

Establishing Collaborative Partnerships to Manage the COVID-19 Pandemic: Experiences from Healthy Davis Together



Introduction

The COVID-19 pandemic has revealed a need for communities across the United States to improve their ability to address large-scale public health crises that require robust and targeted efforts from many disparate entities. A major challenge to national, state, county, and community public health efforts is the siloed and disconnected nature of the healthcare landscape. Often, the overlapping programs and goals of community health, public health, and healthcare provider organizations are hindered by competing interests and a lack of communication and coordination. Additionally, a lack of management and forward-thinking resource allocation processes across community organizations has contributed to outbreaks of COVID-19 that could have been anticipated and mitigated, such as those immediately following the reopening of schools. A successful model for a large-scale public health response centered on collaborative partnerships and coordination between public and private entities can provide tremendous value to future public health efforts.

The unique structure and approaches used for Healthy Davis Together (HDT) has successfully lowered the burden of COVID-19 in the community. HDT is a joint project between the University of California (UC Davis), and the City of Davis (Davis) to unite efforts to prevent the spread of COVID-19 and facilitate a coordinated and gradual return to regular campus and city activities. Healthy Davis Together is unique in that public and private partnerships were built into its core structure from the outset, fostering a holistic, community-centered approach that allows for greater consideration of social determinants of health as well as more expansive coordination and data sharing across partners. The collaborative partnerships established by Healthy Davis Together have not only led to significant improvements in health outcomes but also strengthened community relationships, which will continue to prove beneficial long after the initiative concludes.



From November 2020 through December 2021, Davis successfully reintegrated nearly 40,000 college students back into the community, re-opened 19 K-12 schools full time, and helped over 200 local businesses remain open. HDT's efforts drove an estimated 27% reduction in positive COVID-19 cases and a 61% reduction in deaths from COVID-19 during surge periods, achieved a COVID-19 vaccine rate above 80%, and maintained a case positivity rate averaging 71% lower than California's statewide rate. HDT's expansive partnerships helped it become a trusted and familiar presence in the community, which aided its core program goals and reduced the detrimental impact of misinformation and politicization surrounding COVID-19 public health guidance. Healthy Davis Together developed replicable and scalable public health strategies that have laid important groundwork in Davis and the surrounding county. The community's experience can serve as a model for future public health initiatives to develop decentralized community efforts in an efficient and cohesive manner.

In this paper, we provide an overview of the key partnerships that helped HDT put into practice a robust COVID-19 response strategy and share learnings that other communities can apply to future public health and community resilience efforts. We hope to encourage businesses, nonprofits, school districts, health officials, college and university public health departments, city managers, and government officials to undertake similar initiatives—built on public-public and public-private partnerships and the integration of disparate community efforts—when facing public health challenges. Through the example of Healthy Davis Together, we aim to show that such partnerships are not only effective at mobilizing resources at scale, but can be coordinated efficiently and provide unique advantages when considering the needs of and engaging with specific and hard to reach communities.

Background

Healthy Davis Together is the overarching structure and identity of Davis, California's pandemic response, which further developed and expanded into a county-wide effort referred to as Healthy Yolo Together (HYT). Working in close collaboration with Yolo County Public Health, the project team coordinated key elements of communities' COVID-19 response efforts, including establishing free testing and vaccine sites, distributing personal protective equipment (PPE) like masks and gloves for local employees and volunteers, creating and implementing county-wide public health awareness campaigns to promote public health guidance, tapping local trusted messengers to connect to underserved communities, and providing education on, and access to, COVID-19 testing and vaccines. Through its mutually supportive partnerships, HDT was able to strategically distribute responsibilities and quickly and effectively coordinate a large network of resources and efforts in order to support the community. The following is an overview of the objectives of the pandemic response and the partnerships that helped achieve these objectives.

The core partnership of Healthy Davis Together is between UC Davis and the City of Davis. Prior to the creation of the HDT initiative, the university and city had never collaborated on a project of

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this nature or scale and were in no way uniquely positioned through existing channels to do so. The partnership evolved quickly due to an early agreement to set aside existing conceptions of jurisdictional boundaries and take the lead on efforts and objectives of the city-wide initiative that best suited each entity. The City of Davis dedicated resources for staffing, secured locations for testing, navigated red tape, and helped HDT connect with the broader Davis population, while the university brought leadership and public health expertise, provided scientific and clinical support critical to city-wide programs, and coordinated the needs of the large student body and university employees—who account for approximately one third of the Davis population when in session. The university also served a crucial early role in developing systems and practices as part of its “Campus Ready” program that would later be implemented in Davis, including testing, genomic sequencing, public health education, and a student workforce. The partnership between the city and university was foundational to the success of the HDT initiative.

Building from this initial partnership, Healthy Davis Together expanded to include other key partners, such as Davis businesses, Federally Qualified Health Centers, Yolo County's Health and Education departments, K-12 school districts, pre-K, and daycare programs, and various community-based organizations. By doing so, Healthy Davis Together quickly laid the foundation for an interconnected community effort that was able to respond with both large-scale and targeted interventions to address the challenges presented by the pandemic.

Focus Areas

Communications and Knowledge Sharing

Critical to building the trust and credibility of HDT was establishing a project identity under which to unite efforts, develop a communications strategy, and provide the public with frequent, consistent, and culturally appropriate public health guidance and information. Knowing that misinformation and distrust of official sources presented major challenges for pandemic response initiatives across the country, HDT worked in several ways to establish trust and familiarity among the community. First, the city and university prioritized the development of a clear, recognizable Healthy Davis Together identity—a look and feel that would be applied across all efforts and communications, including regular public health messaging, awareness campaigns, multimedia content, and community signage. Working in conjunction with communications teams and experts from the city, county, and university, HDT also established the [Healthy Davis Together website](#) to provide the public with access to resources and up-to-date information on testing, vaccines, wastewater monitoring, and more. These cross-sector teams also collaborated on media efforts and notices published by city and county officials about ongoing COVID-19 developments and the status of public health guidelines. To reach diverse communities within Davis and Yolo Counties throughout the pandemic, HDT provided simple and easy to understand messaging in multiple languages and with targeted strategies that evolved over time as information and levels of trust changed.

HDT's communications strategy was informed by bi-monthly public opinion research conducted locally to test messages and ensure the right information was reaching target audiences through the right channels. At the same time, HDT took care to ensure that its communications strategy evolved along with the pandemic and allowed for quick reactions to new developments. To combat misinformation and instill public confidence when the pandemic landscape changed and new guidance was necessary, HDT quickly adapted to provide timely updates through its communication channels. City, university, and county communication professionals worked together as an HDT communications team to develop specific protocols and communications strategies. For example, targeted communications were delivered

directly to residents in Davis when a sudden spike in the presence of COVID-19 was detected through wastewater monitoring in specific neighborhoods. In addition to communications responding directly to the pandemic in Davis, HDT leadership and the communications team also undertook [knowledge sharing](#) efforts to document Healthy Davis Together's unique work, promote successful programs, and publish resources to be leveraged by other communities throughout the country either in direct response to COVID-19 or to other public health and safety crises. The partnership and coordination of communication professionals from the university, city, and county as a team was crucial to building the HDT brand and successfully implementing the project's communications.

Local Business Partnerships

To root the HDT initiative directly in the community, HDT launched a Business Partner Program for local Davis businesses. HDT worked with the Davis Downtown Business Association and Davis Chamber of Commerce to support the local economy by providing grants, purchasing gift cards, distributing PPE, providing access to free COVID-19 testing for business employees and family members, and providing public health and safety guidance along with resources like air filter systems. Following the launch of HDT's Business Partner Program in November 2020, 424 Davis businesses from multiple sectors of the local economy participated in the program. As part of its Business Partner Program,



HDT purchased over \$480,000 in gift cards to both stimulate local businesses and serve as incentives to encourage the community to use Healthy Davis Together's free COVID-19 testing and vaccination services. Additionally, HDT provided more than \$365,000 in grants to help participating businesses adapt to meet new COVID-19 public health guidelines.

These partnerships with local Davis businesses had a number of benefits. The initiative helped to promote responsible health behaviors throughout the community and directly injected resources back into the local economy during a time of acute hardship. As a result, participating businesses retained the employee and community support they needed to continue serving as the backbone of the local Davis economy. These measures also helped instill confidence in the community that city leadership and the business community were aligned in efforts to keep people safe and businesses open. An analysis of local businesses found those that participated in HDT's Business Partner Program had fewer staff layoffs compared to Davis businesses that did not participate.

In addition, HDT provided public health consulting to interested business partners, assessing indoor spaces to ensure social distancing and air circulation could be maintained, and making recommendations to enhance safety protocols. Not only did these measures directly impact customers' safety, but they provided many residents with an increased sense of confidence in re-entering these spaces. Participating business program partners helped HDT become a near-ubiquitous community presence, with coffee sleeves, napkins, signage, and window decals, as well as business program ambassadors and program promotional support provided to build awareness of the initiative and encourage the community to support local businesses. Bi-monthly surveys consistently showed city residents felt favorably about these initiatives.

Testing and Contact Tracing

Healthy Davis Together's city- and, later, county-wide free COVID-19 testing program was first developed at UC Davis for use on campus. Similar to other universities, UC Davis established a COVID-19 screening program for students, faculty,

and employees in the fall of 2020. Under the HDT initiative, the university used its on-campus experience and learnings to expand saliva-based PCR testing to the entire Davis community and later Yolo County. To increase scalability, the UC Davis Genome Center developed a saliva-based test by adapting processes used by other universities and combining that with a low-cost, scalable PCR testing system used in agricultural genomics. The UC Davis Genome Center also supported COVID-19 variant monitoring beginning in February 2021 by genotyping every positive PCR result to identify the variant that caused it. This process tracked the introduction and prevalence of known variants of concern in the area. Working closely with the Yolo County health officer, these efforts helped to inform county-wide public health guidance. For instance, Yolo County reintroduced masking requirements earlier in 2021 than many other counties in the state because the UC Davis Genome Center registered a steady rise in the Delta variant across the county.

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Using the university's established testing protocols and processing lab and the city and county's access to local community health resources—including buildings to use as testing sites—HDT established a robust testing and contact tracing system. This system leveraged the initiative's full network of public-private partnerships to reach various communities and locations, bringing testing directly to businesses through the Business Partner Program, to more than 50 schools throughout the county via direct coordination with their superintendents and principals, and to underserved communities, migrant farmworkers, and unhoused individuals through community based organizations and community centers with whom these populations were already acquainted. To augment

the contact tracing program, HDT also supported a team of UC Davis graduate students to become trained and certified as contact tracers.

To provide support for vulnerable populations, Healthy Davis Together developed and utilized a mobile testing model. HDT partnered with local long-term care facilities; Yolo County Health and Human Services; ÓRALE (Organizaciones para Reducir, Avanzar y Lograr Equidad contra el COVID-19 or Organizations to Reduce, Advance, and Lead for Equity against COVID-19), which provided tests, public health education, and other critical services to agricultural workers and their families; and CommuniCare, which provided additional testing support and connected individuals to community resources to support quarantine and isolation. HDT and ÓRALE worked closely together to coordinate testing schedules, respond to outbreaks, and conduct critical outreach to agricultural and migrant communities.

Connecting individuals with access to testing allowed workers to prove their negative COVID-19 status to employers and get back to work much more quickly. In coordination with Yolo County Health and Human Services, HDT also provided workers with income support so that they could isolate and quarantine without losing income. This was an important resource that helped many low-income

workers overcome a barrier to testing. HDT and the Yolo County Department of Public Health worked closely to integrate contact tracing procedures and even collaborated with UC Davis to hire graduate students into contact tracing and public education roles. The public health infrastructure and strategic communications of the testing and contact tracing system led to high testing rates and even regular twice-weekly testing for many Davis residents. HDT later partnered with the biotech company Ellume to provide at-home COVID-19 tests in times of high testing demand and for rapid response to outbreaks in schools and community organizations.

Environmental Monitoring

To complement widespread clinical testing, HDT established environmental monitoring initiatives (air, surface, and wastewater monitoring) to detect the presence of SARS-CoV-2, the virus that causes COVID-19. HDT partnered with both public and private schools to pilot an air filter monitoring program in classrooms, taking samples from surfaces (e.g., desks and floors) and classroom air filters to test for the virus. In the case of a positive detection, the program also advised on testing and contact tracing protocols for the teachers and students who were potentially exposed. The wastewater program monitored SARS-CoV-2 concentrations at the City



of Davis and UC Davis Wastewater Treatment Plants (WWTPs) and from samples collected at neighborhood “nodes” within the city and campus sewer systems. To accomplish this, UC Davis public health experts, UC Davis Health scientists, and city wastewater officials partnered to determine where sampling would be conducted and how data should be analyzed and reported. HDT also partnered with the [Sewer Coronavirus Alert Network \(SCAN\)](#), a project led by Stanford University, to monitor daily samples from the [City of Davis WWTP](#) primary sludge clarifier and from settled solids obtained from large-volume wastewater samples taken at the UC Davis WWTP. The wastewater monitoring data is used to generate geo-targeted messages that encourage community members to seek clinical diagnostic tests when hotspots in wastewater are detected.

Support for Quarantined, Isolated, and Underserved Individuals

In addition to providing free COVID-19 testing in Davis, it was equally important for HDT to make testing services and quarantine and isolation support broadly accessible, especially for community members who were already vulnerable, isolated, and/or especially difficult to reach through traditional programs and communication channels. To do this, HDT partnered with organizations with established connections to these important populations. Specifically, the City of Davis organized quarantine and isolation services in Davis that were implemented by CommuniCare, a Federally Qualified Health Center. Services included food and salary support as well as housing provided by local apartment complex and hotel partners. Materials were translated into different languages and outreach specialists were not only fluent in the languages needed but trained or knowledgeable in culturally appropriate responses and expectations. In addition, HDT’s mobile COVID-19 testing team visited neighborhoods, apartment complexes, long-term care facilities, and non-profit locations serving unhoused people to provide free COVID-19 testing. Coordination between HDT,

CommuniCare, ÓRALE, Yolo County Public Health, and other local CBOs was critical to ensuring awareness and access to HDT’s free testing and quarantine and isolation support.

K-12 School Reopenings

Another integral partnership HDT relied on for success was its collaboration with Yolo County school districts, the Yolo County Office of Education, and Yolo County Public Health. By advising schools on how to create safe classroom environments in the early stages of the pandemic—through measures like evaluation of airflow within classrooms, enhanced air filtering, social distancing, masking, and communications about why those measures helped create a safe environment—Healthy Davis Together established a strong relationship with school district administrators in Davis. HDT later built on this trust to run COVID-19 testing sites directly on school campuses for students and staff. Schools that partnered with HDT to implement school testing programs were actively involved, promoting the program to families, helping staff testing sites, facilitating contact tracing when positive cases were detected, and in some instances, designating times to open their doors to allow community members to access free testing.



After successes in supporting K-12 reopening in Davis during the 2021 spring semester, HDT was able to expand its school COVID-19 testing program in partnership with school districts across Yolo county, ultimately leading to weekly testing availability for each of the county's 30,000 students and staff by fall 2021. With the spread of the Delta variant aligning with back-to-school season, schools were able to offer free weekly testing, contact trace positive cases, and implement protocols to successfully bring down positivity rates over the first two weeks of classes. To aid in back-to-school safety efforts, HDT's Knowledge Sharing Team also produced checklists for back to school that provided school leaders with simple guidance on how to keep their school environments as safe as possible.

Vaccinations

When COVID-19 vaccines became available in late 2020, Healthy Davis Together's vaccine team applied for and was granted permission to administer vaccines to eligible individuals. HDT then partnered with two important vaccine providers: Yolo County Public Health and CommuniCare, CommuniCare, which serves a patient population that includes many underserved communities. Working in partnership with both entities, HDT bolstered vaccination efforts by standing up two vaccine clinics with CommuniCare as well as using the HDT vaccine mobile team to coordinate vaccine outreach events at schools, businesses, farms, migrant camps, and other locations across Yolo County. City managers and staff from multiple cities—including Davis, Woodland, and West Sacramento—were instrumental in helping HDT identify vaccination locations in their communities. Yolo County schools worked with HDT to schedule on-site vaccination events to reach eligible K-12 students and staff. In addition, HDT established a call center to schedule vaccine appointments for those with limited access to technology as well as provide vaccine information.

A top priority of HDT's COVID-19 vaccine work was leveraging partnerships to reach low-income and marginalized populations with vaccinations and relevant COVID-19 public health information. Working closely with Yolo County Public Health and

CommuniCare, HDT joined with community-based organizations such as the Yolo Food Bank, Project Hope, and Empower Yolo in outreach efforts and used HDT's mobile vaccine team to provide vulnerable communities with access to vaccinations and COVID-19 information and guidance. HDT further connected with underserved communities through local faith and cultural group leaders, who reinforced the importance of getting vaccinated to key populations, including people who showed a hesitancy to get vaccinated and those, such as seniors, shown to be at greater risk of negative health outcomes from COVID-19.

A prominent example of these efforts was the interconnected initiative to vaccinate agricultural workers in Yolo County. In partnership with Yolo County, ORALE, and local community based organizations, HDT contributed to providing and encouraging vaccinations at large farms, migrant centers, and community sites—resulting in the vaccination of over 80% of the county's agricultural workers by May of 2021. Working with its partners, from February to October 2021 the HDT vaccine team administered 16,000 COVID-19 vaccines to 8,700 people, with 38% of doses being provided to individuals who identified as Hispanic or Latinx.



Conclusion

Healthy Davis Together's impact on the community has been profound. Over the course of the initiative, Davis successfully reintegrated 40,000 college students back into the community and opened K-12 schools full time to in-person instruction with on-site COVID-19 testing. With free and easily accessible community-wide PCR testing as well as targeted health education interventions, the city maintained very low infection rates compared to California's rate statewide and achieved well over an 80% vaccination rate with a combined impact of a 27% reduction in positive cases and an estimated 61% reduction in deaths. In addition, HDT has been documenting and disseminating learnings from the initiative to benefit other communities.

The success of HDT is also evident in and made possible by the partnerships established between UC Davis, the City of Davis, Yolo County, community partners, local businesses, the Davis Joint Unified School District, and others. These partnerships and the engagement of community stakeholders have strengthened the city's pandemic preparedness, resilience, and health infrastructure in ways that will last well beyond the COVID-19 pandemic. The HDT model has been recognized by the Association of Public and Land-grant Universities with its inaugural Research Response to a Community in Crisis Award. Additionally, the City of Davis was awarded a 2021 Beacon Leadership and Innovation Award by the Institute for Local Government for efforts to implement collaborative, inclusive, and equitable programs that strengthen communities' resilience to crises.

The lessons learned from HDT's pandemic response can inspire us to improve the interconnectedness of our communities, and to think bigger about strategies for advancing common goals and facing large-scale social problems effectively together.

Recommendations

Below are six key elements of Healthy Davis Together's strategy for establishing partnerships that can be useful for developing similar initiatives:

1. Identify partners with similar goals from a diverse range of focus areas representing multiple socioeconomic demographics and groups in order to maximize reach, minimize redundancy, and develop a holistic framework from the outset. Universities can provide invaluable expertise, resources, facilities, and human resources that can be of unique value to large-scale initiatives and, if possible, should be sought out as early partners.
2. Assemble an Advisory Committee that includes representation from partners and other diverse sectors of the community. This committee should offer guidance and ensure community perspectives are considered in strategy development and decision-making. The relationships built among committee members over time allows for more connections and more seamless communication to increase speed and adaptability.
3. Draft clear memoranda of understanding (MOUs) with each partner to ensure comprehension of roles and responsibilities, including good-faith financial burden-sharing and openness in communicating about decisions, risks, and issues that may arise.
4. Develop the scope of the program around the capabilities and resources of key partners, keeping in mind a collective duty to prioritize vulnerable populations. An earnest focus on equity and inclusion draws greater trust and collaboration from non-profit and community-based groups that provide needed resources and perspectives.
5. Align program goals and metrics across partners so that all work activities are tracking toward similar outcomes.
6. Identify opportunities for partners and potential partners to promote their individual goals and agendas to the mutual benefit of all partners and of the program as a whole.

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Primary



Additional

Cities



K-12



Community Organizations



In addition to the faith-based community and 25+ other community-based organizations

Other

420+ Davis businesses

20+ Community Leaders (Advisory)

UCD's Diversity, Equity, and Inclusion Program

Implementation Partners

