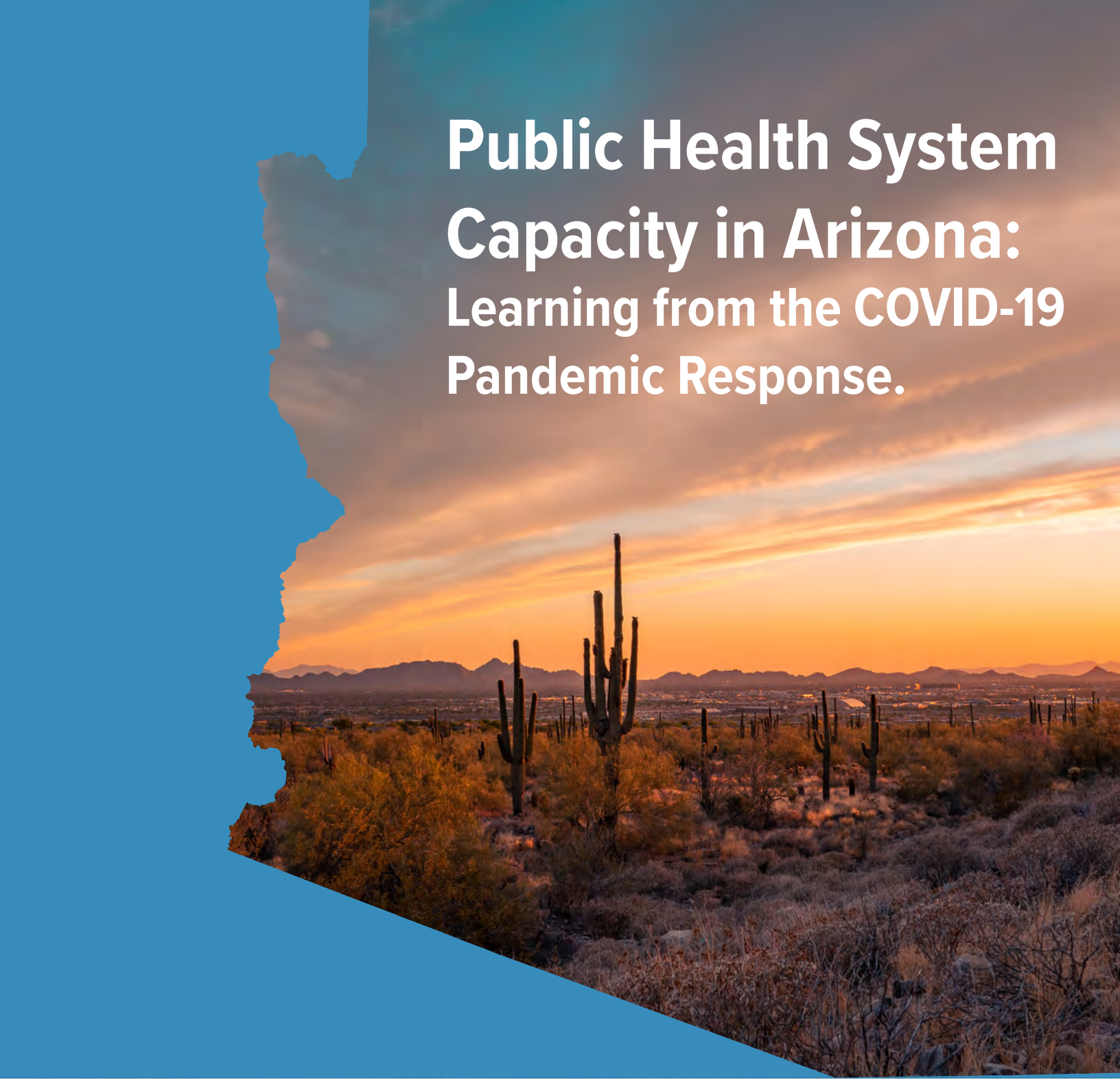

Public Health System Capacity in Arizona:
Learning from the COVID-19 Pandemic Response.

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AHEAD AZ
Advancing Health Equity • Addressing Disparities in Arizona

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About This Report

The Advancing Health Equity, Addressing Disparities (AHEAD AZ) project is housed in the Arizona Center for Rural Health (AzCRH) at the University of Arizona. The Arizona Department of Health Services (ADHS) funded this report via an interagency services agreement with AzCRH as part of a Centers for Disease Control and Prevention (CDC) national initiative to address COVID-19 health disparities among populations at high risk for morbidity and mortality.

The public health system addresses acute diseases such as COVID-19, responds to natural disasters, identifies unmet health needs, makes recommendations and implements interventions to improve health outcomes and reduce health disparities. Businesses, schools, churches, organizations and individuals all play roles in improving community health. The U.S., state, county and local public health systems comprise the foundation for assuring the health of the community and responding to factors that threaten the health and well-being of individuals and communities by identifying problems and supporting solutions. Public health emphasizes prevention using education, awareness and other tools to help people avoid getting sick or injured. Public health works with partners to make sure our communities have what is needed to stay healthy including nutrition, clean air, safe water and access to services.

The national, state and local public health systems are responsible for assessing what is needed to improve health outcomes and reduce disparities. COVID-19 is now the third leading cause of death for both the U.S. and Arizona - making it one of the top priorities for public health (CDC, 2022a, CDC, 2023). Arizona has COVID-19 morbidity and mortality disparities by factors including geography (rural > urban), income (low-income > high income), age (elderly > those less than age 65) (CDC, 2020). These alarming COVID-19 disparities in morbidity and mortality disproportionately affected rural, low-income, elderly and minority individuals and populations. These disparities require proactive interventions by public health systems to assess, prioritize, and act to better support community health.

The public health community can better understand and address these challenges by developing solutions, using innovative approaches, and creating partnerships. This report provides information to better understand Arizona's public health system capacity and incorporates what the COVID-19 pandemic taught us to address public health system needs going forward. The aim is to inform decisions to build and sustain the capacity of the public health system and support community health.

Methodology

This report synthesizes interviews and meetings with the nine public health system stakeholders who are members of the Capacity Assessment Advisory Team (CAAT) for this project. They represented key organizations and groups in the public health system including local and tribal health departments, federally qualified health centers, civic and academic organizations. The interviews provide insight and feedback about the public health system response to the COVID-19 pandemic. Interviews were thematically coded using the eight public health organizational capacity constructs and the macro-context domain from Meyer (2012). Early findings from the interviews were summarized and presented to the CAAT for their feedback and discussion during two meetings in October 2022.

Why Public Health System Capacity Is Important

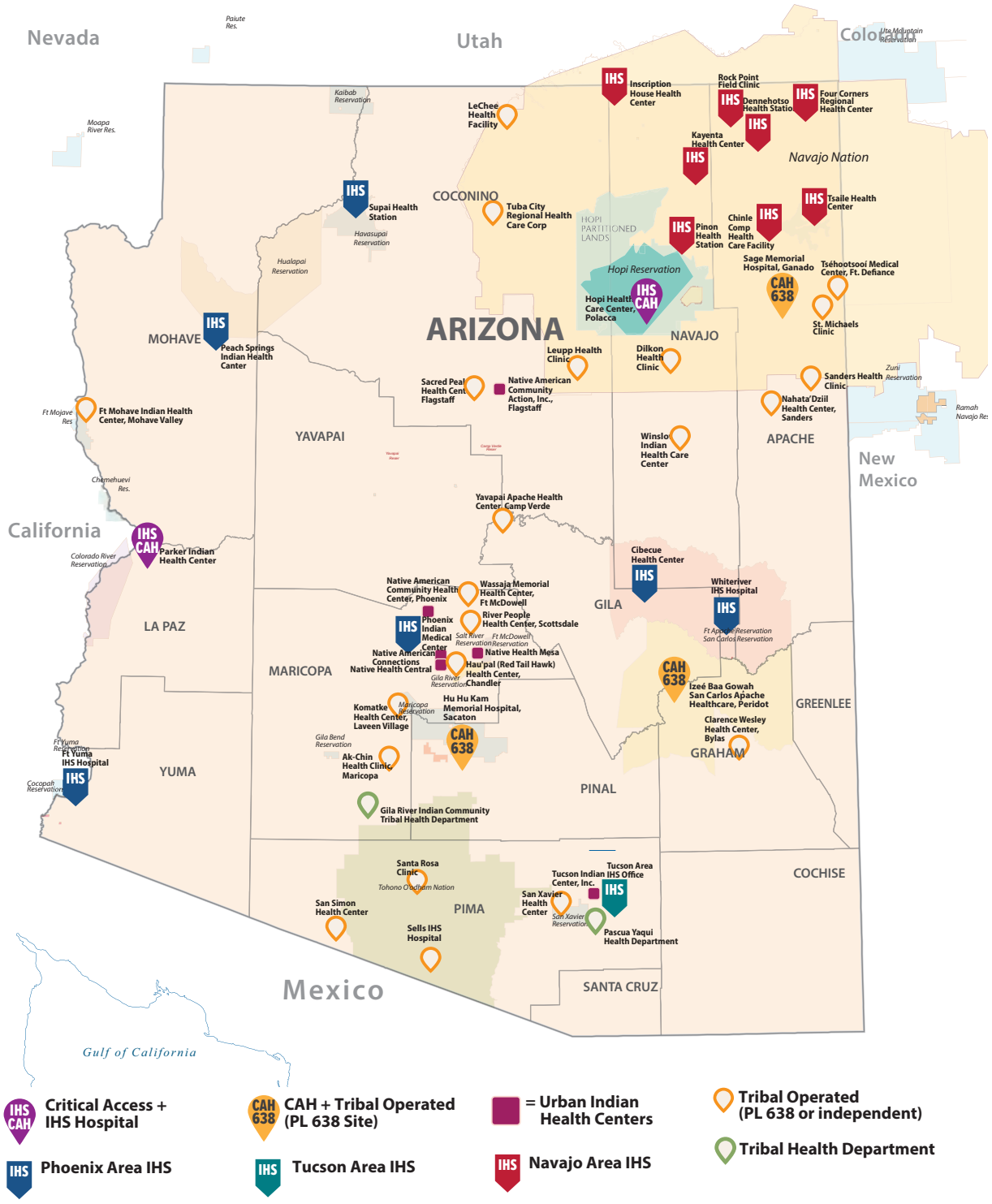
Public health is what we do together to create the conditions for people to be healthy. "Public Health promotes and protects the health of people and the communities where they live, learn, work and play" (APHA, 2023). The public health system is "the collective resources, infrastructure, and effort of all public, private, and voluntary entities and their respective roles, relationships, and interactions that contribute to the delivery of essential public health services within a jurisdiction" (Van Wave et al., 2010, p. 284). The formal public health system includes state, local and tribal public health departments. Essential partners include hospitals, community health centers, schools, non-profit organizations, local businesses, and others.

The complex public health system is characterized by interactive relationships between organizations and people. Originating in the obligation to protect and promote welfare, governmental infrastructure forms the "backbone" of the public health system (Van Wave et al., 2010, p. 284). Public health system capacity relies on resource availability (e.g., workforce, financing, organization) to implement the core functions and services of public health to meet the goal of "protecting and promoting the health of all people in all communities" (CDC - 10 Essential Public Health Services - CSTLTS, 2021).

Arizona's Public Health System

Arizona has a "free-standing/independent agency" type of governmental public health system structure, rather than a decentralized/largely decentralized system (ASTHO, 2022). The backbone of Arizona's public health system is the Arizona Department of Health Services (ADHS), an independent executive branch agency. County health departments in each of Arizona's 15 counties report to their county's Board of Supervisors. The county health departments and the Board of Supervisors are also advised by a Board of Health (appointed by the board of supervisors). The Board of Health is composed of at least one physician member and citizen representatives who represent the county supervisor districts.

There are 22 federally recognized tribes in Arizona that coordinate their public health response and engage with county and state partners. Some tribes coordinate directly with Indian Health Service (IHS) for public health activities, some have tribally operated health facilities, and most tribes have units or programs that participate in public health activities and coordinate with state and local partners. There are two tribal public health agencies – the Gila River and Pascua Yaqui Tribal Health Departments.

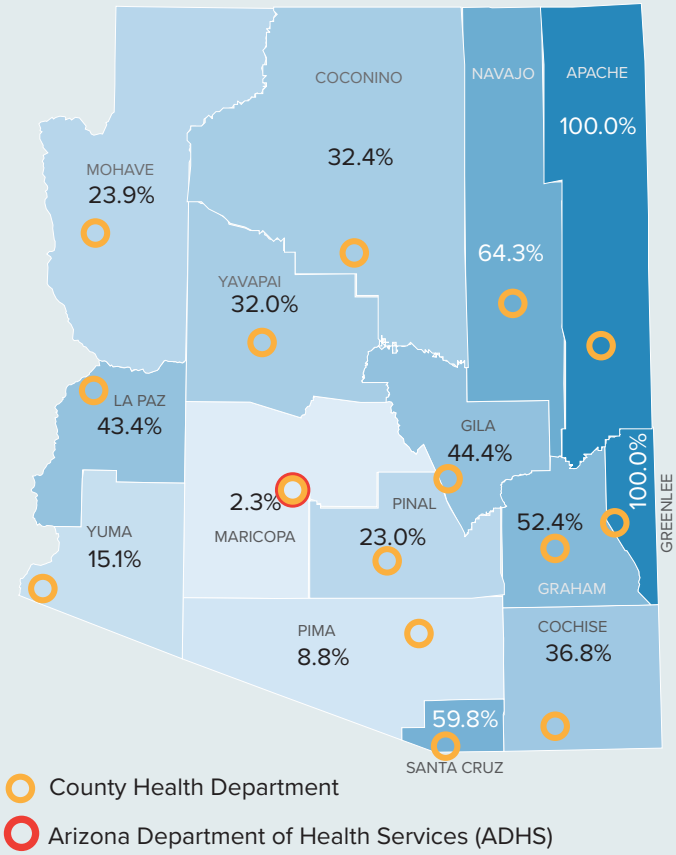


ADHS, five of Arizona's 15 county health departments (Coconino, Maricopa, Mohave, Pima and Yavapai counties) and one tribal health department (Pascua Yaqui Tribal Health Department) are accredited by the Public Health Accreditation Board (PHAB) (CDC, 2022b).

The governmental public health system in Arizona serves a growing population of 7.15 million as of 2020. Between 2010 and 2020, Arizona's total population grew 7.4%. Most of the population (80%) lives in the two largest counties, Maricopa and Pima. Population, population density, percent rural population and social characteristics of the population (e.g., language, race and ethnicity, income) vary significantly between Arizona's 15 counties. Using the ADHS definition of rural, all counties except Maricopa, Pima, Pinal and Yuma are considered rural. At a sub-county level using U.S. Census data, counties range in their percentage rural population from 100% in Apache County to 2.3% in Maricopa County. Between 2010 and 2020, ten of Arizona's 15 counties experienced population growth. See Appendix A for summary social characteristics by county.

The following sections present findings from the interviews and meetings with the CAAT. These findings are specific to the COVID-19 pandemic experience. The sections are broken out by public health capacity domains. Each section presents a summary on how the public health community acted to diagnose problems and implement solutions during the COVID-19 pandemic. Each section also describes how the public health system in Arizona can strengthen.

1. Economic Resources
2. Workforce
3. Governance and Decision Making
4. Inter-Organizational Relationships
5. Informational Resources
6. Organizational Culture
7. System Boundaries and Size
8. Physical Infrastructure
9. Macro-Context



Arizona Department of Health Services
Apache County Public Health Services
Cochise County Public Health Services
Coconino County Health and Human Services
Gila County Health Services Division
Graham County Health Department
Greenlee County Health and County Services
La Paz County Health Department
Maricopa County Department of Public Health
Navajo County Health Department
Pima County Health Department
Pinal County Public Health Department
Santa Cruz County Public Health Services
Yavapai County Community Health Services
Yuma County Public HEalth Services District

1) Economic Resources

The funding, revenue, assets, and costs of public health

Public Health Actions:

- Local public health departments used existing resources to respond to developing public health needs during the pandemic.
- Expanded COVID-19 federal funding provided essential financial support to sustain and implement important public health services.

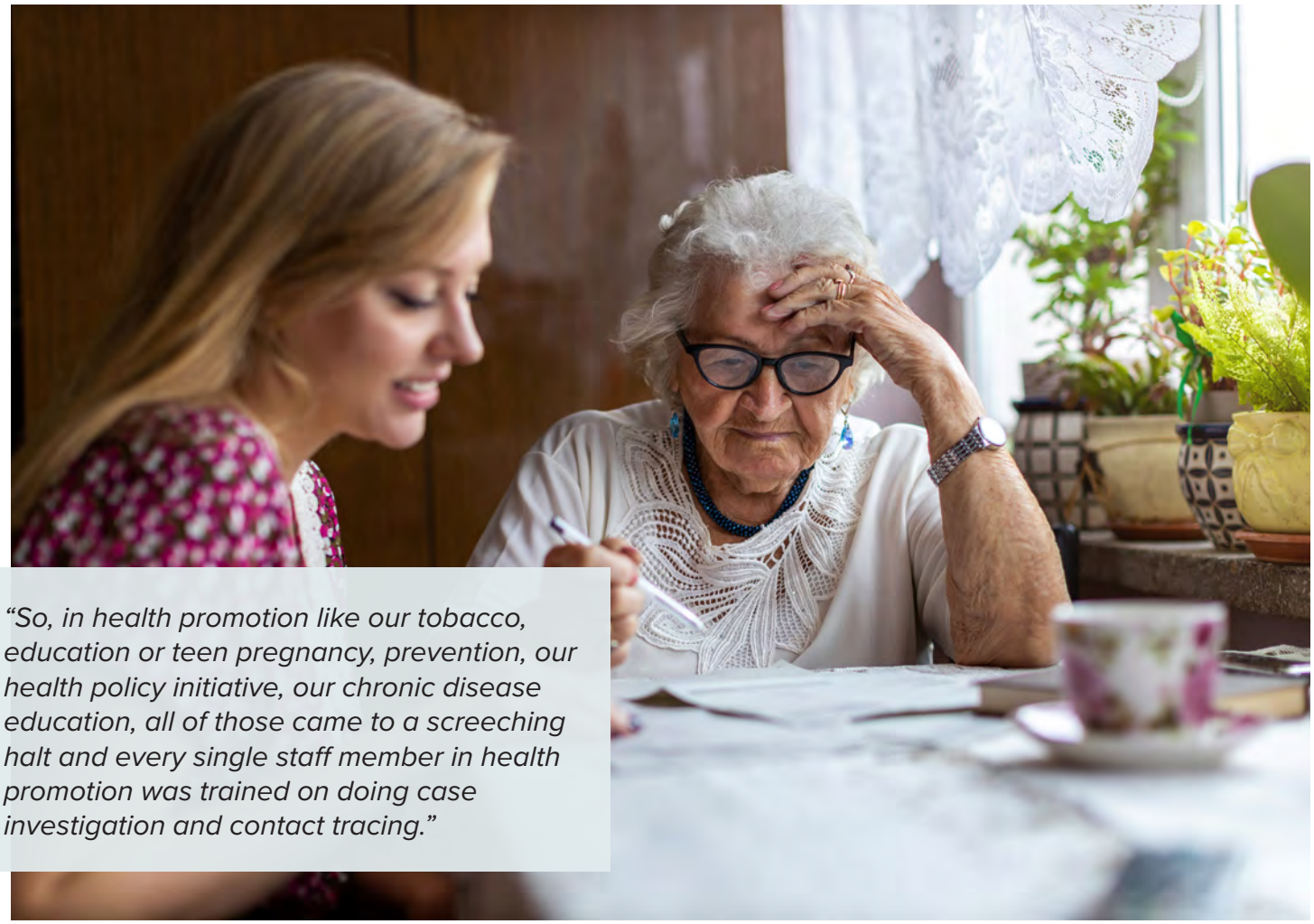
"Community health centers have always been a public health hub of the community...so they are doing vaccinations routinely, but they kind of have to like redeploy...I think that was something completely new...figuring out things like you know drive up testing or vaccination. Those were not things that they had done before."

Public Health Can Be Strengthened By:

- Diversifying funding sources for local public health departments to increase flexibility to meet changing public health needs.
- Sharing successful local funding models (e.g., special tax-districts) that can be implemented in other counties and jurisdictions.
- Investigating other strategies to increase state and local funding for public health.

Multiple interviewees described that federal grants comprise the majority of funding for public health activities in Arizona. While this funding is important and supports essential services, federal funds can be restrictive in ways that prohibit providing certain services, such as stipends for caregivers. Additionally, federal funding is often unable to support health department flexibility to meet changing community needs. Interviewees noted that state funding for public health has not matched the population growth in the state. The lack of state appropriated funding makes it difficult for public health to expand to the needed workforce levels and better prepare for emergencies. Improved state or local funding could help increase the workforce and in turn improve the ability of departments to efficiently use future one-time emergency response funds, including the timely use of funds to support community health. Foundations may be in a unique position to support public health departments with funding for new or pilot programs for innovative efforts that may not be aligned with current federal or other funding sources.

"So I think that's where that combination...and state funding is more flexible than Federal funding, because it takes into account those nuances like okay, Graham, Greenlee, La Paz, is going to have different needs than a Maricopa, or a Pima, and so state funding has that level of awareness versus Federal funding is kind of one of those, you know, this is the cookie cutter."



"So, in health promotion like our tobacco, education or teen pregnancy, prevention, our health policy initiative, our chronic disease education, all of those came to a screeching halt and every single staff member in health promotion was trained on doing case investigation and contact tracing."

2) Workforce

The education, skills, training, experience and demographics of public health professionals

Public Health Actions:

- The public health workforce demonstrated strength and adaptability, continuing required services, learning new skills, and adjusting to community needs.
- The Community Health Worker (CHW) workforce played an integral role in mobilizing and connecting resources to the community and connecting community members to health care resources.
- Multi-sector partnerships, state programs like the Arizona Surge Line, and support from the federal government helped to extend the reach and impact of the public health workforce.

Public Health Can Be Strengthened By:

- Considering loan repayment programs for public health professionals and other solutions for supporting the public health workforce in smaller and rural jurisdictions.
- Increasing support to address burnout and support resiliency of the public health workforce.
- Improving emergency response education and training for new and current public health workforce.
- Considering policy changes to facilitate hiring during a public health emergency, including public health professionals and financial and administrative positions.

"I am very, very, very proud of...the division director for health services. They did a fabulous job working with all of the detention staff and the inmates...and we never had a large outbreak, not even once throughout this entire pandemic."

"You need workforce development, right? Clinical positions are really hard to recruit, especially in rural parts of the State because a lot of people come, they'll get that experience and then they leave to the bigger markets, you know, because the pay differential, and again, honestly, the environment... recruitment for staffing-- is difficult...we can't compete with even our hospital because of the way the funding formula is based, as far as our compensation."

Interviewees described the dedication and commitment of the public health workforce during the COVID-19 pandemic. However, the public health workforce shortage was mentioned as a significant barrier to the COVID-19 response. The root causes of the workforce shortage described by interviewees included low funding for public health, funding restrictions, (e.g., categorical grant funds vs. state general fund support), lower pay for governmental public health positions, and difficulty recruiting and retaining workers in more rural areas. Interviewees noted that the shortage of public health workers impedes local health department ability to use emergency or one-time funding most effectively. Additionally, short-term emergency funds were not suitable to use to address workforce shortages, however other federal support, including the National Guard and the Federal Emergency Management Agency (FEMA), assisted with service delivery and temporarily extended the reach of the public health workforce.

3) Governance & Decision-making

The legal authority and government oversight of public health

Public Health Actions:

- Tribal self-governance was the foundation for tribal public health action.
- Local public health departments established new agreements with other government entities.
- Local public health leadership stepped up to implement and coordinate local response efforts.

Public Health Can Be Strengthened By:

- Improving emergency response coordination and communication across state and local levels.
- Investigating strategies to build relationships between local and state public health leadership and between local public health department leadership and local county boards of supervisors.
- Improving leadership training on navigating political environments.

"The County never declared an emergency, never had a mask mandate, has never required anyone to be vaccinated. None of those mitigation strategies have ever been implemented in because of the politics of the County…I feel like public health as a result of the pandemic has taken probably at least a 100-year step back."

"Collaboration and communication is key and that that was just non-existent. CDC was making decisions without any state input, the state was making decisions without any local input…so you better be able to respond on your own."

Interviewees described a complex governance and decision-making environment. Given this challenging environment, interviewees highlighted the importance of leadership. Major concerns regarding leadership during the pandemic included the lack of clear communication between top public health leadership in the state and local departments and inconsistent messaging from state leadership. Another challenge noted by interviews was the variance in local public health department response efforts between counties. The underlying causes of this variation were identified as the differences in local county political environments and differences in the support of political leaders regarding public health prevention and mitigation efforts. Additionally, interviewees noted that the legal authority of the tribes to implement their own response provided the tools necessary for tribal leaders to embrace and implement a robust public health response.

4) Inter-organizational Relationships

The number, diversity, and strength of the relationships between public health partners

Public Health Actions:

- Local health departments built on existing partnerships with non-profits and other entities to deliver essential services, implement community events and conduct outreach. For example, local fire departments and health professional students assisted with vaccine administration led by public health.
- Local health departments created new partnerships with non-profits and built new relationships with political officials, other government entities (e.g., school boards), and binationally with health agencies in Mexico.
- Community health centers were important coalition partners and acted as information and response hubs.
- Tribal and local health department relationships were able to facilitate reciprocal support in areas of need (e.g., personal protective equipment (PPE), medical equipment).

Public Health Can Be Strengthened By:

- Sustaining and diversifying relationships that preceded or were newly developed during the pandemic through coalitions and/or other structures.
- Strengthening the relationship between the state health department and local health departments by expanding relationships, communications, and the role and voice of representative organizations such as Arizona Local Health Officers Association (ALHOA).
- Increasing the diversity of partner organizations and include diverse partners in standing coalitions/ public health efforts so relationships are built prior to an emergency.

"I think our information sharing became paramount. It was important that we provide information that was timely, that was accurate, and that was culturally, and linguistically appropriate. So, we have allotted meetings, collaborative meetings. We really leaned into our nonprofits and brought them in."

"Community health centers were helpful, were really instrumental in the public health response, you know we represent all the health centers in the State. So they were very instrumental and getting out testing and vaccination, especially to hard to reach populations, the communities that they serve."

Interviewees described the critical importance of inter-organizational partnerships in the pandemic response. Existing health coalition members were critical partners in personal protective equipment (PPE) distribution and vaccine administration. These partnerships helped to identify needs and gaps as well as equity and access to services issues. Many interviewees described the development of new relationships, particularly between the local health department and other government entities. Community Health Centers were a critical partner in rural and underserved areas. Interviewees expressed a range of views on the quality of the partnership between local and state health department, with some describing the partnership as supportive and communicative and others describing being left on their own by the state health department.

"Our community health services program previously had a strong relationship with Pima County Health Department, I think, coming into the pandemic. That was a big benefit for us...the county has always, you know, they've helped us provide vaccination. They helped us with getting testing kits. They provided people to come help set up you know testing, clinics. That partnership has been really strong with the county ... it was very reciprocal, we helped get ventilators to them, because the city needed them. I just think that to me is a really good example of this reciprocal relationship."

5) Informational Resources

Access and usability of technology, internet access, access to relevant public health data

Public Health Actions:

- Local health departments built on existing partnerships and established new relationships with non-profits and other entities to facilitate information sharing. Local health departments shared their experiences and learned from one another and their partners.
- Community Health Center staff and leadership were trusted sources of information for community members.
- Information sharing infrastructure at the state level, like the Surge Line, was an important resource.
- Advocacy and non-profit organizations played an important role in disseminating public health information. The Arizona Public Health Association (AzPHA) was a trusted organization and in a unique position to provide evidence-based information to the media. Other advocacy organizations convened stakeholders and engaged with legislators to discuss important issues like vaccine access.

Public Health Can Be Strengthened By:

- Improving coordination of information and communication between local, state and federal entities.
- Improving training on communicating complex information and addressing misinformation during an emergency.
- Improving data, data access, and data sharing processes between state, local and federal entities.

"I think data always guides your decisions or helps guide the discussion...Do you know how many people with disabilities you have in your state? Do you know how many you have in your county? Do you know what kind of disabilities they have...That's the kind of data that I see that helps you make decisions about how you communicate with your community."

Interviewees described that one of the most critical components of a public health response is the ability to provide accurate and consistent messaging to the public. The information communicated at a federal, state and local level should be coordinated, timely, and supported by science. They also discussed the importance of relationships and regular coordination and information sharing meetings. They discussed the importance of data sharing, making data-based decisions, and communicating with the public about those decisions. In addition, they discussed how data can inform public health strategies to ensure equitable access between populations, e.g., are resources available for people who speak a language other than English, are there sufficient resources accessible for people with disabilities? Many interviewees expressed frustration that they felt important public health messaging was undermined by politics and policy-decisions at the local, state and federal levels.

6) Organizational Culture

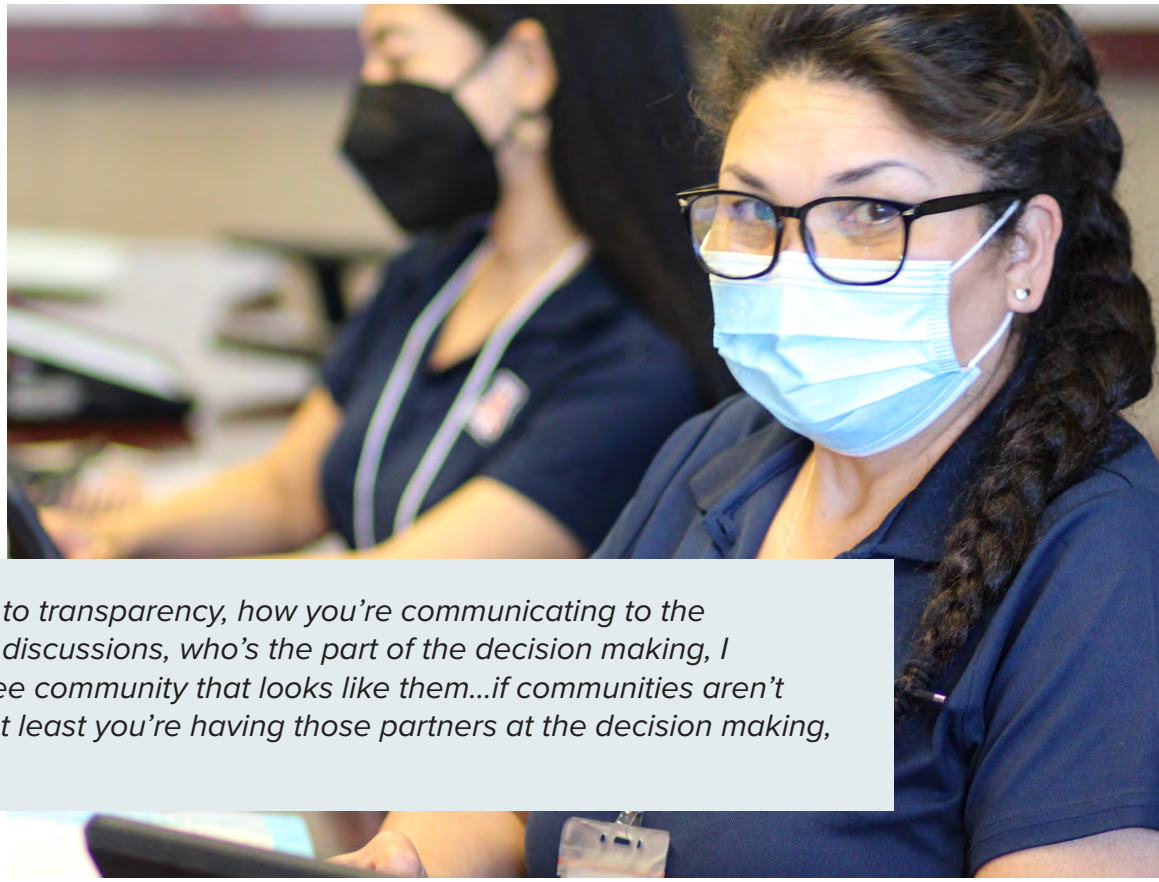
The mission, values, norms and leadership of public health organizations

Public Health Actions:

- Local leadership was dedicated to informing the public and acting on PPE distribution, vaccination and other awareness raising efforts.
- Local health department and non-profit organization staff and leadership were required to be flexible and think outside of the box. They used pandemic funds to address public health needs and improve service delivery.
- Local health departments and non-profit organizations have worked to better integrate health equity principles into their work.

Public Health Can Be Strengthened By:

- Including diverse public health stakeholders in decision-making.
- Ensuring organizational leadership reflects the diversity of the communities they serve.
- Focusing on health equity as a core principle for public health and embedding/supporting health equity through paid staff positions, leadership roles, etc.



"I think you know it's related to transparency, how you're communicating to the public. Who is leading those discussions, who's the part of the decision making, I think communities want to see community that looks like them...if communities aren't reflective of the leadership at least you're having those partners at the decision making, discussions or meetings."

Interviewees described that leadership sets the tone for the organizational approach to the emergency response. They also described how an organization's culture and structure can influence the relationship and trust with a community, the importance of leadership reflecting the communities they serve in making decisions on their behalf. They also described conflicting approaches to public health recommendations between local organizational leadership and public health leadership at the state level, and that public health leadership approach to navigating the political dynamics of the public health response also informed the organizational-level response.

"[I]n that giant cacophony of pandemic, the Black Lives matter and murder of George Floyd, and so many other black Americans, definitely pushed us to be more explicit about racial equity, and to embed equity further into our work."

7) System Boundaries & Size

The state, county, or tribal areas and communities where public health organizations operate

"So again, we have one hospital, our population is about 250,000...officially. But it doubles in the winter because we have visitors."

Public Health Actions:

- Smaller local health departments were able to adjust state recommendations based on county size, geography, and community demographics. For example, some smaller counties adopted different vaccination prioritization approaches.
- State, local, and tribal entities collaborated with each other and other health partners to implement a major vaccine distribution effort.
- Partnerships, with local community health partners, universities and community colleges, and state level resources like the Surge Line, helped counties with fewer health care resources to distribute vaccines and transfer patients during COVID-19 case surges.

Public Health Can Be Strengthened By:

- Supporting smaller local health departments and smaller counties who have fewer health care resources, greater medical underservice, and reduced resources to account for increased needs (e.g., during COVID-19 case surges).
- Structuring flexible state resources and support for counties and local health departments to account not just for population size, but also seasonal fluctuations due to work patterns or tourism, international border points and cross-border travel, geographic distance/travel time between populated areas, relationships with tribal nations, and other factors.
- Considering differences in access to meet the needs of populations who can't access large-scale urban vaccine distribution sites.

"The surge line--what it did was, it enabled our hospital to be able to transfer patients to larger communities who might have better, you know, other resources, so they would not be overwhelmed."

"Sometimes ...the little counties get nothing. It's hard for them to do much but then they're so creative. It is amazing, you know...you go out in the little counties, you talk to them, you see what they're doing, you go, 'Dang. They're creative.'"

Interviewees described that the social, political and demographic uniqueness of Arizona's counties and tribal nations were reflected in the public health response within each of those jurisdictions. Size, geography, and available resources at the local level all played a role in the pandemic response. For example, limited health care resources in smaller or more rural counties impacted their ability to cope with increasing COVID-19 hospitalizations and deaths. To meet these gaps, local health departments collaborated with the state to bring in federal emergency workers and sometimes infrastructure. Interviewees also noted that outside of the two largest counties (Maricopa and Pima) where the state coordinated large point-of-distribution (POD) vaccination events, counties were responsible for implementing vaccine distribution and relied on community partners for support. Smaller and more rural counties with limited internet, technology and childcare resources faced challenges in planning and preparing for interventions like school closures. Interviewees also noted that in addition to size and boundaries, diversity within each jurisdiction should be accounted for in increased flexibility of funding and support from state and federal partners. Needs and "what works" to address those needs vary between counties and jurisdictions. Funding is not flexible enough to address these differences.

"I think we still struggled getting services to our most remote areas...These aren't new issues. I think just COVID just exacerbated them...now we have like mobile vaccination units."

8) Physical Infrastructure

The buildings, equipment, transportation, and telecommunication tools needed for public health

Public Health Actions:

- Smaller and rural counties with fewer physical health care resources (e.g., hospital bed availability) used state resources like the Surge Line during COVID-19 case surges.
- Counties and tribes addressed challenges like geographic distance and transportation by leveraging mobile clinics, using community health workers and partnering with health centers to distribute vaccines to community members unable to travel into a central location.

Public Health Can Be Strengthened By:

- Working with other state and local stakeholders to address internet and technology access in smaller and rural communities and in more populated areas with limited access.
- Supporting flexibility to ensure access to resources like vaccines for communities who are unable to travel to urban vaccination sites.
- Funding to improve access to fundamental resources for health, water, housing, transportation..

"We had to think about how we could use technology to provide our services, and I think it's difficult in general for the nation to have access beyond you know our central locations, where we know we can have consistent broadband."

Interviewees described limitations to physical infrastructure, particularly health care resource capacity (e.g., available beds) during some phases of the pandemic (e.g., increasing hospitalizations and deaths from COVID-19). For example, one interviewee discussed renting a refrigerated truck to increase the local morgue capacity. They also described how internet and technology limitations challenged the public health workforce and their ability to provide services and how well the community could use these services (e.g., ability to implement and use telehealth services). Interviewees discussed physical infrastructure in the context of available workforce, that even if there were hospital beds available, workforce shortages still acted as a barrier to using available physical resources. Physical infrastructure (e.g., lack of running water, limited housing), particularly in tribal areas, was discussed as a challenge.

9) Macro-Context

The history, social values, trust, political leadership, and scientific knowledge that informs public health

Public Health Actions:

- Local public health leaders built trust with community partners and stakeholders through partnerships.
- Local public health leaders engaged the community by holding community meetings, setting up communication hotlines and used social media.
- Local public health leaders met regularly to share information and resources.

Public Health Can Be Strengthened By:

- Advancing a promotional campaign to show Arizonans how important public health is to daily life.
- Consistently engaging the community in public health activities to build trust.
- Improving training for public health leaders to build the skills necessary for navigating the political environment, enhancing public health communication and addressing misinformation.
- Increasing support to address burnout and supporting public health workforce resiliency.

Interviewees discussed the politicization of public health prevention measures like masking and vaccines. They said the politicization made COVID-19 prevention activities more difficult. They described that this politicization contributed to distrust that was also amplified by an "epidemic" of misinformation. Interviewees discussed how the politicization contributed to cynicism and fatigue among public health workers. Interviewees described how the pandemic experience shaped the broader political context of health and highlights the trend at the state legislative level to weaken public health authority. They described how the social conditions created by the pandemic influence health behavior, noting that misinformation and health information fatigue may contribute to low uptake of routine immunizations.

"Local leadership was doing everything that they can--working super long hours in order to build awareness to do the best they could with getting vaccines out and testing... They were basically the messenger, right...The messengers' lives were put at risk. People were forced out of their positions because of them being messengers.... I think politics kind of took hold and the public health input, the public health implications were kind of placed on the back burner."

"So I think there needs to be, you know, more of a resiliency training, because at first you take it personally, you know, and it's hard because you're working your butt off, you're not sleeping, your phone's ringing at all sorts of hours, and then people are still mad."

"We answered questions. They helped us host town meetings. My staff and I went to community meetings. We answered questions. We did Facebook Live, we did tons of stuff, but we used the trusted messengers."

Conclusion

Public health is what we do together to create the conditions for people to be healthy. “Public health promotes and protects the health of people and the communities where they live, learn, work and play” (APHA, 2023). The public health community has an opportunity to shape the future of public health by reflecting on the pandemic response. This report summarized findings about public health system capacity in Arizona to 1) better understand the status of public health system capacity and 2) assess the implications of the COVID-19 pandemic for future public health system needs.

The report identified opportunities across multiple public health system and organizational capacity domains. Our next steps as a community are to prioritize among these recommendations and identify the groups, coalitions, and organizations that can act.

1. Economic Resources	2. Workforce	3. Governance & Decision Making	4. Inter-Organizational Relationships
1a) Diversifying funding sources for local public health departments to increase flexibility to meet changing public health needs.	2a) Considering loan repayment programs for public health professionals and other solutions for supporting the public health workforce in smaller and rural jurisdictions.	3a) Improving emergency response coordination and communication across state and local levels.	4a) Sustaining and diversifying relationships that preceded or newly developed during the pandemic through coalitions or other structures.
1b) Sharing successful local funding models (e.g., special tax-districts) that can be implemented in other counties and jurisdictions.	2b) Increasing support to address burnout and support resiliency of the public health workforce.	3b) Investigating strategies to build relationships between local and state public health leadership and between local public health department leadership and local county boards of supervisors.	4b) Strengthening the relationship between the state health department and local health departments by expanding relationships, communications, and the role and voice of representative organizations such as ALHOA.
1c) Investigating other strategies to increase state and local funding for public health.	2c) Improving emergency response education and training for new and current public health workforce.	3c) Improving leadership training on navigating political environments.	4c) Increasing the diversity of partner organizations and include diverse partners in standing coalitions/public health efforts so relationships are built prior to an emergency.
	2d) Considering policy changes to facilitate hiring during a public health emergency, including public health professionals and financial and administrative positions.		

5. Informational Resources	6. Organizational Culture	7. System Boundaries and Size	8. Physical Infrastructure
5a) Improving coordination of information and communication between local, state, and federal entities.	6a) Working towards sustained inclusion of diverse public health stakeholders at the decision-making table.	7a) Supporting smaller local health departments and smaller counties who have fewer health care resources, greater medical underservice, and reduced capacity to account for increased needs (e.g., during COVID-19 case surges).	8a) Working with other state and local stakeholders to address internet and technology access in smaller and rural communities and in more populated areas with limited access.
5b) Improving training on communicating complex information and addressing misinformation during an emergency.	6b) Ensuring organizational leadership is reflective of the communities the organization serves.	7b) Structuring state level resources and support for counties and local health departments in a flexible manner that accounts not just for population size, but also seasonal fluctuations in size from work patterns or tourism, international border points and cross-border travel, geographic distance/travel time between populated areas, relationships with tribal nations, and other factors.	8b) Supporting flexibility to ensure access to resources like vaccines for communities who are unable to travel to large vaccination distribution sites.
5c) Improving data, data access, and data sharing processes between state, local, and federal entities.	6c) Continuing to focus on health equity as a core principle for public health and embedding/supporting health equity through paid staff positions, leadership roles etc.	7c) Considering differences in accessibility in larger jurisdictions and how to meet the needs of populations who can't access large-scale vaccine distribution sites.	8c) Supporting funding to improve access to the fundamental resources for health, water, housing, etc.

9. Macro-Context

9a) Advancing a public health promotional campaign to show the public how important public health is to daily life.

9b) Consistently engaging the community in public health activities to build trust.

9c) Improving training for public health leaders to improve skills related to navigating the political environment, public communication, and addressing misinformation.

9d) Increasing support to address burnout and support the resiliency of the public health workforce.

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Appendix A. County Social Characteristics

Table A1. Age, Race, and Ethnicity

County	% Pop. Under 5	% Pop. 18-65	% Pop > 65	% Female	% American Indian or Alaska Native	% Asian	% American Indian or Alaska Native Alone	% Black or African American	% White Not Hispanic	% Hispanic
Apache	6.3	77.4	16.3	50.4	74.5	0.4	74.5	0.6	22.6	7.1
Cochise	5.3	71	23.7	48.8	1.9	2.2	1.9	4.6	87.3	35.9
Coconino	4.9	81	14.1	50.6	27.5	2.1	27.5	1.5	65.5	14.9
Gila	4.6	65.5	29.9	49.9	18.3	0.9	18.3	0.8	77.8	19.2
Graham	6.6	79.3	14.1	46.2	13.1	0.8	13.1	1.9	81.9	33.8
Greenlee	7.1	78.4	14.5	47.8	4.6	0.9	4.6	1.9	89.7	49
La Paz	4.4	45.2	40.8	48.5	16.4	1.2	16.4	1.3	75.4	28.6
Maricopa	5.7	78.5	15.8	50.3	2.9	4.8	2.9	6.7	82.0	32.0
Mohave	4.1	64.2	31.7	49.2	3.1	1.4	3.1	1.4	91.1	17.7
Navajo	6.1	74.6	19.3	49.6	44.6	0.7	44.6	1.1	51.1	21.1
Pima	5.0	74.3	20.7	50.5	4.5	3.3	4.5	4.4	84.3	38.5
Pinal	5.4	73.6	21	48	6.5	2	6.5	5.8	82.0	31.4
Santa Cruz	6.6	74.2	19.2	51.4	1.5	0.9	1.5	1.1	95.3	82.7
Yavapai	3.8	62.5	33.7	50.8	2.2	1.3	2.2	1	92.9	15.3
Yuma	6.9	73.5	19.6	48.2	2.5	1.5	2.5	2.7	90.9	65.5

Source: U.S. Census American Community Survey, 2020, 5-yr Estimates

Table A2. Population, Language, Income & Technology

County	% Veterans	% Foreign Born Persons	Average Persons Per Household	% Language Spoken at home other than English	% with a disability < 65	% persons without health insurance > 65	Median Household Income	County % persons in poverty	% households with a computer	% households with broadband internet access
Apache	3,206	1.4	3.28	54.3	8.3	18.6	$33,967	32.4	60.6	40.7
Cochise	18,520	10.5	2.34	27.6	11.8	12.8	$51,505	14.6	90.7	83
Coconino	6,784	4.3	2.6	23.9	9.5	15.7	$59,000	17.2	92.1	79.4
Gila	5,385	3.3	2.34	16.4	13.2	13.9	$46,907	16.7	85.9	72.1
Graham	1771	2.3	3.06	21.8	9	14.4	$55,693	15.2	89.8	79
Greenlee	536	2.6	2.84	18.1	8.3	10.7	$66,368	8.4	94.8	85.6
La Paz	2835	10.1	2.1	19.5	12.9	19.8	$34,956	20.8	85.5	63.7
Maricopa	253,512	14.7	2.73	26.6	7.8	13.3	$67,799	11.6	94.8	88.7
Mohave	2,505	6.2	2.29	10.6	15.6	14.5	$47,686	15.3	90	82.5
Navajo	7,254	2.6	2.95	36.4	13.3	16.4	$43,140	23.3	81	65.3
Pima	85,429	12.5	2.45	27.4	10.4	12.2	$55,023	14.9	93.7	87.9
Pinal	37,119	9	2.84	20.9	11	12.9	$60,968	11.1	93.1	87.3
Santa Cruz	1,609	33.2	2.88	78.8	8.3	19.2	$41,424	16.8	86.8	78.3
Yavapai	26,676	6.2	2.24	10.4	12	13.8	$53,329	10.8	92	84.9
Yuma	15,553	26.7	2.76	54.1	7.4	17.4	$48,790	15.2	88.8	81.2

Source: U.S. Census American Community Survey, 2020, 5-yr Estimates