Caucasian	3,710
Native Hawaiian/Pacific Islander	21
Some other Race	198
Two or more Races	170
Total	4,581

- Topical areas related to testing were rated by survey participants. The following scale was used to rate the effort required for each item:
 - a. Significant effort, some effort, neutral, easy, and very easy
 - b. The percentages of ratings are below.
 - a. 2,708 people said they had been tested at some point in the pandemic at a Tarrant County Public Health Testing Site.

COVID-19 Testing Site	Significant Effort	Some Effort	Neutral	Easy	Very Easy
Identification of testing sites near you	12.9%	29.8%	20.6%	22.7%	13.9%
Transportation to and from testing site	4.8%	10.3%	26.7%	30.1%	28.0%
Registration Process	7.4%	19.8%	19.2%	35.4%	18.2%
Testing appointment reminders	5.4%	6.8%	35.1%	33.3%	19.5%
Ease of rescheduling to meet your availability	11.0%	11.2%	46.3%	18.8%	12.6%
Testing site efficiency and speed	14.5%	15.1%	17.9%	29.8%	22.8%
Notification of test results from the call center	12.2%	11.0%	25.4%	30.4%	21%

COVID-19 Testing Site	Significant Effort	Some Effort	Neutral	Easy	Very Easy
Receipt of physical or electronic copy of test results	9.6%	8.7%	26.8%	31.0%	23.9%

2,033 individuals said they had received a vaccine through a Tarrant County Public Health vaccine site.

COVID-19 Vaccination Program	Significant Effort	Some Effort	Neutral	Easy	Very Easy
Locating a vaccination site near you	6.3%	19.7%	13.1%	29.4%	31.4%
Transportation to and from vaccine site	3.0%	12.5%	18.7%	31.0%	34.8%
Registration Process	4.9%	14.9%	12.4%	35.6%	32.3%
Vaccine appointment reminders	2.9%	4.4%	17.3%	37.5%	38.0%
Ease of rescheduling to meet your availability	5.7%	6.1%	42.7%	21.1%	24.4%
Vaccine site efficiency and speed	7.5%	10.7%	11.4%	28.9%	41.5%

Step 4: Establishing the Improvement Plan

Key observations and associated recommended actions were presented in the AAR and the appended IP. In addition, the IP prioritizes areas for improvement, indicates the agency or organization assigned to lead the response to each identified area for improvement, and establishes a timeline for completing associated actions (i.e., start and completion dates). An initial meeting with Tarrant County leadership was held on June 8, 2022, to ensure recommended assignments for addressing areas of improvement were established. The IP from this AAR will be added to the working IP matrix used by Tarrant County to ensure the consolidated and timely management of improvement actions from recent real-world incidents and exercises.

Step 5: Implementing the Improvement Plan

The IP remains a living tool to help guide the process of addressing areas for improvement. In addition, it will be used at follow-up meetings to check the status of outstanding areas for improvement and corresponding activities. Tarrant County will continue to guide the improvement process, but responsible agencies and organizations will lead the responses to their assigned areas for improvement. Tarrant County will establish an accountability process, involving quarterly meetings to assess progress with appropriate stakeholders.

Appendix C: Incident Timeline

The following timeline documents key events and actions regarding the COVID-19 pandemic as it relates to Tarrant County. The timeline includes information regarding developments necessary to fully establish the incident using events and actions that have global, United States, State of Texas, Tarrant County, and a local focus. All references can be found in Appendix D: References.

2020

- a. **January 9:** The World Health Organization (WHO) traces Wuhan pneumonia illness to a new coronavirus.ⁱ
- b. **January 17:** The Centers for Disease Control and Prevention (CDC) and Customs and Border Protection (CBP) in the Department of Homeland Security (DHS) announce public health screenings to be set up at three U.S. airports.ⁱⁱ
- c. **January 30:** WHO declares the novel coronavirus disease (now designated as COVID-19) a public health emergency of international concern.ⁱⁱⁱ
- d. **January 31:** The Secretary of the U.S. Department of Health and Human Services declares a public health emergency in response to COVID-19.^{iv}
- e. **February 11:** WHO officially announces a name for this new disease as “COVID-19”.^v
- f. **February 26:** CDC confirms possible instances of community spread of COVID-19 in the U.S.^{vi}
- g. **March 10:** Tarrant County public health confirms the first positive COVID-19 case.^{vii}
- h. **March 11:** WHO declares COVID-19 a global pandemic.^{viii}
- i. **March 13:** U.S. President Donald J. Trump declares a national emergency in response to the COVID-19 outbreak.^{ix}
- j. **March 13:** Tarrant County Judge issues a Declaration of Local Disaster due to Public Health Emergency.^x
- k. **March 14:** The CDC issues a no-sail order for cruise ships in the U.S.^{xi}
- l. **March 15:** States in the U.S. begin to announce shutdowns to reduce the spread of COVID-19. Notable examples include New York’s public-school system and Ohio’s restaurants and bars.^{xii}
- m. **March 17:** The first human trial for a vaccine against COVID-19 begins in the U.S.^{xiii}
- n. **March 17:** Tarrant County Commissioners issue a Renewal of Declaration of Local Disaster due to Public Health Emergency.^{xiv} This declaration was renewed 10 times, and it currently extends to May 31, 2022.
- o. **March 19:** California is the first U.S. state to issue a stay-at-home order.^{xv}

- p. March 24:** County Judge issues an executive order, which is amended by the County Commissioners. It provides definitions and guidance for citizens and businesses.^{xvi}
- q. March 27:** The President and Congress approve a \$2.2 trillion aid package to assist individuals and companies with COVID-19 impacts.^{xvii}
- r. March 31:** Governor Abbott issues Executive Order GA-14, stating that every person in Texas shall, except where necessary to provide or obtain essential services, minimize social gatherings, and minimize in-person contact with people who are not in the same household.^{xviii}
- s. April 2:** WHO reports evidence of transmission from symptomatic, pre-symptomatic, and asymptomatic people infected with COVID-19.^{xix}
- t. April 3:** CDC issues guidance that recommends that people wear masks outside of their homes.^{xx}
- u. April 27:** To ensure that individual liberty is not infringed upon by the government, Governor Abbott states that local officials cannot require individuals to wear face masks.^{xxi}
- v. April 30:** President Trump launches Operation Warp Speed, an initiative to produce a vaccine for the coronavirus as quickly as possible, with CDC as an integral member.^{xxii}
- w. May 9:** U.S. unemployment reaches 14.7%, the highest since the great depression.^{xxiii}
- x. June 2:** County Commissioners extend the county's Declaration of Local Disaster until 8/31/20.^{xxiv}
- y. June 17:** Governor Abbott states that local governments can require stores and businesses to require masks.^{xxv}
- z. June 25:** Judge Whitley issues an executive order requiring all entities in Tarrant County that provide goods and services directly to the public to develop and implement a health and safety policy to help stop the spread of COVID-19.^{xxvi}
- aa. June 25:** CDC expands list of people at risk of severe COVID-19 illness.^{xxvii}
- bb. July 2:** Governor Abbott issues a proclamation amending previous executive orders to prohibit outdoor gatherings estimated to be in excess of 10 people in certain circumstances unless they are specifically approved.^{xxviii}
- cc. July 2:** Governor Abbott issues Executive Order GA-29, which requires individuals to wear face coverings over the nose and mouth in certain circumstances to help slow the spread of COVID-19.^{xxix}
- dd. July 21:** Local health authorities issue a Joint Control Order for Tarrant County Students, suspending in-person classes until September 28.^{xxx}
- ee. August 6:** The U.S. State Department lifts its Level 4 Global Health Advisory, greatly reopening international travel.^{xxxi}

- ff. August 25:** Judge Whitley issues an executive order to extend the Declaration of Local Disaster 11/30/20.^{xxxii}
- gg. September 3:** Tarrant County Public Health issues a new COVID-19 school dashboard.^{xxxiii}
- hh. September 16:** The Trump Administration releases a vaccine distribution plan to make the vaccine available and free for all Americans by January 2021.^{xxxiv}
- ii. September 23:** The Department of Health and Human Services (DHHS) announces \$200 million from the CDC to local jurisdictions for COVID-19 vaccine preparedness.^{xxxv}
- jj. October 7:** Governor Abbott issues Executive Order GA-32, significantly updating the thresholds for areas with high hospitalizations.^{xxxvi}
- kk. November 1:** CDC announces the end of the no-sail order for the cruise industry in the U.S.^{xxxvii}
- ll. November 24:** Judge Whitley issues an executive order to extend the Declaration of Local Disaster 2/28/21.^{xxxviii}
- mm. December 5:** After 7 consecutive days in which the number of COVID-19 hospitalized patients as a percentage of total hospital capacity exceeded 15 percent, all restaurants, retail stores, office buildings, manufacturing facilities, gyms and exercise facilities and classes, museums, and libraries in all counties in Trauma Service Area E (which includes Tarrant County), are required to return to maximum occupancy levels of 50 percent, per Governor Abbott's Executive Order GA-32.^{xxxix}
- nn. December 11:** The Food and Drug Administration (FDA) issues an Emergency Use Authorization (EUA) for the Pfizer-BioNTech COVID-19 vaccine.^{xl}
- oo. December 14:** Distribution of vaccines to the Phase 1a group begins.^{xli}
- pp. December 18:** FDA issues an EUA for the Moderna COVID-19 vaccine.^{xlii}
- qq. December 28:** Distribution of vaccines to the Phase 1b group begins.^{xliii}
- rr. December 31:** Original deadline for all CARES ACT funding to be spent is extended until December 31, 2021.^{xliv}
- ss. December 31:** WHO issues its first emergency use validation for a COVID-19 vaccine and emphasizes the need for equitable global access.^{xlv}

2021

- a. January 5:** The Federal Emergency Management Agency (FEMA) modifies an allocation order on exports such as personal protective equipment, scarce health resources, and medical resources to ensure that these resources are widely available to the American public.^{xlvi}

- b. January 7:** CDC releases the Comprehensive COVID-19 Quarantine vs Isolation Guide, which provides detailed procedures for isolation and quarantine for vaccinated and unvaccinated people.^{xlvii}
- c. January 8:** FEMA establishes the Emergency Management Priorities and Allocations System.^{xlviii}
- d. January 29:** CDC issues an order requiring the wearing of masks by people on public transportation conveyances or on the premises of transportation hubs to prevent spread of the virus that causes COVID-19.^{xlix}
- e. January 29:** FEMA announced a six-month extension of the Emergency Non-Congregate Sheltering during the COVID-19 Public Health Emergency, and it eases reporting requirements.^l
- f. February 1:** DHS releases a statement supporting equal access to COVID-19 vaccines and vaccine distribution sites.^{li}
- g. February 2:** CDC issues orders that face coverings are required on planes, buses, trains, and other forms of public transportation traveling into, within, or out of the United States and in U.S. transportation hubs, such as airports and bus stations.^{lii}
- h. February 23:** Judge Whitley issues an executive order to extend the Declaration of Local Disaster 5/25/21. It is the sixth amendment of the Declaration of Local Disaster.
- i. February 26:** FEMA announces federal support for community vaccination clinics nationwide, putting \$3.97 billion to vaccination efforts.^{liii}
- j. March 2:** Governor Abbott issues Executive Order GA-34, stating that business activities and legal proceedings are free to proceed without COVID-19-related limitations imposed by local governmental entities or officials, in all counties not in an area of high hospitalizations, as defined in the executive order.^{liv}
- k. March 2:** Judge Whitley terminates the executive order issued February 23, 2021. Judge Whitley also orders entities in Tarrant County providing goods and services to the public are no longer required to implement a health and safety policy that at a minimum requires face coverings to be worn on the entity's business premises.^{lv}
- l. March 9:** FEMA establishes the Civil Rights Advisory Group to review policies, plans, practices, and strategies to ensure that vaccine access is widely accessible to all.^{lvi}
- m. March 11:** President Biden signs the \$1.9 trillion American Rescue Plan into law.^{lvii}
- n. April 5:** Governor Abbott issues Executive Order GA-35, suspending a section of the Texas Health and Safety Code to ensure that no governmental entity can compel any individual to receive a COVID-19 vaccine administered under an emergency use authorization.^{lviii}
- o. April 20:** The State Department adds more than 100 countries to its "Do Not Travel" list for COVID-19.^{lix}

- p. May 13:** CDC announces that people who are fully vaccinated against COVID-19 no longer need to wear masks or physically distance—whether indoors or outdoors—in most circumstances.^{lx}
- q. May 18:** Governor Abbott issues Executive Order GA-36 stating that no governmental entity, including a county, city, school district, and public health authority, and no governmental official may require any person to wear a face covering or to mandate that another person wear a face covering; provided, however, that state-supported living centers, government-owned hospitals, and government-operated hospitals may continue to use appropriate policies regarding the wearing of face coverings.^{lxi}
- r. July 29:** President Biden announces new actions to get more Americans vaccinated and slow the spread of the delta variant.^{lxii}
- s. July 29:** Governor Abbott issues Executive Order GA-38, which eliminates COVID-19-related operating limits for any business or other establishment.^{lxiii}
- t. September 9:** President Biden signs an executive order requiring COVID-19 vaccines for all federal employees.^{lxiv}
- u. September 28:** Tarrant County issued the eighth amendment to the Declaration of Local Disaster due to Public Health Emergency. It approves, continues, and extends the county's Declaration of Local Disaster until November 23, 2021.^{lxv}
- v. November 2:** CDC releases recommendations for COVID-19 vaccines for children 5 to 11 Years.^{lxvi}
- w. November 19:** CDC expands eligibility for COVID-19 booster shots to all adults.^{lxvii}
- x. November 23:** Tarrant County issued the ninth amendment to the Declaration of Local Disaster due to Public Health Emergency. It approves, continues, and extends the county's Declaration of Local Disaster until March 1, 2022.^{lxviii}
- y. November 26:** WHO announces the classification of Omicron (B.1.1.529) as a variant of concern.^{lxix}

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Appendix D: References

- ⁱ World Health Organization statement regarding cluster of pneumonia cases in Wuhan, China. January 8, 2020. World Health Organization (WHO). Accessed on December 29, 2021. <https://www.who.int/china/news/detail/09-01-2020-who-statement-regarding-cluster-of-pneumonia-cases-in-wuhan-china>
- ⁱⁱ Public health screening to begin at 3 U.S. airports for 2019 novel coronavirus (“2019-nCoV”), January 17, 2020. Centers for Disease Control and Prevention (CDC). Accessed on December 29, 2021. <https://www.cdc.gov/media/releases/2020/p01117-coronavirus-screening.html>
- ⁱⁱⁱ New ICD-10-CM code for 2019 novel coronavirus (COVID-19). April 1, 2020. CDC. Accessed on July 29, 2020. https://www.cdc.gov/nchs/data/icd/Announcement-New-ICD-code-for-coronavirus-3-18-2020.pdf?fbclid=IwAR1W4E21-xZbEJdSG-RFewVZmuM72GGhiE2QIRyur_CPStp14uAa8gzhRXw#:~:text=On%20March%2011%2C%202020,COVID%2D19%20Outbreak.
- ^{iv} Proclamation on declaring a national emergency concerning the novel coronavirus disease (COVID-19) outbreak. 2020. U.S. White House. Accessed on July 29, 2020. <https://www.whitehouse.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/>
- ^v Naming the coronavirus disease (COVID-19) and the virus that causes it. February 11, 2020. WHO. Accessed on December 29, 2021. [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it)
- ^{vi} CDC confirms possible instance of community spread of COVID-19 in U.S. February 26, 2020. CDC. Accessed on December 29, 2021. <https://www.cdc.gov/media/releases/2020/s0226-Covid-19-spread.html>
- ^{vii} Tarrant county public health confirms first positive covid-19 case. March 10, 2020. TCPH Press Release. Accessed on November 18, 2021. <https://www.tarrantcounty.com/en/public-health/news/2020/tarrant-county-public-health-confirms->
- ^{viii} Coronavirus confirmed as pandemic by World Health Organization. March 11, 2020. BBC News. Accessed December 13, 2021. <https://www.bbc.com/news/world-51839944>
- ^{ix} Proclamation on declaring a national emergency concerning the novel coronavirus disease (COVID-19) outbreak. 2020. U.S. White House. Accessed on July 29, 2020:

<https://www.whitehouse.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/>

^x Declaration of disaster due to public health emergency, Tarrant County. March 13, 2020. Accessed on December 13, 2021.

<https://access.tarrantcounty.com/content/dam/main/global/Covid-19/Disaster-Declaration-Extension.pdf>

^{xi} CDC COVID-19 orders for cruise ships. March 14, 2021. CDC. Accessed on December 29, 2021.

<https://www.cdc.gov/quarantine/cruise/covid19-cruiseships.html#:~:text=The%20CDC%20Director%20issued%20a%20No%20Sail%20Order,cruise%20ship%20travel%20introducing%2C%20transmitting%2C%20or%20spreading%20COVID-19>

^{xii} CDC Museum COVID-19 Timeline. March 15, 2020. CDC. Accessed December 29, 2021.

<https://www.cdc.gov/museum/timeline/covid19.html>

^{xiii} Coronavirus: US volunteers test first vaccine. March 17, 2020. BBC. Accessed December 29, 2021. <https://www.bbc.com/news/health-51906604>

^{xiv} Tarrant County extends local state of disaster declaration after 6th COVID-19 case is confirmed. March 17, 2020. *The Shorthorn*. Accessed December 13, 2021.

https://www.theshorthorn.com/news/tarrant-county-extends-local-state-of-disaster-declaration-after-6th-covid-19-case-is-confirmed/article_836dee32-68c6-11ea-bd4f-5f80a9f2d0fa.html

^{xv} Order of the State Public Health Officer. March 19, 2020. Executive Department State of California. Accessed on December 29, 2021.

<https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/COVID-19/Health%20Order%203.19.2020.pdf>

^{xvi} Executive order of County Judge Glen B. Whitley, Tarrant County. March 24, 2020. Accessed December 13, 2021.

<https://www.mansfieldtexas.gov/DocumentCenter/View/6076/Tarrant-County-Executive-Order-Executed-3-24-20>

^{xvii} Trump signs \$2.2 trillion stimulus after swift congressional votes. March 27, 2020. PBS NewsHour. Accessed December 13, 2021.

<https://www.pbs.org/newshour/politics/house-passes-2-2t-rescue-package-rushes-it-to-trump>

^{xviii} Executive Order No. GA-14 relating to statewide continuity of essential services and activities during the COVID-19 disaster. March 31, 2020. Governor of the State of Texas. Accessed December 13, 2021.

<https://gov.texas.gov/uploads/files/press/EO-GA-14-Statewide-Essential-Service-and-Activity-COVID-19-IMAGE-03-31-2020.pdf>

^{xix} Coronavirus disease 2019 (COVID-19) situation report – 73. April 2, 2020. WHO. Accessed December 29, 2021.

<https://apps.who.int/iris/bitstream/handle/10665/331686/nCoVsitrep02Apr2020-eng.pdf?sequence=1>

^{xx} CDC's recommendation on use of cloth face coverings, especially in areas of significant community transmission of #COVID19. CDC [@CDCgov] on Twitter. April 3, 2020.

<https://twitter.com/cdcgov/status/1246208619479261188>

^{xxi} Executive Order No. GA-18 relating to the expanded reopening of services as part of the safe, strategic plan to open Texas in response to the COVID-19 disaster. April 27, 2020. Governor of the State of Texas. https://gov.texas.gov/uploads/files/press/EO-GA-18_expanded_reopening_of_services_COVID-19.pdf

^{xxii} Trump unveils 'warp-speed' effort to create coronavirus vaccine by year's end. CDC Museum COVID-19 timeline. April 30, 2020. *The Guardian*, CDC. Accessed on December 29, 2021.

<https://www.theguardian.com/us-news/2020/may/15/trump-coronavirus-warp-speed-vaccine-white-house>

<https://www.cdc.gov/museum/timeline/covid19.html>

^{xxiii} No 'V-shape' return from devastating U.S. job loss, Fed policymakers say. May 9, 2021. Fox Business. Accessed on December 29, 2021. <https://www.foxbusiness.com/economy/no-v-return-job-loss-coronavirus>

^{xxiv} Minutes of Commissioners Court, Tarrant County. June 2, 2020. Accessed December 15, 2021.

https://tarrantcounty.granicus.com/MinutesViewer.php?view_id=6&clip_id=4545

^{xxv} Executive Order No. GA-18 relating to the expanded reopening of services as part of the safe, strategic plan to open Texas in response to the COVID-19 disaster. June 17, 2020. Governor of the State of Texas. Accessed December 15, 2021. [EO-GA-18 expanded reopening of services COVID-19.pdf](#) (texas.gov)

^{xxvi} Executive Order of County Judge Glen B. Whitley, Tarrant County. June 25, 2020. Accessed December 15, 2021.

<https://access.tarrantcounty.com/content/dam/main/global/Covid-19/TarrantCountyJudgeExecutiveOrder6-25-20.pdf>

^{xxvii} CDC updates, expands list of people at risk of severe COVID-19 illness. June 25, 2020. CDC.

Accessed on December 29, 2021. <https://www.cdc.gov/media/releases/2020/p0625-update-expands-covid-19.html>

^{xxviii} Governor Abbott issues proclamation to limit gatherings July 2, 2020. Governor of the State of Texas. Accessed December 15, 2021. <https://gov.texas.gov/news/post/governor-abbott-extends-disaster-declaration-4>

^{xxix} Executive Order No. GA-29 relating to the use of face coverings during the COVID-19 disaster. July 2, 2020. Governor of the State of Texas. Accessed December 15, 2021. <https://gov.texas.gov/uploads/files/press/EO-GA-29-use-of-face-coverings-during-COVID-19-IMAGE-07-02-2020.pdf>

^{xxx} Local health authorities issue joint control order for Tarrant County; Students will not be returning for in-person classes until Sept. 28. July 21, 2020. TCPH Press Release. Accessed on December 13, 2021. <https://www.tarrantcounty.com/en/public-health/news/2020/local-health-authorities-issue-joint-control-order-for-tarrant-c.html>

^{xxxi} State Department to add more than 100 countries to 'Do Not Travel' list as COVID-19 continues to spread. April 20, 2021. Alison Fox. *Travel and Leisure*. Accessed on September 27, 2021. <https://www.travelandleisure.com/travel-news/us-state-department-level-4-do-not-travel-warnings-covid>

^{xxxii} Executive Order of County Judge Glen B. Whitley, Tarrant County. August 25, 2020. Accessed December 15, 2021. https://www.tarrantcounty.com/content/dam/main/covid-cares/TarrantCountyExecutiveOrder_8-25-20.pdf

^{xxxiii} New COVID-19 school dashboard published by Tarrant County Public Health. September 3, 2020. TCPH Press Release. Accessed on December 13, 2021. <https://www.tarrantcounty.com/en/public-health/news/2020/new-covid-19-school-dashboard-published-by-tarrant-county-public.html>

^{xxxiv} What we're reading: Value-based care partnership; HHS official takes leave of absence; vaccine rollout plan unveiled. September 16, 2020. *The American Journal of Managed Care*. Accessed on December 29, 2021. <https://www.ajmc.com/view/what-we-re-reading-value-based-care-partnership-hhs-official-takes-leave-of-absence-trump>

^{xxxv} Administration announces \$200 million from CDC to jurisdictions for COVID-19 vaccine preparedness. September 23, 2020. CDC. Accessed on December 29, 2021. <https://www.cdc.gov/media/releases/2020/p0924-200-million-jurisdictions-covid-19-preparedness.html>

^{xxxvi} Executive Order No. GA-32 relating to the continued response to the COVID-19 disaster as Texas reopens. October 7, 2020. Governor of the State of Texas. Accessed December 15, 2021. [EO-GA-32 continued response to COVID-19 IMAGE 10-07-2020.pdf \(texas.gov\)](https://gov.texas.gov/uploads/files/press/EO-GA-32-continued-response-to-COVID-19-IMAGE-10-07-2020.pdf)

- ^{xxxvii} CDC announces an end for the no sail order for the cruise industry in the U.S. November 1, 2021. CDC. Accessed on December 29, 2021. <https://www.cdc.gov/museum/timeline/covid19.html>
- ^{xxxviii} Executive Order of County Judge Glen B. Whitley, Tarrant County. November 24, 2020. Accessed December 15, 2021. <https://www.tarrantcounty.com/content/dam/main/covid-cares/ExecutiveOrder-11-24-2020.pdf>
- ^{xxxix} Letter to Judge Whitley from the Texas Department of State Health Services. Accessed March 14, 2022. <https://access.tarrantcounty.com/content/dam/main/global/Covid-19/DSHS Letter to Tarrant County Judge-GA-32-50 percent occupancy in businesses.pdf>
- ^{xl} FDA takes key action in fight against COVID-19 by issuing emergency use authorization for first COVID-19 vaccine. December 11, 2021. FDA. Accessed on December 29, 2021. <https://www.fda.gov/news-events/press-announcements/fda-takes-key-action-fight-against-covid-19-issuing-emergency-use-authorization-first-covid-19>
- ^{xli} COVID-19 vaccine arrives in Texas. December 14, 2020. Texas Health and Human Services. Accessed March 14, 2022. <https://dshs.texas.gov/news/releases/2020/20201214.aspx>
- ^{xlii} FDA takes additional action in fight against COVID-19 by issuing emergency use authorization for second COVID-19 vaccine. December 18, 2021. FDA. Accessed on December 29, 2021. <https://www.fda.gov/news-events/press-announcements/fda-takes-additional-action-fight-against-covid-19-issuing-emergency-use-authorization-second-covid>
- ^{xliii} Phase 1B of vaccine distribution plan 'hit or miss' in Dallas County. January 1, 2021. *Dallas Observer*. Accessed March 14, 2022. <https://www.dallasobserver.com/news/phase-1b-of-vaccine-distribution-plan-is-here-but-north-texas-is-low-on-doses-11974096>
- ^{xliv} Consolidated Appropriations Act, 2021 (P.L. 116-260). U.S. Congress. December 21, 2020. Accessed December 15, 2021. [PUBL260A.PS \(congress.gov\)](https://www.congress.gov/bills/116/260)
- ^{xlv} WHO issues its first emergency use validation for a COVID-19 vaccine and emphasizes need for equitable global access. December 31, 2020. WHO. Accessed on December 29, 2021. <https://www.who.int/news/item/31-12-2020-who-issues-its-first-emergency-use-validation-for-a-covid-19-vaccine-and-emphasizes-need-for-equitable-global-access>
- ^{xlvi} FEMA modifies order on scarce health and medical resources exports. January 5, 2021. Federal Emergency Management Agency (FEMA). Accessed on December 30, 2021. <https://www.fema.gov/press-release/20210105/fema-modifies-order-scarce-health-and-medical-resources-exports>

- ^{xlvii} COVID-19 quarantine vs. isolation. January 7, 2021. CDC. Accessed on December 30, 2021. <https://www.cdc.gov/coronavirus/2019-ncov/downloads/COVID-19-Quarantine-vs-Isolation.pdf>
- ^{xlviii} FEMA establishes emergency management priorities and allocations system. January 8, 2021. FEMA. Accessed on December 30, 2021. <https://www.fema.gov/press-release/20210108/fema-establishes-emergency-management-priorities-and-allocations-system>
- ^{xlix} Order: Wearing of face masks while on conveyances and at transportation hubs. January 29, 2021. CDC. Accessed on December 30, 2021. <https://www.cdc.gov/quarantine/masks/mask-travel-guidance.html>
- ^l FEMA extends emergency sheltering assistance, eases reporting requirements. January 29, 2021. FEMA. Accessed on December 30, 2021. <https://www.fema.gov/press-release/20210129/fema-extends-emergency-sheltering-assistance-eases-reporting-requirements>
- ^{li} DHS statement on equal access to COVID-19 vaccines and vaccine distribution sites. February 1, 2021. DHS. Accessed on December 30, 2021. <https://www.dhs.gov/news/2021/02/01/dhs-statement-equal-access-covid-19-vaccines-and-vaccine-distribution-sites>
- ^{lii} Requirement for persons to wear masks while on conveyances and at transportation hubs. February 2, 2021. CDC. Accessed December 15, 2021. [Mask-Order-CDC GMTF 01-29-21-p.pdf](#)
- ^{liii} FEMA supporting vaccination centers nationwide. February 26, 2021. FEMA. Accessed on December 30, 2021. <https://www.fema.gov/press-release/20210226/fema-supporting-vaccination-centers-nationwide>
- ^{liv} Executive Order No. GA-34 relating to the opening of Texas in response to the COVID-19 disaster. March 2, 2021. Governor of the State of Texas. Accessed December 15, 2021. <https://open.texas.gov/uploads/files/organization/opentexas/EO-GA-34-opening-Texas-response-to-COVID-disaster-IMAGE-03-02-2021.pdf>
- ^{lv} Executive order terminating prior order dated February 23, 2021. March 2, 2021. Tarrant County. Accessed December 15, 2021. https://www.tarrantcounty.com/content/dam/main/global/Covid-19/Tarrant_County_Judge_Glen_Whitley_Executive_Order_3-2-21.pdf
- ^{lvi} FEMA ensures equitable distribution of COVID-19 vaccines. March 9, 2021. FEMA. Accessed on December 30, 2021. <https://www.fema.gov/press-release/20210309/fema-ensures-equitable-distribution-covid-19-vaccines>

- ^{lvii} President Biden signs American Rescue Plan Act into law to address ongoing issues related to coronavirus pandemic. March 11, 2021. Library of Congress. Accessed December 13, 2021. <https://www.loc.gov/item/global-legal-monitor/2021-03-11/united-states-president-biden-signs-american-rescue-plan-act-into-law-to-address-ongoing-issues-related-to-coronavirus-pandemic/>
- ^{lviii} Executive Order No. GA-35 relating to COVID vaccines and protection of Texans' private health information. April 5, 2021. Governor of the State of Texas. Accessed December 13, 2021. [EO-GA-35 private health information protection vaccines.pdf \(texas.gov\)](https://www.texas.gov/EO-GA-35-private-health-information-protection-vaccines.pdf)
- ^{lix} U.S. State Department lifts health advisory against international travel – What to know. August 6, 2021, Christine Burroni. *Travel and Leisure*. Accessed on September 27, 2021. <https://www.travelandleisure.com/travel-news/state-department-health-advisory-lifted>
- ^{lx} Fully vaccinated? You can ditch the mask, CDC says. May 13, 2021. NBC News. Accessed December 15, 2021. <https://www.nbcnews.com/health/health-news/cdc-plans-drop-mask-requirements-fully-vaccinated-people-n1267249>
- ^{lxi} Executive Order GA-36 relating to the prohibition of governmental entities and officials from mandating face coverings or restricting activities in response to the COVID-19 disaster. May 18, 2021. Governor of the State of Texas. Accessed December 13, 2021. [EO-GA-36 prohibition on mandating face coverings response to COVID-19 disaster IMAGE 05-18-2021.pdf \(texas.gov\)](https://www.texas.gov/EO-GA-36-prohibition-on-mandating-face-coverings-response-to-COVID-19-disaster-IMAGE-05-18-2021.pdf)
- ^{lxii} Fact sheet: President Biden to announce new actions to get more Americans vaccinated and slow the spread of the delta variant. July 29, 2021. The White House. Accessed on December 30, 2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/29/fact-sheet-president-biden-to-announce-new-actions-to-get-more-americans-vaccinated-and-slow-the-spread-of-the-delta-variant/>
- ^{lxiii} Executive Order No. GA-38 relating to the continued response to the COVID-19 disaster. July 29, 2021. Governor of the State of Texas. Accessed December 13, 2021. [EO-GA-38 continued response to the COVID-19 disaster IMAGE 07-29-2021.pdf \(texas.gov\)](https://www.texas.gov/EO-GA-38-continued-response-to-the-COVID-19-disaster-IMAGE-07-29-2021.pdf)
- ^{lxiv} Executive order requiring coronavirus disease 2019 vaccination for federal employees. September 9, 2021. The White House. Accessed on December 30, 2021. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/09/09/executive-order-on-requiring-coronavirus-disease-2019-vaccination-for-federal-employees/>
- ^{lxv} Approval of eighth amended declaration of local disaster due to public health emergency and renewal of same. September 28, 2021. Tarrant County. Accessed December 13, 2021.

https://tarrantcounty.granicus.com/player/clip/4917?view_id=6&meta_id=2549260&redirect=true

^{lxvi} CDC recommends pediatric COVID-19 vaccine for children 5 to 11 years. November 2, 2021. CDC. <https://www.cdc.gov/media/releases/2021/s1102-PediatricCOVID-19Vaccine.html>

^{lxvii} CDC expands eligibility for COVID-19 booster shots to all adults. November 19, 2021. CDC. Accessed on December 30, 2021. <https://www.cdc.gov/media/releases/2021/s1119-booster-shots.html>

^{lxviii} Ninth amended declaration of local disaster due to public health emergency and renewal of the same. November 23, 2021. Tarrant County. Accessed December 13, 2021. <https://www.tarrantcounty.com/content/dam/main/global/Covid-19/Ninth-Amended-Declaration-of-Local-Disaster-11-23-2021.pdf>

^{lxix} Classification of omicron (B.1.1.529): SARS-CoV-2 variant of concern. November 26, 2021. WHO. Accessed on December 30, 2021. [https://www.who.int/news/item/26-11-2021-classification-of-omicron-\(b.1.1.529\)-sars-cov-2-variant-of-concern](https://www.who.int/news/item/26-11-2021-classification-of-omicron-(b.1.1.529)-sars-cov-2-variant-of-concern)