



November 2023

# PUBLIC HEALTH PREPAREDNESS

## Building and Maintaining Infrastructure beyond the COVID-19 Pandemic

## Why GAO Did This Study

CDC is the primary federal agency responsible for helping strengthen jurisdictions' public health infrastructure to aid emergency preparedness and response capabilities.

The CARES Act includes a provision for GAO to report on the federal response to the COVID-19 pandemic. This report (1) describes CDC awards to support jurisdictions' public health infrastructure for preparedness, and (2) examines challenges selected jurisdictions and stakeholder groups identified to building and maintaining such infrastructure.

GAO analyzed CDC's data on awards provided to jurisdictions using annual appropriations and certain supplemental appropriations made in response to the pandemic. Specifically, GAO analyzed annual award data from fiscal year 2018 (the year GAO last reported on award data) through 2022 (most recent data available at the time of GAO's review). GAO also analyzed data on awards using appropriations from the most recently enacted COVID-19 relief law—the American Rescue Plan Act of 2021.

GAO interviewed officials from a nongeneralizable sample of 12 jurisdictions—selected based on governance structure, funding received, and rurality. GAO also interviewed representatives from 10 stakeholder groups representing public health professionals and policy organizations, among others.

GAO provided a draft of this report to HHS for review and comment. HHS provided technical comments, which GAO incorporated as appropriate.

View [GAO-24-105891](#). For more information, contact Mary Denigan-Macauley at (202) 512-7114 or [DeniganMacauleyM@gao.gov](mailto:DeniganMacauleyM@gao.gov).

## PUBLIC HEALTH PREPAREDNESS

### Building and Maintaining Infrastructure beyond the COVID-19 Pandemic

## What GAO Found

The COVID-19 pandemic demonstrated the importance of a strong public health infrastructure to prepare for and respond to threats, including a skilled workforce, and physical infrastructure, such as laboratories. The Department of Health and Human Services' (HHS) Centers for Disease Control and Prevention (CDC) annually supports public health infrastructure in jurisdictions—states, localities, and territories—through two key preparedness programs: (1) Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases and (2) Public Health Emergency Preparedness. The programs' award amounts to jurisdictions from annual appropriations totaled about \$845 million on average per year from fiscal year 2019 through 2022. Separately, in fiscal years 2021 through 2023, using supplemental appropriations from the most recent COVID-19 relief law, CDC also provided jurisdictions with about \$7.1 billion in awards to enhance infrastructure. Of this, \$3.5 billion can be used over 5 years for a new longer-term infrastructure investment to help with future threats. Jurisdiction officials GAO spoke with cited important benefits of awards from both annual and supplemental appropriations, such as supporting epidemiology staff and purchasing supplies for laboratories.

Selected jurisdictions and stakeholder groups identified several challenges building and maintaining infrastructure to be sufficiently prepared for public health threats. These include challenges in the following areas:

- **Temporary public health funding.** Officials from nearly all jurisdictions and stakeholder groups expressed concern about the pattern of increased federal funding for an emergency response, followed by a decrease in funding after that emergency ends. This pattern can make it hard for jurisdictions to invest in long-term sustainable efforts to prepare for future public health threats.
- **Varying levels of jurisdictional funding.** Jurisdictions have primary responsibility to prepare for and respond to threats. However, there is variation in the amount of funding jurisdictions provide for preparedness and response. This affects the extent to which jurisdictions may need to rely on CDC awards for such purposes, according to two stakeholder groups.
- **Building a public health workforce.** Jurisdictions' officials noted that because awards using COVID-19 supplemental appropriations were temporary, workforce increases were also largely temporary. Even for the new award that can be used over 5 years, officials from eight jurisdictions noted concerns about permanently increasing their workforces because of uncertainty of longer-term funding. Officials from six jurisdictions and five stakeholder groups also expressed concerns about the availability of a sufficient public health workforce, due to burnout and other factors.

Jurisdictions are key partners in preparing for and responding to public health threats. The infrastructure challenges they face can impact how quickly and effectively CDC and other response partners are able to contain these threats, as was demonstrated during the COVID-19 pandemic. According to CDC officials, increased and ongoing investments in public health infrastructure are vital to the response to contain threats on a national level.

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## Abbreviations

ARPA	American Rescue Plan Act of 2021
CDC	Centers for Disease Control and Prevention
ELC	Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases
HHS	Department of Health and Human Services
PHEP	Public Health Emergency Preparedness

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November 7, 2023

### Congressional Committees

The COVID-19 pandemic demonstrated the importance of a strong public health infrastructure to prepare for and respond to threats and emergencies, such as infectious diseases and extreme weather events. Public health infrastructure includes the people, services, and systems needed to promote and protect health, such as epidemiologists and laboratory services, according to the Department of Health and Human Services' (HHS) Centers for Disease Control and Prevention (CDC). State, local, and territorial governments (referred to in this report as jurisdictions) are primarily responsible for leading the preparation for and response to public health threats in their jurisdictions. When their infrastructure capabilities are overwhelmed during an emergency response, these jurisdictions can become reliant on support from the federal government.

CDC is the primary federal agency responsible for helping strengthen jurisdictions' public health infrastructure to aid emergency preparedness and response.<sup>1</sup> In May 2018, we reported that annual CDC public health preparedness award amounts to jurisdictions had generally decreased over the years.<sup>2</sup> We reported then that, according to CDC officials, such decreases limited jurisdictional preparedness capacity—such as the ability to maintain preparedness staff—which, in turn, increased the

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<sup>1</sup>CDC strengthens such infrastructure by awarding funds to jurisdictions' health departments, among other support. The Administration for Strategic Preparedness and Response within HHS also provides awards to jurisdictions' health departments through its Hospital Preparedness Program. The Hospital Preparedness Program funds and promotes the development of health care coalitions—groups of health care and response organizations in defined geographic locations that coordinate emergency preparedness and response activities for their members. For our recent work on this program and its recipients' experiences during the COVID-19 pandemic see GAO, *Public Health Preparedness: COVID-19 Medical Surge Experiences and Related HHS Efforts*, [GAO-22-105461](#) (Washington, D.C.: Aug. 17, 2022).

Other federal agencies also make awards to jurisdictions to help communities prevent, prepare for, and mitigate the effects of; respond to; and recover from emergencies. However, these awards may not go directly to jurisdictions' health departments, like the CDC awards do. For example, the Federal Emergency Management Agency, a component of the Department of Homeland Security, provides such awards to jurisdictions' emergency management agencies, according to its website.

<sup>2</sup>GAO, *Infectious Disease Threats: Funding and Performance of Key Preparedness and Capacity-Building Programs*, [GAO-18-362](#) (Washington, D.C.: May 24, 2018).

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importance of supplemental appropriations to respond to public health emergencies. HHS received such supplemental appropriations to respond to the COVID-19 pandemic in 2020 and 2021, most recently from the American Rescue Plan Act of 2021 (ARPA).<sup>3</sup> HHS previously received supplemental appropriations to respond to the Zika outbreak in 2016 and the H1N1 influenza pandemic in 2009, as well as for other public health emergencies.<sup>4</sup>

The CARES Act includes a provision for us to report on the federal response to the COVID-19 pandemic.<sup>5</sup> This report is also part of our body of work on HHS's leadership and coordination of public health emergencies, which we identified as an area of high risk. We added this topic to our High-Risk List in 2022, citing the critical need for the nation to be prepared for, and effectively respond to, future public health threats and emergencies.<sup>6</sup>

This report (1) describes awards CDC provided to jurisdictions' health departments to build and maintain infrastructure for public health threats

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<sup>3</sup>A supplemental appropriation is an act appropriating funds in addition to those already provided in an annual appropriation act. Supplemental appropriations provide additional budget authority usually in cases where the need for funds is considered too urgent to be postponed until enactment of the next regular annual appropriation bill. For COVID-19 supplemental appropriations to HHS, see the American Rescue Plan Act of 2021, Pub. L. No. 117-2, 135 Stat. 4; Consolidated Appropriations Act, 2021, Pub. L. No. 116-260, div. M and N, 134 Stat. 1182 (2020); Paycheck Protection Program and Health Care Enhancement Act, Pub. L. No. 116-139, 134 Stat. 620 (2020); CARES Act, Pub. L. No. 116-136, 134 Stat. 281 (2020); Families First Coronavirus Response Act, Pub. L. No. 116-127, 134 Stat. 178 (2020); and the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020, Pub. L. No. 116-123, 134 Stat. 146.

<sup>4</sup>For Zika supplemental appropriations to HHS, see the Zika Response and Preparedness Act, Pub. L. No. 114-223, div. B tit. I, 130 Stat. 857, 901. For H1N1 pandemic influenza supplemental appropriations to HHS, see the Supplemental Appropriations Act, 2009, Pub. L. No. 111-32, tit. VIII, 123 Stat. 1859, 1884.

<sup>5</sup>Specifically, the act requires us to monitor and oversee the federal government's efforts to prepare for, respond to, and recover from the pandemic. Pub. L. No. 116-136, § 19010(b), 134 Stat. 281, 580 (2020). The American Rescue Plan Act of 2021 also includes a provision for us to conduct oversight of the COVID-19 response. Pub. L. No. 117-2, § 4002, 135 Stat. 4, 78. All of GAO's reports related to the COVID-19 pandemic are available on GAO's website at <https://www.gao.gov/coronavirus>.

<sup>6</sup>GAO, *High-Risk Series: Efforts Made to Achieve Progress Need to Be Maintained and Expanded to Fully Address All Areas*, [GAO-23-106203](#) (Washington, D.C.: Apr. 20, 2023) and the *New High-Risk Designation: HHS and Public Health Emergencies* appendix in *COVID-19: Significant Improvements Are Needed for Overseeing Relief Funds and Leading Responses to Public Health Emergencies*, [GAO-22-105291](#) (Washington, D.C.: Jan. 27, 2022).

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and emergencies using annual appropriations, as well as selected COVID-19 supplemental appropriations, and (2) examines challenges selected jurisdictions and stakeholder groups identified to building and maintaining such infrastructure.

Public health infrastructure is broad. For the purposes of this report, we focused on infrastructure needed to prepare for and respond to public health threats and emergencies. We determined that this includes public health workforce recruitment, hiring, and training; physical infrastructure, such as laboratories and equipment; and other resources. Infrastructure also includes data systems. We excluded the building of such systems from our review as we have recently reported on HHS efforts to support jurisdictions' data systems.<sup>7</sup> However, we included the workforce needed to support such systems.

To describe awards CDC provided to jurisdictions' health departments to build and maintain infrastructure for public health threats and emergencies, we analyzed CDC data on the amounts of awards that CDC made to these entities from annual appropriations through two key preparedness and capacity-building programs. We analyzed these data from fiscal year 2018 (the year we last reported on these funds) through 2022 (the most recent data available at the time of our review). Tribes are not direct recipients of awards through these annual preparedness programs. Therefore, we excluded Tribes from our review. We also analyzed data on awards CDC provided to jurisdictions' health departments using supplemental appropriations provided by ARPA.<sup>8</sup>

To assess the reliability of the annual and ARPA supplemental award data, we reviewed agency documentation, such as reports provided by

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<sup>7</sup>See, for example, GAO, *COVID-19: Pandemic Lessons Highlight Need for Public Health Situational Awareness Network*, [GAO-22-104600](#) (Washington, D.C.: June 23, 2022) and the *Public Health Data Collection and Standardization* enclosure in *COVID-19: Current and Future Federal Preparedness Requires Fixes to Improve Health Data and Address Improper Payments*, [GAO-22-105397](#) (Washington, D.C.: Apr. 27, 2022).

<sup>8</sup>ARPA is the most recent of the six enacted COVID-19 relief laws providing supplemental appropriations to respond to the COVID-19 pandemic. ARPA and the CARES Act included the largest amount of funding appropriated for state, local, territorial, and tribal governments. The CARES Act was the third law enacted and therefore likely to be used for immediate response needs. We chose to examine awards made using ARPA supplemental funding in this review because, unlike awards provided with prior COVID-19 supplemental appropriations, some ARPA supplemental funding can explicitly be used for activities beyond the COVID-19 pandemic. We included awards CDC provided to health departments for infrastructure using ARPA supplemental appropriations; we excluded awards for other jurisdictional entities, such as schools and correctional facilities.



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jurisdictions, and compared the CDC data to the award amounts in this documentation. We interviewed knowledgeable CDC officials about their data systems and data validation processes. Lastly, we performed checks of the data for consistency and completeness. Based on these steps, we determined that the data for CDC annual and ARPA supplemental awards included in our review were sufficiently reliable for our reporting purposes. We also reviewed documents, such as CDC funding announcements and agency guidance, to determine allowable uses of the funding and other funding requirements, such as the allowable time periods to use the funding.

To examine challenges with building and maintaining infrastructure, we reviewed documentation from and interviewed a nongeneralizable sample of officials from 12 jurisdictions and 10 stakeholder groups:

**12 jurisdictions.** We selected four states, six localities, and two territories to obtain variation in the following characteristics: health department governance structure (i.e., the relationship between state health agencies and local health departments), source of funding for localities (state vs. directly from CDC), and percent of rural population, as calculated by the U.S. Census Bureau. We selected and interviewed health department officials for the following 12 jurisdictions: California; Maine; Maryland; South Carolina; Los Angeles County, Calif.; San Bernardino, Calif.; San Francisco, Calif.; Portland, Maine; Baltimore, Md.; Garrett County, Md.; Puerto Rico; and the U.S. Virgin Islands.<sup>9</sup> To characterize jurisdictions' views throughout this report, we defined modifiers to quantify jurisdictions' views. For the purposes of this report, "nearly all" represents nine to 11 jurisdictions, "many" represents six to eight jurisdictions, and "some" represents three to five jurisdictions.

**10 stakeholder groups.** We selected four stakeholder groups that represent all state, local, or territorial health departments or laboratories; one stakeholder group that represents public health professionals; three think tanks that study public health and preparedness and produced related reports; one group of academic researchers; and CDC's main

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<sup>9</sup>We also interviewed officials from Penquis-District 6 in Maine; we counted these responses as responses from the state because decisions are made at the state level and officials report to the state. We did not interview officials from localities in South Carolina, Puerto Rico, and the U.S. Virgin Islands as these jurisdictions do not have separate local health departments.

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philanthropic partner organization.<sup>10</sup> To characterize stakeholder groups' views throughout the report, we defined modifiers to quantify their views. For the purposes of this report, "nearly all" represents seven to nine groups, "many" represents five to six groups, and "some" represents three to four groups. We have also drawn on reports recently published by several of the stakeholder groups that we interviewed. In doing so, we took account of their methodological strengths and limitations.

To help ensure the accuracy of the facts and statements presented from our interviews, we provided relevant excerpts of the draft report to the jurisdictions and stakeholder groups we interviewed. We incorporated, as appropriate, their technical comments. The views of the jurisdictions and stakeholder groups interviewed are not generalizable beyond those entities.

We also reviewed CDC documentation and interviewed agency officials to identify steps CDC has taken to support jurisdictions' building and maintenance of infrastructure. We assessed CDC's steps against CDC's goals and priorities to develop and strengthen jurisdictions' public health capabilities, including those related to preparedness and response.

We conducted this performance audit from March 2022 to November 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

CDC supports jurisdictions' public health infrastructure for preparedness activities by providing annual awards through two key preparedness and capacity-building programs: (1) Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) and (2) Public Health Emergency Preparedness (PHEP) cooperative agreements,

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<sup>10</sup>We interviewed representatives from the following stakeholder groups: Association of State and Territorial Health Officials, National Association of County and City Health Officials, Association of Public Health Laboratories, Council of State and Territorial Epidemiologists, American Public Health Association, Trust for America's Health, Commonwealth Fund, de Beaumont Foundation, Columbia University Mailman School of Public Health researchers, and the CDC Foundation. The CDC Foundation is an independent, private nonprofit corporation established under the Public Health Service Act to support and carry out activities for the prevention and control of diseases, disorders, injuries, and disabilities, and for the promotion of public health. See 42 U.S.C. § 280e-11.

as shown in table 1.<sup>11</sup> Preparedness activities are intended to build capabilities that are critical to be able to effectively respond to a public health threat or emergency.

**Table 1: CDC Annual Awards to States, Localities, and Territories for Public Health Infrastructure**

Program	Purpose	Jurisdictions funded as of fiscal year 2022	Examples of allowable uses
Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases	Supports prevention and control of infectious diseases. Funding is generally either (1) cross-cutting funding that can be used for a range of needs related to epidemiology, laboratory, and health information systems, leadership, and management, or (2) funding that must be used for specific diseases, such as influenza and vector-borne diseases (e.g., West Nile virus, which is transmitted by mosquitoes).	64 (50 states, 6 localities, 8 U.S. territories and freely associated states)	Staff salaries, laboratory operations, purchase equipment and supplies
Public Health Emergency Preparedness	Supports preparedness for “all-hazard” public health threats, including infectious diseases, extreme weather events, or terrorist threats.	62 (50 states, 4 localities, 8 U.S. territories and freely associated states)	Staff salaries, maintenance of preparedness plans, training exercises, purchase equipment and supplies

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) documentation. | GAO-24-105891

Notes: The Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases program funds the following six localities: Chicago, Ill.; Houston, Tex.; Los Angeles County, Calif.; New York City, N.Y.; Philadelphia, Pa.; and Washington, D.C.

The Public Health Emergency Preparedness program funds the following four localities: Chicago, Ill.; Los Angeles County, Calif.; New York City, N.Y.; and Washington, D.C.

The eight territories and freely associated states include American Samoa, Federated States of Micronesia, Guam, Marshall Islands, Northern Mariana Islands, Palau, Puerto Rico, and the U.S. Virgin Islands.

**ELC.** ELC was established in 1995 with a goal of supporting capacity building to combat domestic infectious disease threats. According to CDC, jurisdictions’ health departments receive awards through ELC to detect, prevent, and respond to the emerging threats posed by infectious diseases.<sup>12</sup> These awards support three core areas: (1) surveillance, detection, and response; (2) prevention and intervention; and (3) communications, coordination, and partnerships. Amounts awarded to jurisdictions’ health departments vary depending on the amounts that the

<sup>11</sup>These two programs are cooperative agreements. A cooperative agreement is a federal award to a non-federal entity to carry out a public purpose. Unlike grants, cooperative agreements generally provide for substantial involvement between the federal awarding agency and the non-federal entity in carrying out the activity contemplated by the award.

<sup>12</sup>For more information, see <https://www.cdc.gov/elc/elc-overview.html>, accessed July 6, 2023.

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jurisdictions request and availability of funding, among other factors. ELC is made up of different programs and projects, such as for influenza, congenital syphilis, and vector-borne diseases. Jurisdictions can apply for funding from all or some of the programs and projects based on the needs of the jurisdiction. ELC does not include a requirement for jurisdictions to match a percentage of funding provided by the federal government, though CDC strongly encourages jurisdictions to leverage other resources to promote sustainability.

**PHEP.** PHEP was established in 2002, in the aftermath of 9/11, when the need for a public health emergency infrastructure became apparent, according to CDC.<sup>13</sup> The goal of the program is to prepare the nation for all public health threats, including infectious diseases, extreme weather events, or terrorist threats. Awards provided to jurisdictions' health departments through PHEP include three components: (1) base funding adjusted to account for the population of the recipient jurisdiction, (2) funding that supports chemical laboratories, and (3) Cities Readiness Initiative funding that supports preparedness in the nation's largest localities—at least one in each state.<sup>14</sup> Jurisdictions apply for PHEP funding. PHEP award amounts are determined based on a formula and include a 10 percent matching requirement; that is, for every \$10 received in federal funds, the recipient jurisdiction must make \$1 available for the same purpose, with a few exceptions.<sup>15</sup>

In addition to PHEP and ELC, CDC also supports jurisdictions' infrastructure by

- awarding funds through the Preventive Health and Health Services Block Grant Program, which allows recipients to address their own unique public health needs and challenges, one of which could be supporting infrastructure to prepare for public health threats; and

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<sup>13</sup>For more information, see [https://www.cdc.gov/orr/readiness/public\\_health\\_adapts.htm](https://www.cdc.gov/orr/readiness/public_health_adapts.htm), accessed July 6, 2023.

<sup>14</sup>Through the Cities Readiness Initiative, CDC provides awards to support all-hazards medical countermeasure distribution and dispensing planning and response capabilities. CDC provided awards to 21 cities through the Cities Readiness Initiative in 2004, when the initiative began, and has since expanded the program to provide awards to 72 localities.

<sup>15</sup>These matching requirements do not apply to Chicago, Los Angeles County, or Washington, D.C. Additionally, any matching requirement of less than \$200,000 is waived for American Samoa, Guam, U.S. Virgin Islands, and Northern Mariana Islands.

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- embedding CDC staff into jurisdictions' health departments, among other efforts.

See appendix I for more information on the Preventive Health and Health Services Block Grant Program, including jurisdictions that reported using it for public health infrastructure, as well as other CDC efforts.

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## Jurisdictions Received about \$845 Million Annually, Plus \$7.1 Billion in Response to the COVID-19 Pandemic, for Public Health Infrastructure

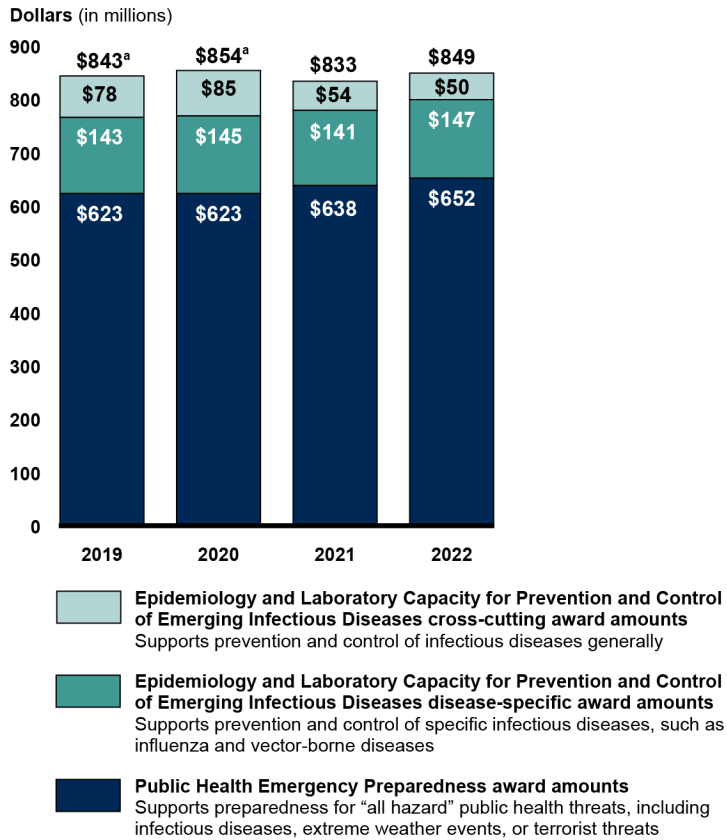
Public Health Infrastructure Awards to Jurisdictions from Annual Appropriations Remained Fairly Constant at about \$845 Million from Fiscal Year 2019 through 2022

CDC's award amounts to jurisdictions from annual appropriations for infrastructure to prepare for public health threats has remained about the same in recent years. Specifically, CDC's award amounts to jurisdictions through PHEP and ELC from annual appropriations have been about \$845 million per year on average from fiscal year 2019 through 2022 (see fig. 1).<sup>16</sup> During that time, PHEP award amounts rose modestly and ELC award amounts decreased somewhat.

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<sup>16</sup>CDC has also used PHEP and ELC as mechanisms to make awards to jurisdictions using supplemental appropriations to respond to specific infectious disease threats. For example, PHEP has been used to provide awards to jurisdictions to help respond to the Zika outbreak, Ebola, and H1N1 influenza pandemic, and ELC has been used in this manner to respond to the COVID-19 pandemic, the Zika outbreak, Ebola, and other events, such as hurricanes.

**Figure 1: CDC Awards to Jurisdictions for Infrastructure for Public Health Threats from Annual Appropriations, Fiscal Years 2019-2022**



Source: GAO analysis of Centers for Disease Control and Prevention (CDC) information. | GAO-24-105891

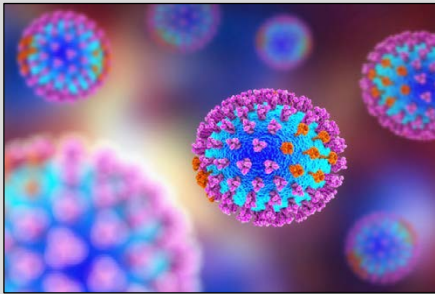
Note: CDC also has used the Public Health Emergency Preparedness (PHEP) and Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) programs to make awards to jurisdictions using supplemental appropriations to respond to specific infectious disease threats. For example, PHEP has been used to provide awards to jurisdictions to help respond to the Zika outbreak, Ebola, and the H1N1 influenza pandemic, and ELC has been used in this manner to respond to the COVID-19 pandemic, the Zika outbreak, Ebola, and other events, such as hurricanes. This figure does not include awards made from supplemental appropriations. It is specific to awards CDC provided to jurisdictions through PHEP and ELC from annual appropriations. Award amounts are rounded and presented in nominal dollars; that is, amounts have not been adjusted for inflation.

<sup>a</sup>Award amounts for fiscal years 2019 and 2020 do not add to total due to rounding.

**Awards provided through PHEP from annual appropriations.** PHEP accounted for 75 percent of CDC annual preparedness award amounts to jurisdictions in the period of our review, ranging from about \$623 million to \$652 million annually. PHEP award amounts to jurisdictions generally remained the same from fiscal years 2011 to 2020, with modest increases

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**Disease-Specific Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) Awards**



Funding for the ELC program comes from many different centers within the Centers for Disease Control and Prevention (CDC) as part of the annual appropriations process, according to CDC officials. Many of these funds were appropriated for specific infectious diseases. Therefore, jurisdictions may be limited in their use of these awards to activities related to specific disease types, such as influenza or vector-borne diseases, depending on the particular appropriation used to fund the award.

Source: GAO summary of CDC information (information); Dr\_Microbe/stock.adobe.com (photo). | GAO-24-105891

in both fiscal years 2021 and 2022.<sup>17</sup> In those 2 years, CDC provided increased funding for the Cities Readiness Initiative portion of the PHEP program to support preparedness in the nation's largest localities.

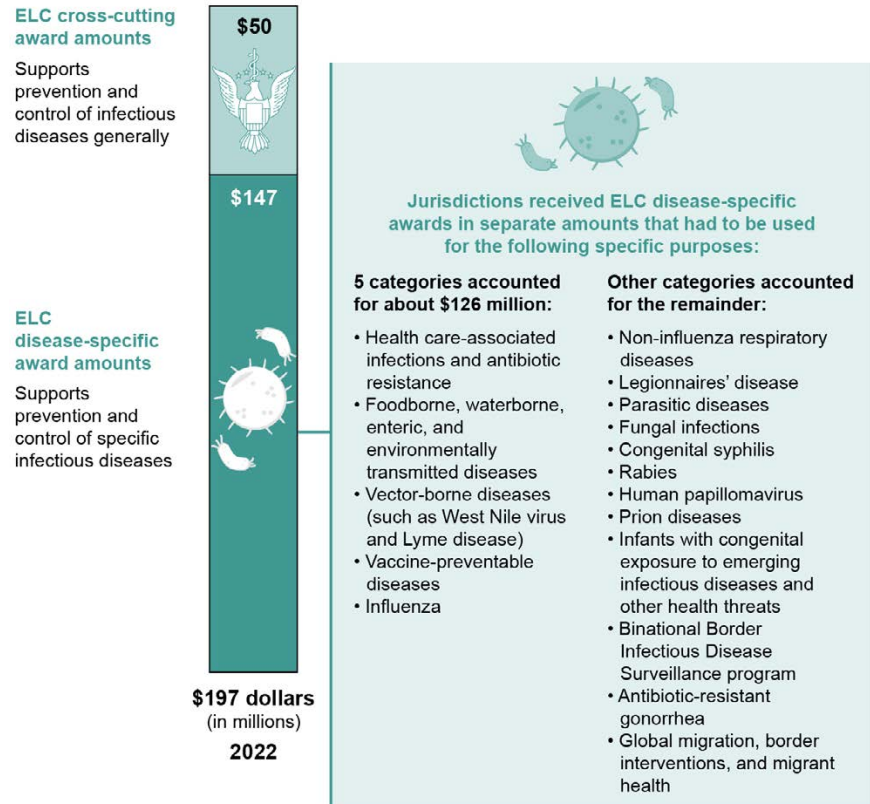
**Awards provided through ELC from annual appropriations.** ELC accounted for the remainder of CDC annual preparedness award amounts to jurisdictions, ranging from about \$195 million to \$230 million annually. ELC funding can be broken into two components: (1) disease-specific and (2) cross-cutting—that is, funding that is not tied to a particular disease.

Most of the awards that jurisdictions received through ELC were disease-specific, ranging from 63 to 75 percent of the award amounts each year. The ELC disease-specific awards are divided into separate amounts that must be used for a wide range of targeted purposes (see fig. 2). None of these awards can be used for general, cross-cutting preparedness efforts. For example, ELC awarded funds for influenza cannot be used to hire staff for disease-agnostic preparedness activities.

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<sup>17</sup>We previously reported that annual awards provided through PHEP had decreased since fiscal year 2002, from more than \$900 million, and remained relatively stable from fiscal year 2011 to 2017, when awards largely ranged from about \$610 million to about \$620 million. See [GAO-18-362](#).

**Figure 2: CDC Awards to Jurisdictions through the ELC Program from Annual Appropriations, FY 2022**



Source: GAO analysis of Centers for Disease Control and Prevention (CDC) Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) information (information); GAO (icons). | GAO-24-105891

While disease-specific award amounts largely remained stable from fiscal year 2019 through 2022, amounts for the cross-cutting portion of the ELC program decreased in fiscal years 2021 and 2022. ELC award amounts from annual appropriations will vary from year to year due to CDC appropriations and new initiatives, jurisdictions' funding requests, and other factors, according to CDC.<sup>18</sup> For example, in fiscal year 2020, CDC provided nearly \$23 million in cross-cutting awards through ELC as part of the agency's efforts to modernize public health data. In fiscal years

<sup>18</sup>ELC award amounts also vary based on whether jurisdictions are able to fully utilize prior-year funds, according to CDC officials. For example, in fiscal year 2018, ELC award amounts from annual appropriations were \$160 million, substantially less than 2019 ELC award amounts, as jurisdictions were allowed to use unexpended funds from the year before.



2021 and 2022, ELC award amounts were about \$200 million each year, similar to annual ELC award amounts in fiscal years 2016 and 2017.<sup>19</sup>

Officials we spoke with from selected jurisdictions reported using awards through PHEP and ELC from annual appropriations for staff salaries, purchasing supplies, training, and other infrastructure building and maintenance purposes (see table 2).

**Table 2: Selected Jurisdictions’ Reported Uses of CDC Awards for Infrastructure for Public Health Threats from Annual Appropriations**

Program	Examples of uses for infrastructure according to jurisdiction officials
Public Health Emergency Preparedness (PHEP)	<p><b>California.</b> The state used 30 percent of its PHEP award amount for purposes such as helping to support the state’s emergency operations center; 19 public health laboratories, including a disease surveillance system and several staff working on preparedness; and staff training on state hazard mitigation. The state distributed the remaining 70 percent of its PHEP award amount each year to local public health departments for preparedness efforts within their jurisdiction. California was awarded about \$44.4 million through PHEP in fiscal year 2022.</p> <p><b>Maine.</b> Awards through PHEP helped support the state’s public health laboratory, including laboratory staff, supplies, and equipment. PHEP awards also supported state epidemiology staff and surveillance systems. The awarded funds were also used to maintain the state’s warehouse space for receiving, staging, and storing emergency response supplies. Maine was awarded about \$5.5 million through PHEP in fiscal year 2022.</p> <p><b>San Bernardino County (California).</b> Awards through PHEP—allocated by the state—fully funded the salaries of all but one of the public health preparedness and response program staff. The awarded funds also helped fund training, medical and laboratory supplies, and other items. County officials reported receiving about \$2.3 million of PHEP funding awarded to the state in fiscal year 2022.</p>
Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC)	<p><b>Maryland.</b> Awards through ELC helped fund staff—such as epidemiologists who investigate outbreaks—laboratory equipment, and health information technology for surveillance. Maryland was awarded about \$5.1 million through ELC in fiscal year 2022.</p> <p><b>Los Angeles County (California).</b> Awards through ELC helped support the county’s public health laboratory, including to fund several staff, purchase testing supplies, and maintain equipment. The awarded funds were also used to support core data systems, detect and manage vector-borne disease and food-borne illness outbreaks, and other efforts. The county was awarded about \$3.8 million through ELC in fiscal year 2022.</p> <p><b>U.S. Virgin Islands.</b> Awards through ELC fully funded the salaries of the epidemiology staff and public health laboratory staff. The awarded funds were also used for a database that supports reporting cases of infectious diseases and for laboratory equipment and supplies. The territory was awarded about \$1.2 million through ELC in fiscal year 2022.</p>

Source: GAO analysis of information from Centers for Disease Control and Prevention (CDC) and interviews with selected jurisdictions. | GAO-24-105891

Note: CDC also has used the PHEP and ELC programs to make awards to jurisdictions using supplemental appropriations to respond to specific infectious disease threats. For example, PHEP has been used to provide awards to jurisdictions to help respond to the Zika outbreak, Ebola, and the H1N1 pandemic, and ELC has been used in this manner to respond to the COVID-19 pandemic, the Zika outbreak, Ebola, and other events, such as hurricanes. This table does not include information on use of awards made from supplemental appropriations. It is specific to awards CDC provided to jurisdictions through PHEP and ELC from annual appropriations.

<sup>19</sup>We previously reported that ELC award amounts to jurisdictions from annual appropriations had increased since fiscal year 2002, from about \$100 million that year, and were about \$200 million in fiscal years 2016 and 2017. See [GAO-18-362](#).

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See appendix II for awards to jurisdictions through PHEP and ELC from fiscal year 2019 through fiscal year 2022 using annual appropriations. See appendix III for profiles on each of the 12 selected jurisdictions, including additional examples of how these jurisdictions have used awards to build or maintain infrastructure.

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## Awards to Jurisdictions Totaled About \$7.1 Billion from Most Recent COVID-19 Supplemental Appropriation

In light of the severity of the global COVID-19 pandemic, CDC provided jurisdictions with about \$7.1 billion in awards using ARPA supplemental appropriations (the most recently enacted COVID-19 relief law) in fiscal years 2021 through 2023 to build and maintain infrastructure. Of this amount, CDC awarded about \$3 billion that was largely to be used in the short term. CDC provided an additional \$4.1 billion—that jurisdictions can use over 4 or 5 years—to support longer-term investment in needed infrastructure.

### Coronavirus State and Local Fiscal Recovery Funds

The American Rescue Plan Act of 2021 also established the Coronavirus State and Local Fiscal Recovery Funds, administered by the Department of the Treasury. The Coronavirus State and Local Fiscal Recovery Funds provided billions of dollars to jurisdictions to help them recover from the fiscal effects of the COVID-19 pandemic. Jurisdictions had broad discretion in using the funding and could use it to build public health infrastructure.

For example, South Carolina officials said they were using these funds to build a new public health laboratory that will better meet their needs than the current laboratory.

For information on jurisdictions' use of this funding, see GAO, *COVID-19: Current and Future Federal Preparedness Requires Fixes to Improve Health Data and Address Improper Payments*, [GAO-22-105397](#) (Washington, D.C.: Apr. 27, 2022)

Source: GAO analysis of federal and state information. | GAO-24-105891

**Short-term awards.** Through a number of awards in fiscal years 2021 and 2022, CDC provided a total of about \$3 billion to jurisdictions from ARPA supplemental appropriations to help build their laboratory infrastructure and workforce capacity.<sup>20</sup> (See appendix IV for more information on the specific awards provided.) All of the awarded funding was provided to jurisdictions as short-term (2- to 3-year) funding specifically to respond to the COVID-19 pandemic, though some new infrastructure could be used beyond the COVID-19 pandemic.

Jurisdictions reported using the awarded funding in a range of ways:

- **Laboratory infrastructure.** Public health laboratories were essential to respond to a needed surge in testing during the COVID-19 pandemic. Maine used its awarded funds to expand its public health laboratory capacity by purchasing equipment that has allowed staff to conduct additional and more precise analyses of the genomic sequences of viruses and other pathogens, according to officials.<sup>21</sup> Los Angeles County is using its awarded funds to remodel and expand its public health laboratory, officials said. Planned changes

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<sup>20</sup>We focused on awards from ARPA supplemental appropriations that were provided to jurisdictions' health departments to build and maintain their infrastructure. We did not focus on certain awards from ARPA supplemental appropriations that CDC provided to jurisdictions for other entities' use, such as \$10 billion to support reopening schools; and \$1.3 billion to address COVID-19 in specific congregate settings, such as nursing homes and jails.

<sup>21</sup>Genomic sequencing is a process scientists use to decipher the genetic material found in an organism or virus, according to CDC.

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include added space for molecular testing, supplies, and shipping specimens. Officials said the changes will expand the county's ability to manage specimens during emergencies and boost their ability to send testing supplies to partners and samples to CDC for testing. They also noted that the expanded space will be permanent, but they are looking for future funding to be able to retain new staff.

- **Workforce.** Maryland used its awarded funds from ARPA supplemental appropriations to staff a critical care coordination center with physicians and other public health workers, officials said. These staff monitored the availability of critical care resources throughout the state and helped hospitals match COVID-19 patients with available resources, such as beds available in intensive care units. The center remains in place and staff address critical care needs beyond those related to COVID-19. For example, they help physicians identify available hospital beds when patient transfers are necessary. Puerto Rico used its awarded funds to hire regional coordinators to help reach vulnerable communities and hard-to-reach populations, according to officials.<sup>22</sup> We previously reported on the medical and public health care needs during Hurricane Maria in Puerto Rico. These included caring for the elderly, chronically ill, and people with disabilities in isolated areas.<sup>23</sup>

**Longer-term awards.** In 2021, CDC also began using ARPA supplemental funding to make awards that could be available for jurisdictions' use in the longer term. CDC first provided this longer-term funding through its *Disease Intervention Specialists Workforce Development* award in June 2021, and again in fiscal years 2022 and 2023, for a total of \$600 million. Subsequently, CDC awarded about \$3.5 billion in November 2022 and May 2023 through a newly created infrastructure *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

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<sup>22</sup>For additional information on states' uses of COVID-19 workforce funds, see GAO, *COVID-19: HHS Funds Allocated to Support Disproportionately Affected Communities*, [GAO-23-105500](#) (Washington, D.C.: Jan. 24, 2023).

<sup>23</sup>For more information, see GAO, *Disaster Response: HHS Should Address Deficiencies Highlighted by Recent Hurricanes in the U.S. Virgin Islands and Puerto Rico*, [GAO-19-592](#) (Washington, D.C.: Sept. 20, 2019) and *Disaster Assistance: FEMA Action Needed to Better Support Individuals Who Are Older or Have Disabilities*, [GAO-19-318](#) (Washington, D.C.: May 14, 2019).

### Funding to Improve Data Systems

According to the Centers for Disease Control and Prevention (CDC), the COVID-19 pandemic has underscored the need for a high-speed, modernized public health data infrastructure. CDC has previously awarded funds to jurisdictions for data modernization, and awarded additional funds for data systems through its new 5-year infrastructure grant.

Many selected jurisdiction officials and stakeholder groups commented on the funding needed to improve jurisdictions' data systems. For example, officials from one jurisdiction said they planned to use funding from CDC's new infrastructure grant to hire several information technology staff, but that the funding amount is small given expensive data system investments.

For more information on public health data, see GAO, *COVID-19: Current and Future Federal Preparedness Requires Fixes to Improve Health Data and Address Improper Payments*, [GAO-22-105397](#) (Washington, D.C.: Apr. 27, 2022).

Source: GAO summary of CDC, jurisdiction, and stakeholder information. | GAO-24-105891

The *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant was intended to help meet short-term critical infrastructure needs, as well as to fund investments to benefit jurisdictions in the longer term. For example, awarded funds could be used to recruit and retain epidemiologists, laboratory scientists, data analysts, and other staff. CDC awarded \$3 billion in November 2022 for jurisdictions' public health workforce.<sup>24</sup> Additionally, CDC awarded \$505 million through this award in May 2023 for core data modernization activities and for laboratory data exchange activities.<sup>25</sup> (See app. IV for funds awarded by jurisdiction through this grant.)

According to CDC, this grant is intended to reflect a move toward more flexible, cross-cutting funding to jurisdictions with hopes that jurisdictions can use the awarded funds to make strategic investments that will have lasting effects.

- **Jurisdictions have more time to use CDC's new infrastructure grant.** CDC's new infrastructure grant has a 5-year period for jurisdictions to use the awarded funds, rather than CDC's 2- to 3-year time period for previous awards from ARPA supplemental appropriations. This can allow jurisdictions to support a preparedness workforce ready to respond to future threats for a longer-term, for example.
- **Jurisdictions can use CDC's new infrastructure grant for broad, disease-agnostic purposes.** This award funding is broader than the initial awards CDC made using ARPA supplemental appropriations, in

<sup>24</sup>In addition to the \$3 billion from ARPA supplemental appropriations, CDC also awarded \$140 million through this grant from its fiscal year 2022 annual appropriation for foundational capabilities activities—including surveillance, emergency preparedness, and other key elements of public health. In fiscal year 2022, CDC received \$200 million through a new specific line item in its appropriation for public health infrastructure and capacity. See Consolidated Appropriations Act, 2022, Pub. L. No. 117-103, div. H, tit. II, 136 Stat. 49, 448. CDC received \$350 million for this line item in fiscal year 2023 and requested \$600 million in its congressional budget justification for fiscal year 2024. See Consolidated Appropriations Act, 2023, Pub. L. No. 117-328, div. H, tit. II, 136 Stat. 4459, 4860 (2022). According to CDC, this funding will be used to support jurisdictions' public health infrastructure.

CDC also awarded funding through the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant to three national partners to support the work of the 107 jurisdictions, such as by providing training and technical assistance. The funding for these partners is not included in this report.

<sup>25</sup>In addition to the \$505 million from ARPA supplemental appropriations awarded for data modernization, CDC also awarded \$40 million for data modernization through this grant from its appropriation for fiscal year 2023.

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part because it is explicitly focused on building infrastructure beyond that needed to respond to the COVID-19 pandemic. The intent of these awards is to strengthen infrastructure related to workforce, data, and other areas for a cross-cutting range of infrastructure needs, including preparedness for all types of public health emergencies.

- **More jurisdictions were directly awarded grant funds.** In addition to all 50 states and eight territories and freely associated states, CDC awarded grant funds directly to far more localities—49 cities and counties in total—than it did with prior awards from annual appropriations (PHEP and ELC) and initial awards to jurisdictions from ARPA supplemental appropriations, which were often awarded to seven or fewer localities.<sup>26</sup> CDC officials said they did so in order to support the “next level of infrastructure in the U.S. public health system” (large cities and counties)—and to broaden the base of the nation’s public health infrastructure.

Jurisdictional officials we spoke with planned to use this new grant for a range of infrastructure needs, some of which would continue efforts that began in response to the COVID-19 pandemic. For example, Maryland officials plan to use the grant funds to invest in workforce training and development to improve recruitment and retention. Puerto Rico officials plan to expand COVID-19 surveillance efforts to include other infectious diseases.

See appendix III for additional examples of jurisdictions’ use, and planned use, of awards made with ARPA supplemental appropriations.

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<sup>26</sup>CDC’s November 2022 awards went to 107 jurisdictions (50 states, eight U.S. territories and freely associated states, and 49 cities and counties) for workforce and foundational capabilities. States, territories, and freely associated states were eligible to apply for the November 2022 awards, as were local health departments serving a county with a population of 2 million or more, or a city with a population of 400,000 or more. CDC’s May 2023 awards for data modernization went to 64 jurisdictions (50 states, six localities, including Washington, D.C., and eight U.S. territories and freely associated states); only the jurisdictions that previously received Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases supplemental awards for data modernization were eligible to apply for those funds. For all of these awards, amounts were based on population size and a U.S. Census Bureau measure of how at risk neighborhoods are to the impact of disasters, including the COVID-19 pandemic.

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## Challenges Selected Jurisdictions and Stakeholders Identified to Building and Maintaining Public Health Infrastructure

Officials from the 12 selected jurisdictions and 10 stakeholder groups we interviewed identified several challenges to building and maintaining infrastructure to be sufficiently prepared for future public health threats.<sup>27</sup> These challenges can be grouped into two areas: (1) how infrastructure is funded, and (2) building a public health workforce. We have found that CDC has taken actions to try to help mitigate these challenges, in accordance with CDC's goals and priorities to develop and strengthen jurisdictions' public health preparedness and response. The challenges, and CDC's related actions, are described in further detail below.

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### Challenges with Funding Infrastructure

Jurisdictions and stakeholder groups identified the following challenges with regard to funding infrastructure necessary to prepare for and respond to public health threats.

#### **“Boom and bust” pattern of public health emergency funding.**

Officials from nearly all selected jurisdictions and stakeholder groups expressed concern about the pattern of an increase—or “boom”—in federal funding to respond to a public health emergency, followed by a decrease—or “bust”—once that emergency terminates and associated funding runs out.<sup>28</sup> More broadly, this pattern can make it hard for jurisdictions to invest in long-term sustainable efforts to prepare for future public health threats, officials from nearly all jurisdictions and stakeholder groups noted. (See fig. 3.)

CDC officials also acknowledged that jurisdictions often have difficulty maintaining infrastructure without a sustained and flexible funding source. According to CDC, its new 5-year infrastructure grant is more flexible and longer term. However, officials from some jurisdictions said they planned to use the awarded funds to hire temporary staff rather than commit to longer-term investments, due to the uncertainty around whether additional funding will be available after the award is expended. According to CDC,

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<sup>27</sup>To characterize jurisdictions' views throughout this report, we defined modifiers to quantify jurisdictions' views. For the purposes of this report, “nearly all” represents nine to 11 jurisdictions, “many” represents six to eight jurisdictions, and “some” represents three to five jurisdictions. To characterize stakeholder groups' views throughout the report, we defined modifiers to quantify their views. For the purposes of this report, “nearly all” represents seven to nine groups, “many” represents five to six groups, and “some” represents three to four groups.

<sup>28</sup>For examples of supplemental appropriations to address past public health emergencies and awards made using such appropriations, see [GAO-18-362](#) and [GAO, \*Zika Supplemental Funding: Status of HHS Agencies' Obligations, Disbursements, and the Activities Funded\*, GAO-18-389](#) (Washington, D.C.: May 14, 2018).

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sustained public health infrastructure funding at all levels is needed to ensure that health departments have resources to perform the essential public health services and be ready to respond to emerging threats. CDC plans to use a new specific line item in its annual appropriation for public health infrastructure and capacity to support ongoing investment in jurisdictions' infrastructure.<sup>29</sup>

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<sup>29</sup>In fiscal year 2022, CDC received \$200 million through a new specific line item in its appropriation for public health infrastructure and capacity. See Consolidated Appropriations Act, 2022, Pub. L. No. 117-103, div. H, tit. II, 136 Stat. 49, 448. CDC received \$350 million for this line item in fiscal year 2023 and requested \$600 million in its congressional budget justification for fiscal year 2024. See Consolidated Appropriations Act, 2023, Pub. L. No. 117-328, div. H, tit. II, 136 Stat. 4459, 4860 (2022).

**Figure 3: Selected Jurisdictions and Stakeholder Groups Identified “Boom and Bust” Pattern of Federal Public Health Infrastructure Funding as a Challenge**



According to the Commonwealth Fund Commission on a National Public Health System, *“the ‘boom and bust’ cycle of public health budgeting, with surges in federal funding in response to emergencies followed by budget retrenchments, makes it hard for state and local public health agencies to invest in long term capacity building. While during the pandemic period the federal government increased its support for public health, this support represents a fiscal cliff. New hires become the financial responsibility of local public health after funding sunsets. As a result, state and local health officials are hesitating to invest in workforce expansion.”<sup>a</sup>*

Dr. Georges Benjamin, Executive Director of the American Public Health Association, testified in June 2023 that *“this yo-yo funding has to end, where we put in a lot of money when something bad happens, often comes a little late, not quite enough, and then we take it away too quickly, and you can’t build a system like that.”<sup>b</sup>*

Officials from nearly all of the 12 selected jurisdictions and representatives from 10 stakeholder groups echoed these concerns. Examples reported from selected jurisdictions on struggles to sustain, in the long term, infrastructure built with federal awards from supplemental appropriations include activities in the areas of community connections and partnerships and surveillance and laboratory capacity.

### Community connections and partnerships

- Funding expiration could mean the loss of ability to fund new public health workers who have worked directly with local communities, officials from one jurisdiction noted.
  - This jurisdiction increased its vaccination team during the COVID-19 pandemic from five to more than 100 staff using federal awards from supplemental appropriations. This new team included ambassadors who built trust between the health department and communities by listening to residents’ concerns about the pandemic, providing information about COVID-19, and helping residents navigate the health care system.
  - While this jurisdiction no longer needs this number of staff to help specifically with COVID-19 vaccines, these new workers built relationships with local communities and—if retained—could help address other critical public health needs, such as helping residents navigate a complex health care system, according to officials. Further, losing these workers would require jurisdiction officials to train a new group of workers when another threat arises, which takes time and is not ideally done while also trying to respond, officials said.
- Further, the ebb and flow of federal funding erodes the trust of local community groups who have partnered with jurisdictions during various times of emergency, officials from the same jurisdiction said. For example, officials from this jurisdiction said they may engage with these community partners during an emergency response, when awards from supplemental appropriations are available, but this engagement may decrease if funding is not sustained during non-emergency periods. This can lead to the community partners feeling used and not as willing to help in the future.

### Surveillance and laboratory capacity

- Officials from one jurisdiction said they used awards from supplemental appropriations for the Zika outbreak to build up staff and a mosquito surveillance program, but when that funding was no longer available, they could not sustain that infrastructure. If the jurisdiction has another mosquito-borne outbreak, it will need to rebuild the infrastructure it had previously built for mosquito surveillance.
- One jurisdiction used awards from supplemental appropriations to expand and improve its public health laboratory, but would need longer-term funding to retain new laboratory staff and maintain new equipment, according to officials from that jurisdiction.

Source: GAO analysis of information from 12 selected jurisdictions and 10 stakeholder groups (information); GAO and iilerlok\_xolms/stock.adobe.com (icons). | GAO-24-105891



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<sup>a</sup>The Commonwealth Fund Commission on a National Public Health System, *Meeting America's Public Health Challenge: Recommendations for Building a National Public Health System That Addresses Ongoing and Future Health Crises, Advances Equity, and Earns Trust* (June 2022).

<sup>b</sup>Georges C. Benjamin, Executive Director, American Public Health Association, *Looking Back Before Moving Forward: Assessing CDC's Failures in Fulfilling its Mission*, testimony before House Energy and Commerce Committee, Subcommittee on Oversight and Investigations, June 7, 2023.

Additionally, certain unobligated funds appropriated by ARPA were rescinded as part of the Fiscal Responsibility Act of 2023.<sup>30</sup> This included \$400 million—\$200 million per year for fiscal years 2024 and 2025—that CDC would have provided to jurisdictions through its *Disease Intervention Specialists Workforce Development* award, according to agency officials. CDC awarded funds using ARPA supplemental appropriations through this award in fiscal years 2021, 2022, and 2023 and planned to provide additional awards to jurisdictions (\$200 million annually) for a total of 5 years and \$1 billion.

CDC officials explained that as a result of the rescission, jurisdictions will stop hiring new staff and cancel other activities to retain current staff for as long as possible. If jurisdictions are not able to retain staff through alternative funding sources, this will reduce the number of staff ready to address the next public health threat, according to CDC officials.

Officials from one jurisdiction made the decision to fill only a few of their existing vacancies given the rescission. More than half of their positions remain vacant, and most will not be filled, according to officials from this jurisdiction. These officials said that the loss of this funding has “eviscerated” the jurisdiction’s plan to have a highly competent cross-trained outbreak response team.

Officials from another jurisdiction said they plan to use CDC’s new 5-year infrastructure grant to cover the 2 years of award funds that were rescinded. However, according to jurisdiction officials, using this grant to cover the rescission impedes this jurisdiction’s ability to use those funds to strengthen and provide more robust public health planning and response for future public health threats and emergencies.

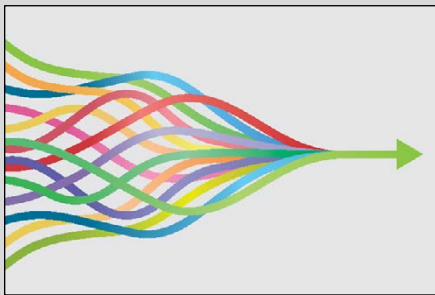
**CDC award amounts from annual appropriations have supported less as costs have increased.** Officials from many jurisdictions told us that they have been less able to rely on awards through PHEP and ELC from annual appropriations to cover staff costs, as those costs have increased while the award amounts have remained flat over the years,

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<sup>30</sup>See Pub. L. No. 118-5, div. B, tit. I, § 2(15), 137 Stat. 10, 24.

unadjusted for inflation. Officials from one jurisdiction told us that the jurisdiction used its award provided through PHEP to support 24 percent of salaries of staff that work on preparedness for public health threats, down from 33 percent of staff salaries covered by its award 5 years prior.

#### Braiding: Combining Funds with Other Funds



To cover staff costs, officials from nearly all jurisdictions told us they often combine, or braid, funds—including federal and state funds—to fully support salaries of staff in needed positions. This means these staff may work on multiple programs at once; some could be related to supporting the health departments' preparedness and response activities, and others may not be.

Some jurisdictions and stakeholder groups reported that the process of braiding multiple funding sources to cover staff salaries is administratively challenging for staff. For example, it can require a lot of time, resources, and coordination to track time spent on each program for reporting purposes.

To braid funds to address public health needs and maintain proper oversight of the funds, jurisdictions must track each funding source to ensure it complies with each program's requirements.

Source: GAO summary of information from interviews with selected jurisdictions and stakeholder groups (information); Eva Almqvist/stock.adobe.com (photo). | GAO-24-105891

To help manage such funding gaps, jurisdictions often combine funding sources—known as braiding. For example, jurisdictional staff may work on influenza surveillance activities 25 percent of their time (funded by awards through ELC from annual appropriations) and work on other activities (funded by other sources and perhaps not related to preparedness) for the remaining portion.

If other funding sources are not available for the health departments, preparedness activities may be scaled back. Such scaling back may leave those impacted activities more vulnerable to threats. In response to this concern, CDC officials stated that they support sustainable funding for public health infrastructure. As noted previously, CDC plans to use a new specific line item in its annual appropriation for public health infrastructure and capacity to support ongoing investment in jurisdictions' infrastructure.

**Disease-specific awards are of limited use for preparedness and initial response to public health threats.** Officials from some stakeholder groups told us that disease-specific award funding is needed and has led to benefits, including development of staff with expertise in a disease. However, officials from many jurisdictions and nearly all stakeholder groups said disease-specific award funding can limit flexibility for preparedness and response. Representatives from one stakeholder group noted that flexibility is critical for building cross-cutting capacity needed to prepare for future emergencies. Specifically, disease-agnostic funding that can be used flexibly and is sustained over time is needed to both strengthen capacity for health departments between emergencies and to scale up quickly during them. Officials from one jurisdiction said they “do not have cross-cutting funding that is cohesive, substantial, and sustainable” and that they use a “patchwork of funds to create” their public health infrastructure.

Jurisdictions have a limited ability to use disease-specific awards provided through ELC from annual appropriations for building or maintaining baseline infrastructure. This is also the case for other disease-specific awards they receive from CDC, such as awards to address HIV/AIDS prevention, sexually transmitted disease control, tuberculosis control, or chronic diseases in their communities.

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During an initial response to a public health emergency, jurisdictions may, with CDC and HHS approval, temporarily reassign certain staff.<sup>31</sup> However, according to some jurisdiction officials, while reassignment may be available, such reassignment can take away from ongoing public health work, leaving these public health issues unaddressed. For example, reassigning staff for the COVID-19 response affected work on sexually transmitted infections, according to officials from one jurisdiction. Those officials stated that sexually transmitted infection cases in the jurisdiction, including syphilis, had been increasing and the rise was exacerbated by reassignment of these staff to the COVID-19 pandemic response.

Jurisdictions may also redirect disease-specific funding to other activities with CDC approval. However, officials from one jurisdiction said that they were unable to redirect certain disease-specific awards—such as for HIV/AIDS—to the initial mpox response because that funding had already been exhausted.

According to CDC officials, disease-specific awards are intended to fund programs for particular diseases.<sup>32</sup> However, CDC officials also said that disease-specific awards limit jurisdictions' flexibility to address broader infrastructure needs, infectious disease threats, and future needs as they arise. CDC officials told us that the agency consistently receives requests from jurisdictions for additional cross-cutting awards through ELC from annual appropriations beyond what the agency can provide. According to

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<sup>31</sup>When the HHS Secretary has declared a public health emergency, states and Tribes can seek HHS approval to temporarily reassign state, local, and tribal public health department or agency personnel funded, in whole or in part, by certain federal programs, such as CDC disease-specific programs. If approved, reassignment authorizations are valid for no more than 30 days or until HHS determines that the public health emergency no longer exists, whichever comes first. In cases in which a public health emergency lasts longer than 30 days, the jurisdiction may request a personnel reassignment extension. See 42 U.S.C. § 247d(e). See also GAO, *Public Health Emergencies: HHS Needs to Better Communicate Requirements and Revise Plans for Assessing Impact of Personnel Reassignment*, [GAO-17-187](#) (Washington, D.C.: Jan. 9, 2017).

Also, for more information on federal funding available for an initial response to a public health threat, see GAO, *Public Health Preparedness: HHS Reserve Funding for Emergencies*, [GAO-23-106102](#) (Washington, D.C.: Aug. 15, 2023).

<sup>32</sup>CDC reported that disease-specific awards to health departments—such as for surveillance capacity for a particular disease—are meant to allow the departments to detect changes or outbreaks that would otherwise go unnoticed if these awards were for general public health activities. For example, CDC has seen accomplishments in surveillance for fungal diseases; food safety, including foodborne or waterborne pathogens activities; and antibiotic resistance as a result of disease-specific awards.

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these officials, ELC cross-cutting funding offers important flexibility to respond to infectious disease threats and support cross-cutting infectious disease infrastructure needs, such as the workforce. For example, ELC provides support for cross-cutting infectious disease positions, which allows recipients to hire for positions that suit their needs, such as regional epidemiologists that may be assigned to local health departments. Positions supported with cross-cutting funds can also be quickly redirected to support priorities or responses as the need arises.

**Varying levels of jurisdictional funding for infrastructure.**

Jurisdictions have the primary responsibility for preparation for and response to public health threats and emergencies. They are key preparedness and response partners with the federal government and the first line of defense against threats. However, there is variation in the amount of funding jurisdictions provide to health departments for public health infrastructure, including for preparedness and response, according to two stakeholder groups. As a result, the extent to which jurisdictions may rely on CDC awards for building and maintaining infrastructure varies. However, the degree to which this reliance occurs by jurisdiction is unclear due to differences in measuring such information, according to one stakeholder group.

Our interviews with officials from the 12 selected jurisdictions found variation in the amount of funding jurisdictions dedicate to infrastructure. For example, officials from one jurisdiction told us that the state had recently appropriated new funding meant specifically to fill gaps in state and local infrastructure, including to be better prepared for future public health threats. Conversely, officials from another jurisdiction said that their locality does not receive additional funding from the state for infrastructure to prepare for and respond to public health threats.

One stakeholder group that tracks states' reported changes in their public health funding most recently found that at least 34 states reported that their funding for public health was stable or had increased; but at least 13 states had reduced their funding from fiscal year 2021 to 2022.<sup>33</sup>

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<sup>33</sup>This stakeholder group examined state-reported funding for public health generally, which includes funding for infrastructure for emergency preparedness and response. The stakeholder group also found that Washington, D.C. reported an increase in its funding for public health during the time period. Three states did not provide public health funding data for fiscal year 2022 and therefore could not be examined for the time period. See, Trust for America's Health, *Ready or Not: Protecting the Public's Health From Diseases, Disasters, and Bioterrorism* (March 2023).

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Separately, because there is no minimum set of standards that jurisdictions have to meet for public health services, the preparedness activities provided can vary by jurisdiction (see text box).

**Standardization of public health services**

No minimum standard has been set for public health capabilities, according to a recent report by the Commonwealth Fund, an organization that supports independent research to promote high-performing and equitable health care.

As a result, how well a health department protects the population it serves from public health threats varies, according to the report. For more information, see the Commonwealth Fund Commission on a National Public Health System, *Meeting America's Public Health Challenge: Recommendations for Building a National Public Health System That Addresses Ongoing and Future Health Crises, Advances Equity, and Earns Trust* (June 2022).

The Centers for Disease Control and Prevention (CDC) does have a set of national standards to guide public health preparedness planning. These are a set of 15 capability standards designed to advance the emergency preparedness and response capacity of state and local public health systems, according to CDC documentation. Jurisdictions that receive awards through the Public Health Emergency Preparedness program do not have to “meet” these standards to receive funding, but they are required to use them as they plan, operationalize, and evaluate their ability to prepare for, respond to, and recover from public health emergencies.

Accreditation is another method jurisdictions can use to provide more standardization of services. According to the Public Health Accreditation Board, accreditation ensures the public that the jurisdiction has established core public health capabilities, and accreditation could help advance performance more consistently across health departments. Accreditation is not a requirement to receive award funding from CDC, but many jurisdictions we spoke with said they used the accreditation process as a tool to help ensure they were meeting basic preparedness and broader public health needs and continually trying to improve.

Source: GAO summary of information from interviews with documentation from selected jurisdictions, stakeholder groups, and CDC. | GAO-24-105891

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**Challenges Building a Public Health Workforce**

Officials from some jurisdictions we interviewed reported that the temporary nature of awards from supplemental appropriations made it challenging to quickly build a workforce to respond to the COVID-19 pandemic, as well as maintain that workforce to be prepared for future public health threats. For example, officials from many jurisdictions noted that the temporary nature of the awards provided led them to hire primarily temporary staff. Officials from these jurisdictions noted hesitancy to hire permanent positions without a signal that there will be sustainable funding beyond the awards from ARPA supplemental appropriations—even with the new 5-year infrastructure grant funding CDC provided. See fig. 4 for these and additional challenges jurisdictions reported with regard to building and maintaining a workforce with supplemental award funding.

**Figure 4: Selected Jurisdictions Identified Challenges to Building and Maintaining a Public Health Workforce with Awards from COVID-19 Supplemental Appropriations**

**Hiring quickly was challenging.**

Hiring quickly enough to maximize the 2-year time frames of some awards from supplemental appropriations proved challenging, according to many jurisdictions. Examples of challenges identified by one or more jurisdictions include the following:

- It took time to develop, post, receive applications, and interview for a new staff position, time jurisdictions may not have when quickly responding to an emergency. It could take 2 to 10 months, officials from one jurisdiction noted, to create a new position from approval to posting, even before recruitment and hiring began.
- Hiring positions in high demand during an emergency—such as contact tracers, epidemiologists, case investigators, and other health care professionals—required even more time for recruitment.
- Potential candidates may not have applied because they wanted to be hired for permanent positions or may not have accepted positions because they wanted higher salaries offered by other entities with less limited funding.
- Jurisdictions had to go through the hiring cycle multiple times because of the limited number of applications received.
- Jurisdictions may be required to obtain approval for new positions from jurisdictional leadership—such as the governor or legislature—which takes time.
- Jurisdictions needed to hire additional support staff—such as human resources staff—to have the capacity to bring on other staff, including response personnel.



**Temporary hiring helped, but also created additional recruitment and retention challenges.**

To help address hiring needs, many jurisdictions reported using temporary staffing measures, specifically contracting with the CDC Foundation and others to bring temporary staff on more quickly.<sup>a</sup> One jurisdiction told us it could take about 2 weeks to 1.5 months to hire contract staff, compared with lengthier time frames to hire permanent staff.

While these temporary positions provided relief, many jurisdictions also reported challenges. Examples of challenges identified by one or more jurisdictions include the following:

- Hiring contractors was costlier than permanent staff.
- Contract staff were typically paid higher salaries and therefore were difficult to convert to permanent positions that generally offered lower salaries. Officials from one jurisdiction noted that their permanent staff felt undervalued as a result of salary inequities between them and contract staff.
- Short-term contract staff concerned that jurisdictions will not continue to fund their positions, sometimes began looking for other roles as their contracts neared the end of the funding period. This exacerbated existing staffing issues.



- New hires, including temporary hires, must be trained at a considerable time and expense. Such investments by jurisdictions are lost or seem imprudent if staff are not retained permanently.

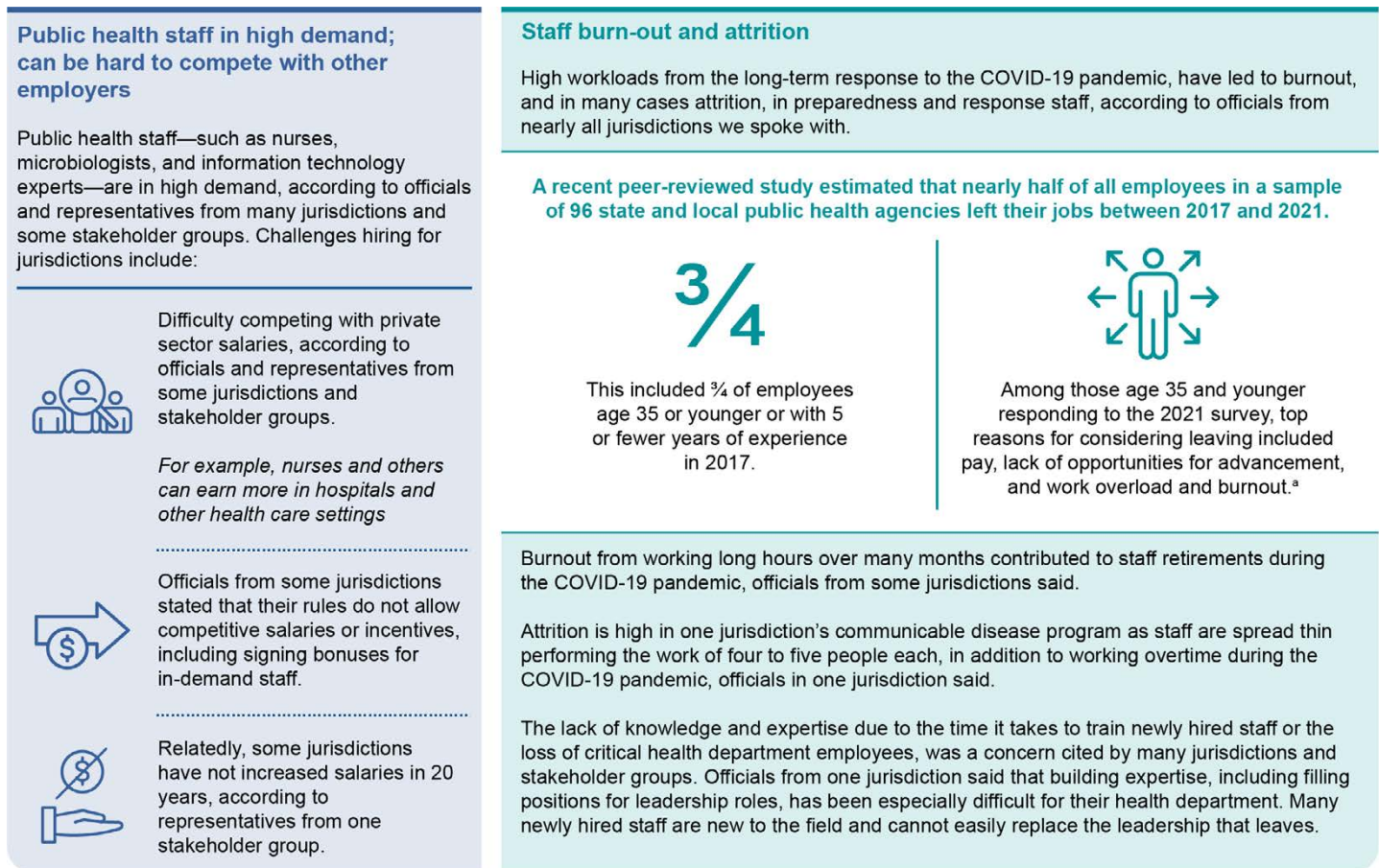
Source: GAO analysis of information from interviews with 12 selected jurisdictions (information); inspiring.team/stock.adobe.com (illustrations). | GAO-24-105891

<sup>a</sup>The CDC Foundation is an independent, private nonprofit corporation established under the Public Health Service Act to support and carry out activities for the prevention and control of diseases, disorders, injuries, and disabilities, and for the promotion of public health. See 42 U.S.C. § 280e-11. During the COVID-19 pandemic, the CDC Foundation—with financial support from CDC and some private donors—hired about 4,000 public health professionals to support state, local, territorial, and tribal health departments, the Foundation reported.

Beyond these workforce challenges, jurisdictions have experienced (and we have previously reported on) other challenges to managing awards from supplemental appropriations during emergencies, such as managing and tracking a large influx of funding. See appendix V for more information, including challenges identified in prior GAO work.

Separately, officials and representatives from many jurisdictions and stakeholder groups reported concerns with the availability of a sufficient public health workforce to be prepared for future threats, due to burnout and other factors. (See fig. 5.)

**Figure 5: Selected Jurisdictions and Stakeholder Groups Identified Public Health Workforce Challenges**



Source: GAO analysis of information from 12 selected jurisdictions and 10 stakeholder groups (information); iierlok\_xolms/stock.adobe.com (icons). | GAO-24-105891

<sup>a</sup>See J. P. Leider, B. C. Castrucci et al., “The Exodus of State and Local Public Health Employees: Separations Started Before and Continued Throughout COVID-19,” *Health Affairs*, vol. 42, no. 3 (March 2023). This study was based on data from the Public Health Workforce Interests and Needs

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Survey (PH WINS), a national survey of state and local health department staff, as well as the staff lists assembled to field the two surveys that were used to determine staff departures between 2017 and 2021. The study's analytic sample included 96 agencies (46 state health agencies, 25 big-city health departments, and 25 local health departments) that participated in the PH WINS survey in both 2017 and 2021. The sample was not representative of all public health agencies, as it did not include small agencies, as well as larger agencies that did not participate in both years. The study did not capture the reasons why staff left their jobs between 2017 and 2021 or whether they left for another government public health position, or specifically in 2021, were moved to a separate COVID-19 response division. The 2021 survey had a 35 percent response rate.

Recent studies have indicated that more staff are needed to create a workforce to support public health in jurisdictions. (See text box.) However, the challenges to building and supporting such a workforce are complex. For example, according to one recent study of health departments in five selected states, even if CDC or jurisdictions provide additional funding in this area, the nation's public health workforce challenges will continue until public health is a more attractive career path with higher pay, improved working conditions, and more training and promotion opportunities.<sup>34</sup> For examples of actions CDC has taken to try to support the public health workforce, such as through awarding grants to support the public health workforce, see appendix I.

### Recent studies on the workforce needed to support overall public health

One stakeholder group's 2021 study—supported in part by CDC—estimated that states and localities would need to hire at least 80,000 full-time staff, almost an 80 percent increase, to build adequate public health infrastructure and provide a minimum set of public health services. A former CDC director has publicly acknowledged the findings of this study.<sup>a</sup>

In a different stakeholder group's 2021 epidemiology capacity assessment, state epidemiologists indicated they needed more than 6,300 epidemiologists at state health departments nationwide—an almost 2,200 increase from levels at the time of the survey—to provide basic public health services.<sup>b</sup>

Source: GAO analysis of stakeholder information. | GAO-24-105891

<sup>a</sup>See de Beaumont Foundation, *Staffing Up: Workforce Levels Needed to Provide Basic Public Health Services for All Americans*, October 2021. The 80,000 full-time equivalents were estimated to be needed prior to the COVID-19 pandemic and therefore do not account for vacancies in this workforce resulting from the pandemic. Staff positions include those for all-hazards, chronic disease and injury, and communicable disease, among others. This estimate was based on data from three states and 170 local health departments in four states prior to the COVID-19 pandemic and does not represent workforce needs in U.S. territories and freely associated states or Tribal Nations.

See also Rochelle Walensky, CDC Director, *Preparing for and Responding to Future Public Health Security Threats*, testimony before the House Committee on Energy and Commerce, Subcommittee on Health, May 11, 2023.

<sup>b</sup>See Council of State and Territorial Epidemiologists, *2021 Epidemiology Capacity Assessment*, 2021. This national survey of state and territorial epidemiologists found that state epidemiologists from the 50 states and D.C. expressed a need for 2,196 more epidemiologists at state health

<sup>34</sup>Michael S. Sparer and Lawrence D. Brown, "Politics and the Public Health Workforce: Lessons Suggested from a Five-State Study," *The Milbank Quarterly*, Vol. 0, No. 0 (2023): 1-26.



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departments to provide basic public health services in all program areas, including preparedness. Adding those positions would result in an ideal total of 6,331 epidemiologists—a 53 percent increase over the 4,135 epidemiologists at the time of the survey. The survey was administered in all 50 states, Washington, D.C., and the eight U.S. territories from January 2021 to April 2021, and obtained a response rate of 100 percent from the 50 states and Washington, D.C.

Because jurisdictions are key partners in preparing for and responding to public health threats, the infrastructure challenges they face can impact how quickly and effectively CDC and other response partners are able to contain these threats. This was acutely demonstrated during the COVID-19 pandemic, when infrastructure became overwhelmed, helping the virus to spread nationwide. According to CDC officials, increased and ongoing investments in public health infrastructure is vital to the response to contain threats on a national level.

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## Agency Comments

We provided a draft of this report to HHS and the Department of the Treasury for review and comment. HHS provided technical comments, which we incorporated as appropriate. Treasury did not have any comments on the report.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Health and Human Services, the Secretary of the Treasury, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or [DeniganMacauleyM@gao.gov](mailto:DeniganMacauleyM@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VI.



Mary Denigan-Macauley  
Director, Health Care

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*List of Addressees*

The Honorable Patty Murray  
Chair  
The Honorable Susan Collins  
Vice Chair  
Committee on Appropriations  
United States Senate

The Honorable Ron Wyden  
Chairman  
The Honorable Mike Crapo  
Ranking Member  
Committee on Finance  
United States Senate

The Honorable Bernard Sanders  
Chair  
The Honorable Bill Cassidy, M.D.  
Ranking Member  
Committee on Health, Education, Labor, and Pensions  
United States Senate

The Honorable Gary C. Peters  
Chairman  
The Honorable Rand Paul, M.D.  
Ranking Member  
Committee on Homeland Security and Governmental Affairs  
United States Senate

The Honorable Kay Granger  
Chair  
The Honorable Rosa L. DeLauro  
Ranking Member  
Committee on Appropriations  
House of Representatives

The Honorable Cathy McMorris Rodgers  
Chair  
The Honorable Frank Pallone, Jr.  
Ranking Member  
Committee on Energy and Commerce  
House of Representatives

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The Honorable Mark E. Green, M.D.  
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The Honorable Bennie G. Thompson  
Ranking Member  
Committee on Homeland Security  
House of Representatives

The Honorable James Comer  
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The Honorable Jamie Raskin  
Ranking Member  
Committee on Oversight and Accountability  
House of Representatives

The Honorable Jason Smith  
Chairman

The Honorable Richard Neal  
Ranking Member  
Committee on Ways and Means  
House of Representatives

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# Appendix I: Other Centers for Disease Control and Prevention Efforts to Support Jurisdictions' Public Health Infrastructure

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The Centers for Disease Control and Prevention (CDC) annually provides awards to jurisdictions (states, localities, and territories) to support their public health infrastructure through the Public Health Emergency Preparedness and Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases cooperative agreements.<sup>1</sup> In addition, CDC also awards a block grant and has other efforts to support jurisdictions' public health infrastructure.

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## CDC Preventive Health and Health Services Block Grant

CDC provides awards through its Preventive Health and Health Services Block Grant Program annually to states, territories and freely associated states, and Washington, D.C. to address public health needs.<sup>2</sup> Jurisdictions that receive awards through this block grant are to implement local strategies to address any of the wide ranging objectives identified in the Department of Health and Human Services' national Healthy People initiative—an initiative that aims to guide health promotion and disease prevention efforts.<sup>3</sup> Jurisdictions set their own goals and program objectives, and decide how to use the award based on their communities' needs. They can opt to use the funds for objectives related to certain aspects of public health infrastructure, but that is not required. CDC does not specify or allocate funding to any specific purpose, except for the Sex-Offense Set-Aside required in statute, according to agency officials.

Officials we spoke with from the selected jurisdictions in our review told us they sometimes used these block grant funds to support infrastructure to prepare for public health threats.<sup>4</sup> Maine officials said they used the block grant funds for epidemiology staff, local plans for emergency

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<sup>1</sup>A cooperative agreement is a federal award to a non-federal entity to carry out a public purpose. Unlike grants, cooperative agreements generally provide for substantial involvement between the federal awarding agency and the non-federal entity in carrying out the activity contemplated by the award.

<sup>2</sup>CDC also awards this block grant to two Tribes, which were not included in the scope of our review.

<sup>3</sup>Department of Health and Human Services, "Healthy People 2030: Building a Healthier Future for All," accessed August 2, 2023, <https://health.gov/healthypeople>.

<sup>4</sup>We selected four states, six localities, and two territories to obtain a variety of the following characteristics: health department governance structure (i.e., the relationship between state health agencies and local health departments), how localities receive funding (through the state or directly from CDC), and percent of rural population, as calculated by the U.S. Census Bureau. We selected and interviewed health department officials for the following 12 jurisdictions: California; Maine; Maryland; South Carolina; Los Angeles County, Calif.; San Bernardino, Calif.; San Francisco, Calif.; Portland, Maine; Baltimore, Md.; Garrett County, Md.; Puerto Rico; and the U.S. Virgin Islands.

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preparedness, and other infrastructure purposes. Maryland officials, in contrast, said they mostly used the funds for unfunded or poorly funded areas, such as heart disease, diabetes, and other chronic diseases.

**Other CDC Efforts**

Our review of agency documentation shows that CDC also annually supports jurisdictions' public health infrastructure by assigning CDC staff to work in jurisdictions' health departments, funding other efforts to strengthen the public health workforce, and providing technical assistance and other support. See table 3 for examples.

**Table 3: Examples of Other CDC Efforts to Support Jurisdictions' Public Health Infrastructure**

Type	Description
<b>CDC staff assigned to work in jurisdictions</b>	
Career Epidemiology Field Officers Program	<p>CDC funds and assigns Career Epidemiology Field Officers to work in jurisdictions' health departments to strengthen public health preparedness. These officers provide mentorship and train state, local, and territorial staff in public health emergency management.</p> <ul style="list-style-type: none"> <li>• CDC centrally funds these positions through the Public Health Emergency Preparedness (PHEP) program. As of December 2022, CDC centrally funded 38 such officers, with additional placements planned. In addition, several health departments have opted to use awarded funding they receive through PHEP for additional officers.</li> <li>• Assignments are requested by jurisdictions and are for at least 2 years initially. They can be renewed, subject to availability of funds and program needs.</li> <li>• Among the program's objectives are a) developing and sustaining essential public health security capabilities, such as disease detection, containment, and distribution of medical countermeasures; b) integrating public health, public, and private medical capabilities; and c) evaluating preparedness and response capabilities.</li> </ul>
Preparedness Field Assignee Program	<p>CDC assigns staff as Preparedness Field Assignees to fill jurisdictions' personnel and preparedness capacity gaps. This program provides boots-on-the-ground support to state and local preparedness programs and provides early-career professionals with additional experience in state and local emergency preparedness and response.</p> <ul style="list-style-type: none"> <li>• CDC funds these positions through the PHEP program. As of December 2022, CDC funded 27 positions, with plans to expand the program.</li> <li>• Assignments are requested by jurisdictions and are for at least 3 years initially. They can be renewed, subject to availability of funds and program needs.</li> <li>• Among the program's goals are strengthening state and local capacity to prepare for, detect, respond to, and recover from public health emergencies.</li> </ul>
<b>Other efforts to strengthen the public health workforce</b>	
Strengthening Public Health Systems and Services through National Partnerships to Improve and Protect the Nation's Health	<p>In 2018, CDC awarded cooperative agreements to 39 national partners for a 5-year effort to help strengthen the nation's public health infrastructure and improve the delivery of public health services.<sup>a</sup> Sixteen of those partners were to provide capacity-building assistance to state, local, territorial, and tribal health departments. Those partners included, for example, national associations that represented state, local, and territorial health departments, as well as epidemiologists, infectious disease staff, chronic disease specialists, and other components of the state, local, territorial, and tribal health department workforce.</p> <p>Capacity-building assistance could include technical assistance, training, information sharing, and other activities.</p>

**Appendix I: Other Centers for Disease Control  
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Type	Description
<b>Other efforts</b>	
Technical assistance	Examples of CDC-facilitated technical assistance include: <ul style="list-style-type: none"> <li>• CDC subject matter experts provide technical assistance to jurisdictions on public health emergency preparedness issues, such as operational readiness.</li> <li>• CDC has funded national partners to provide technical assistance and other support to jurisdictions to aid jurisdictions' efforts to strengthen their public health infrastructure.</li> </ul>
Training	CDC has provided training opportunities for the public health workforce, such as the following. <ul style="list-style-type: none"> <li>• CDC offers courses and continuing education activities on topics such as emergency management, epidemiology, infectious diseases, laboratory services, and workforce development.</li> <li>• CDC partnered with the Council of State and Territorial Epidemiologists to offer the Data Science Team Training program, an on-the job training program designed to enhance data science capacity at state, territorial, local, and tribal public health agencies.</li> </ul>

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) information. | GAO-24-105891

<sup>9</sup>A cooperative agreement is a federal award to a non-federal entity to carry out a public purpose. Unlike grants, cooperative agreements generally provide for substantial involvement between the federal awarding agency and the non-federal entity in carrying out the activity contemplated by the award.

Additionally, using COVID-19 supplemental appropriations, CDC had planned to expand its Public Health Fellowship programs to enhance the public health workforce, as well as Public Health AmeriCorps, a new effort to recruit and train public health workers. However, remaining COVID-19 supplemental funding for the Public Health Fellowship programs expansion and Public Health AmeriCorps were rescinded as part of the Fiscal Responsibility Act of 2023, according to CDC officials.<sup>5</sup>

<sup>5</sup>See Pub. L. No. 118-5, div. B, tit. I, § 2(18), 137 Stat. 10, 24.

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# Appendix II: Centers for Disease Control and Prevention Awards to Jurisdictions for Public Health Preparedness Infrastructure

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The Centers for Disease Control and Prevention's (CDC) Public Health Emergency Preparedness (PHEP) and Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) cooperative agreements are the agency's two key programs that provide awards to jurisdictions—states, localities, and territories and freely associated states—for infrastructure to prepare for public health threats, using funding from annual appropriations.<sup>1</sup>

- Awards through PHEP from annual appropriations support preparedness for “all-hazard” public health threats, including infectious diseases, extreme weather events, or terrorist threats. As of fiscal year 2022, CDC provided awards through PHEP to 62 jurisdictions (50 states, four localities, and eight U.S. territories and freely associated states).
- Awards through ELC from annual appropriations support prevention and control of infectious diseases. As of fiscal year 2022, CDC provided awards through ELC to 64 jurisdictions (50 states, six localities, and eight U.S. territories and freely associated states).

See tables 4 and 5 for awards through PHEP and ELC from annual appropriations to jurisdictions from fiscal year 2019 through fiscal year 2022.

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<sup>1</sup>A cooperative agreement is a federal award to a non-federal entity to carry out a public purpose. Unlike grants, cooperative agreements generally provide for substantial involvement between the federal awarding agency and the non-federal entity in carrying out the funded activity.

CDC also has used PHEP and ELC to make awards to jurisdictions using supplemental appropriations to respond to specific threats. For example, PHEP has been used to provide awards to jurisdictions to help respond to the Zika outbreak, Ebola, and the H1N1 influenza pandemic, and ELC has been used in this manner to respond to the COVID-19 pandemic, the Zika outbreak, Ebola, and other events, such as hurricanes.

**Appendix II: Centers for Disease Control and  
Prevention Awards to Jurisdictions for Public  
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**Table 4: CDC Awards to Jurisdictions through the Public Health Emergency Preparedness (PHEP) Program from Annual Appropriations, Fiscal Years 2019-2022**

Amount in dollars

	2019	2020	2021	2022
<b>States</b>				
Alabama	9,054,221	8,740,894	8,892,198	9,021,541
Alaska	5,447,600	5,169,900	5,210,000	5,760,000
Arizona	12,446,524	12,164,945	12,695,698	13,142,567
Arkansas	6,894,830	6,558,883	6,666,795	6,662,659
California	41,896,344	42,272,321	44,070,003	44,440,891
Colorado	10,368,137	10,066,666	10,407,154	10,828,721
Connecticut	7,842,523	7,514,989	7,693,758	7,756,083
Delaware	5,075,000	5,312,726	5,383,535	5,405,020
Florida	30,329,229	30,596,524	31,844,745	32,589,946
Georgia	16,429,205	16,188,726	16,818,599	17,715,933
Hawaii	5,075,000	5,627,369	5,315,643	5,642,210
Idaho	5,075,000	5,546,900	5,246,538	5,382,980
Illinois	16,296,979	16,052,302	16,541,884	16,606,455
Indiana	11,527,724	11,238,343	11,575,238	11,702,107
Iowa	7,053,143	6,718,250	6,825,471	7,158,236
Kansas	6,600,607	7,009,071	6,778,745	6,818,460
Kentucky	8,293,772	8,348,507	8,510,043	8,553,495
Louisiana	8,672,294	9,102,809	8,934,209	8,919,448
Maine	5,075,000	5,542,500	5,210,000	5,510,000
Maryland	11,399,141	11,105,328	11,510,060	11,777,135
Massachusetts	12,943,677	13,031,996	13,421,314	13,800,043
Michigan	16,185,611	16,309,591	16,711,689	16,981,692
Minnesota	11,164,582	11,235,645	11,559,800	12,131,089
Mississippi	6,527,773	6,936,267	6,655,374	6,601,489
Missouri	10,987,397	10,691,802	11,007,602	11,383,901
Montana	5,075,000	5,542,500	5,210,000	5,210,000
Nebraska	5,329,627	5,726,102	5,446,141	5,483,678
Nevada	7,258,599	6,924,768	7,157,460	7,297,816
New Hampshire	5,447,600	5,280,301	5,345,470	5,663,127
New Jersey	15,400,178	15,144,167	15,725,569	16,344,236
New Mexico	6,638,183	6,664,176	6,760,227	6,949,221
New York	18,544,755	18,683,356	19,480,531	19,763,713
North Carolina	15,356,128	15,108,972	15,545,983	15,894,002



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North Dakota	5,075,000	5,169,900	5,210,000	5,210,000
Ohio	17,356,642	17,502,622	18,042,980	18,224,028
Oklahoma	7,693,590	7,742,012	7,910,584	7,950,479
Oregon	8,109,807	8,161,938	8,382,359	8,444,226
Pennsylvania	18,782,276	19,315,104	19,517,788	19,783,265
Rhode Island	5,447,600	5,271,773	5,336,988	5,369,497
South Carolina	9,917,925	9,979,562	10,217,636	10,404,117
South Dakota	5,075,000	5,542,500	5,210,000	5,210,000
Tennessee	11,198,104	11,654,608	11,636,659	12,135,779
Texas	39,141,025	39,129,703	40,952,164	42,270,242
Utah	7,157,125	6,823,464	7,004,062	7,461,137
Vermont	5,447,600	5,169,900	5,210,000	5,210,000
Virginia	14,857,347	14,966,098	15,481,874	15,885,898
Washington	12,756,443	12,478,656	12,955,078	13,507,141
West Virginia	5,556,448	5,196,440	5,255,093	5,229,883
Wisconsin	11,333,547	11,404,763	11,623,201	11,917,508
Wyoming	5,075,000	5,169,900	5,210,000	5,210,000
<b>Localities</b>				
Chicago	9,715,194	9,651,560	10,070,627	10,207,392
Los Angeles County	20,235,667	19,648,468	20,733,030	20,923,151
New York City	18,790,865	18,608,800	19,398,987	20,055,935
Washington, D.C.	6,831,442	6,467,129	6,548,017	6,527,834
<b>Territories and freely associated states</b>				
American Samoa	411,385	412,042	422,440	413,424
Federated States of Micronesia	467,114	468,367	488,764	478,510
Guam	532,702	534,657	550,942	543,123
Marshall Islands	408,616	409,243	426,964	418,761
Northern Mariana Islands	410,851	411,502	425,119	408,982
Palau	374,215	374,474	380,471	370,357
Puerto Rico	6,522,620	6,560,315	6,613,160	6,653,125
U.S. Virgin Islands	465,667	466,904	478,140	466,932
<b>Total</b>	<b>622,858,200</b>	<b>622,850,000</b>	<b>637,850,603</b>	<b>651,788,620</b>

Source: GAO summary of Centers for Disease Control and Prevention (CDC) information. | GAO-24-105891

**Appendix II: Centers for Disease Control and  
Prevention Awards to Jurisdictions for Public  
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**Table 5: CDC Awards to Jurisdictions through the Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) Program from Annual Appropriations, Fiscal Years 2019-2022**

Amount in dollars

	2019	2020	2021	2022
<b>States</b>				
Alabama	3,010,949	2,786,412	1,985,192	1,895,343
Alaska	2,198,044	2,360,438	2,298,907	2,216,487
Arizona	3,973,064	4,124,917	3,152,987	2,868,459
Arkansas	2,377,216	2,449,146	1,016,332	2,126,337
California	9,809,677	10,104,112	10,339,906	10,362,274
Colorado	5,607,249	6,022,658	5,765,586	5,999,774
Connecticut	3,438,639	3,519,939	2,483,833	2,559,951
Delaware	1,453,443	1,779,045	1,356,732	2,603,053
Florida	5,100,662	5,031,249	4,668,440	4,123,281
Georgia	3,795,427	3,991,569	3,619,330	3,521,597
Hawaii	3,239,651	3,297,631	2,172,006	1,943,945
Idaho	1,303,939	1,493,749	1,476,699	1,570,357
Illinois	4,345,353	4,270,602	2,058,357	1,887,316
Indiana	3,469,969	3,483,728	3,091,126	2,804,594
Iowa	3,590,280	3,552,691	3,623,171	3,197,687
Kansas	2,504,757	2,469,389	2,112,149	2,339,429
Kentucky	2,949,602	3,367,323	2,644,053	2,596,633
Louisiana	2,379,214	2,509,141	1,636,652	2,142,594
Maine	2,483,075	2,631,866	2,218,038	2,293,626
Maryland	5,075,761	5,378,313	5,326,569	5,144,569
Massachusetts	6,195,880	6,032,616	5,281,171	6,800,136
Michigan	6,544,249	6,557,202	6,144,918	6,694,072
Minnesota	9,110,666	9,238,467	8,398,793	8,553,088
Mississippi	1,874,895	2,060,093	1,757,487	1,301,827
Missouri	1,754,550	2,007,361	1,672,082	1,558,132
Montana	2,031,678	1,869,473	1,744,124	1,648,729
Nebraska	3,188,722	3,277,952	2,800,041	3,220,876
Nevada	2,277,390	2,939,527	2,590,580	2,084,665
New Hampshire	2,454,181	2,704,758	2,220,483	1,978,069
New Jersey	3,647,888	3,513,962	2,856,603	3,554,807
New Mexico	2,786,787	3,233,913	2,705,762	2,637,756
New York	9,166,551	10,328,731	9,138,399	8,645,809
North Carolina	3,984,913	3,929,435	3,077,800	3,041,076

**Appendix II: Centers for Disease Control and  
Prevention Awards to Jurisdictions for Public  
Health Preparedness Infrastructure**

	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
North Dakota	1,625,008	1,611,044	1,532,864	1,396,048
Ohio	4,175,762	4,530,634	3,618,072	3,584,552
Oklahoma	1,848,118	2,078,703	1,816,868	2,346,818
Oregon	3,685,357	3,896,941	3,113,419	2,894,936
Pennsylvania	4,895,626	4,785,075	4,224,511	3,351,687
Rhode Island	2,502,574	2,396,464	2,129,096	2,082,650
South Carolina	2,998,885	2,922,316	2,675,988	2,589,107
South Dakota	1,373,406	1,388,902	1,265,408	1,353,475
Tennessee	7,679,562	8,377,034	7,419,816	7,507,419
Texas	5,381,154	4,959,840	4,185,501	3,995,395
Utah	5,602,616	6,176,813	5,377,078	5,471,840
Vermont	1,792,334	1,896,253	1,732,946	1,824,340
Virginia	4,223,932	4,429,490	4,170,703	5,104,364
Washington	8,800,972	9,412,090	9,078,502	8,856,117
West Virginia	1,656,477	1,720,094	1,166,050	954,235
Wisconsin	7,260,406	7,660,458	6,420,125	5,703,549
Wyoming	1,502,790	1,828,474	1,443,906	1,369,717
<b>Localities</b>				
Chicago	2,292,836	2,206,179	1,820,923	1,982,590
Houston	2,277,708	2,697,022	1,867,096	1,649,214
Los Angeles County	4,105,908	4,945,876	4,125,687	3,808,296
New York City	8,250,353	8,355,609	4,298,101	4,783,905
Philadelphia	1,877,926	1,796,063	1,708,410	1,688,458
Washington, D.C.	2,239,392	2,564,102	2,356,350	2,136,994
<b>Territories and freely associated states</b>				
American Samoa	284,280	237,373	13,000	382,200
Federated States of Micronesia	225,330	216,665	155,796	155,509
Guam	920,067	813,246	817,953	231,456
Marshall Islands	384,855	499,085	272,517	397,349
Northern Mariana Islands	868,588	1,018,675	693,292	699,287
Palau	519,555	511,662	446,627	260,750
Puerto Rico	1,021,075	1,371,190	1,070,675	1,350,680
U.S. Virgin Islands	1,120,501	1,194,312	1,138,831	1,210,804
<b>Total</b>	<b>220,517,674</b>	<b>230,815,092</b>	<b>195,590,419</b>	<b>197,040,089</b>

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) information. | GAO-24-105891

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# Appendix III: Selected State, Local, and Territorial Health Department Profiles

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This appendix presents information about selected jurisdictions' (states, localities, and territories) health department characteristics and federal awards for public health infrastructure to prepare for and respond to threats.

Jurisdictions have wide latitude on how to organize and operate their health departments—there is no standard for how they must be structured and thus, wide variation exists across jurisdictions. For example, state public health agencies may be part of larger departments or stand-alone agencies within state government. Additionally, the relationship between state health departments and local public health units differs across states, and typically falls into one of the following types of governance structures, according to the Centers for Disease Control and Prevention's (CDC) website:<sup>1</sup>

- **Centralized or largely centralized structure.** Local health units are primarily led by employees of the state and governed by the state.
- **Decentralized or largely decentralized structure.** Local health units are primarily led by employees of the local government and governed by the local government.
- **Shared or largely shared structure.** Local health units are either (1) primarily led by employees of the state and some, if not all, authorities reside with the local government, or (2) primarily led by employees of the local government and some, if not all, authorities reside with the state government.
- **Mixed structure.** Some local health units are led by employees of the state and some are led by employees of local government. There is a mix of centralized, decentralized, and shared governance structures; no single structure predominates.

Jurisdictions' health departments may also seek accreditation. Accreditation of health departments was established with support from CDC and the Robert Wood Johnson Foundation to help provide more standardization of services, though accreditation is not a requirement to receive federal funding, including CDC awards. According to the Public Health Accreditation Board, accreditation ensures the public that the

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<sup>1</sup>See CDC, "Health Department Governance," accessed Aug. 1, 2023, <https://www.cdc.gov/publichealthgateway/sitesgovernance/index.html>. CDC's website is based on information from the Association of State and Territorial Health Officials.

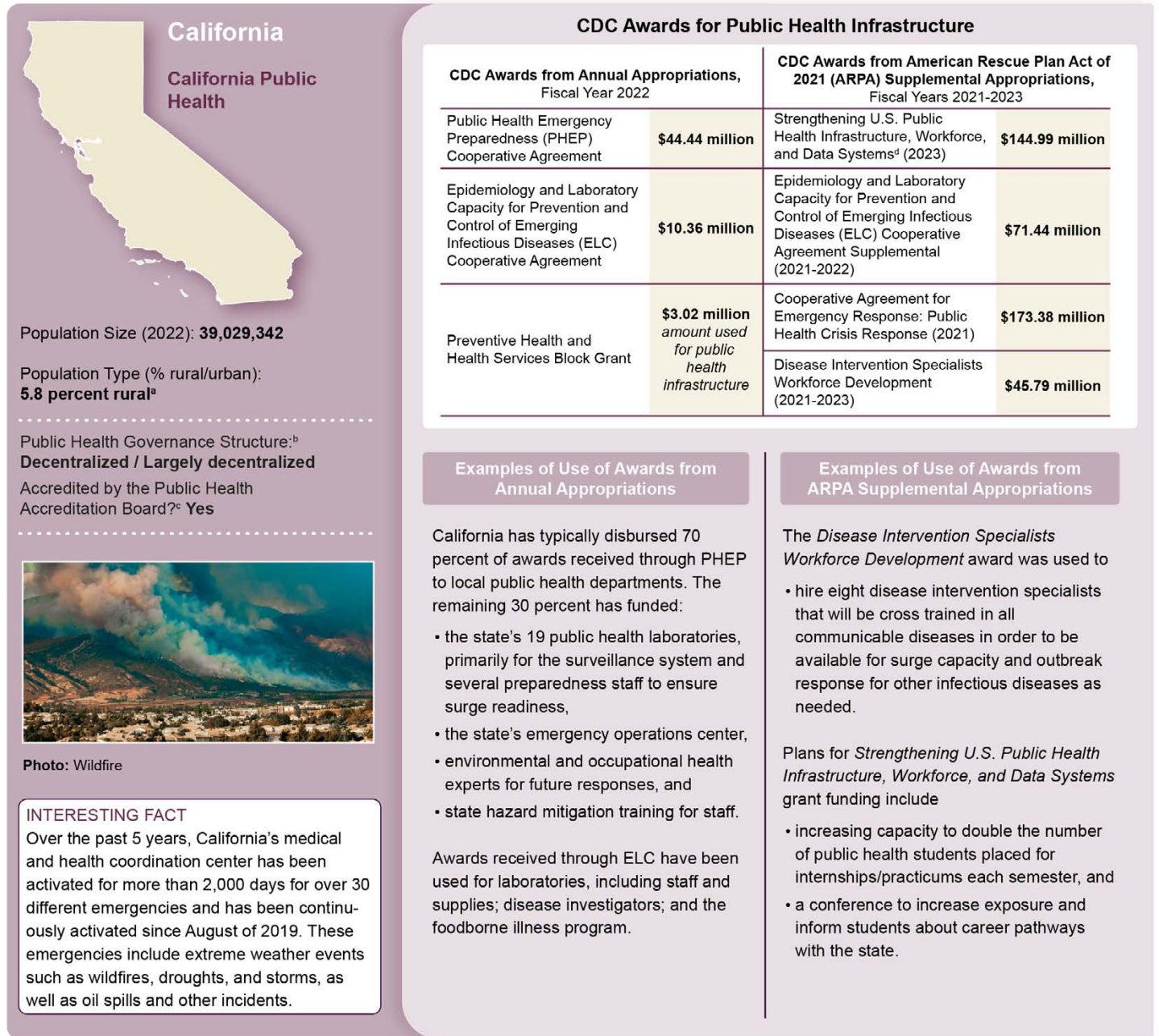
jurisdiction has met standards and such accreditation could help advance performance more consistently across health departments.

For our review, we selected four states, six localities, and two territories to obtain a variety of the following characteristics: health department governance structure, localities that receive funding through the state versus directly from the CDC, and percent of rural population, as calculated by the U.S. Census Bureau. We selected and interviewed health department officials for the following 12 jurisdictions: California; Maine; Maryland; South Carolina; Los Angeles County, Calif.; San Bernardino, Calif.; San Francisco, Calif.; Portland, Maine; Baltimore, Md.; Garrett County, Md.; Puerto Rico; and the U.S. Virgin Islands.<sup>2</sup> The following figures provide information on public health in each of the 12 selected jurisdictions.

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<sup>2</sup>We also interviewed officials from Penquis-District 6 in Maine; we counted their responses as responses from the state because decisions are made at the state level and officials report to the state. We did not interview localities in South Carolina, Puerto Rico, and the U.S. Virgin Islands as these jurisdictions do not have local health departments.

Figure 6: California Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the California Department of Public Health (information); GAO (map); Scott/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

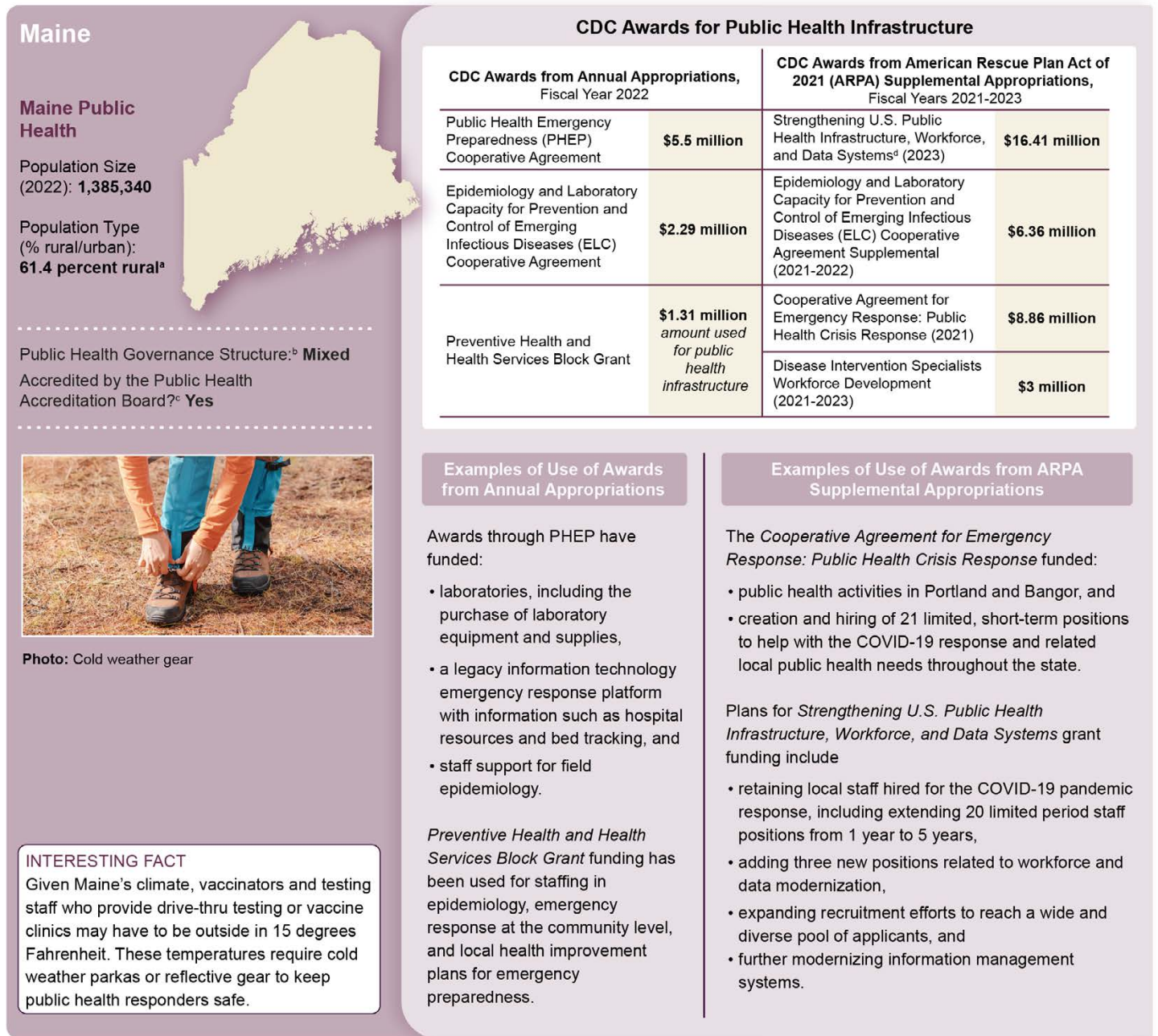
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<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Decentralized/largely decentralized governance indicates that local government employees primarily lead their local health departments and local governments govern their local health units.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 7: Maine Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the Maine Center for Disease Control and Prevention (information); GAO (map); EdNurg/stock.adobe.com (photo). | GAO-24-105891



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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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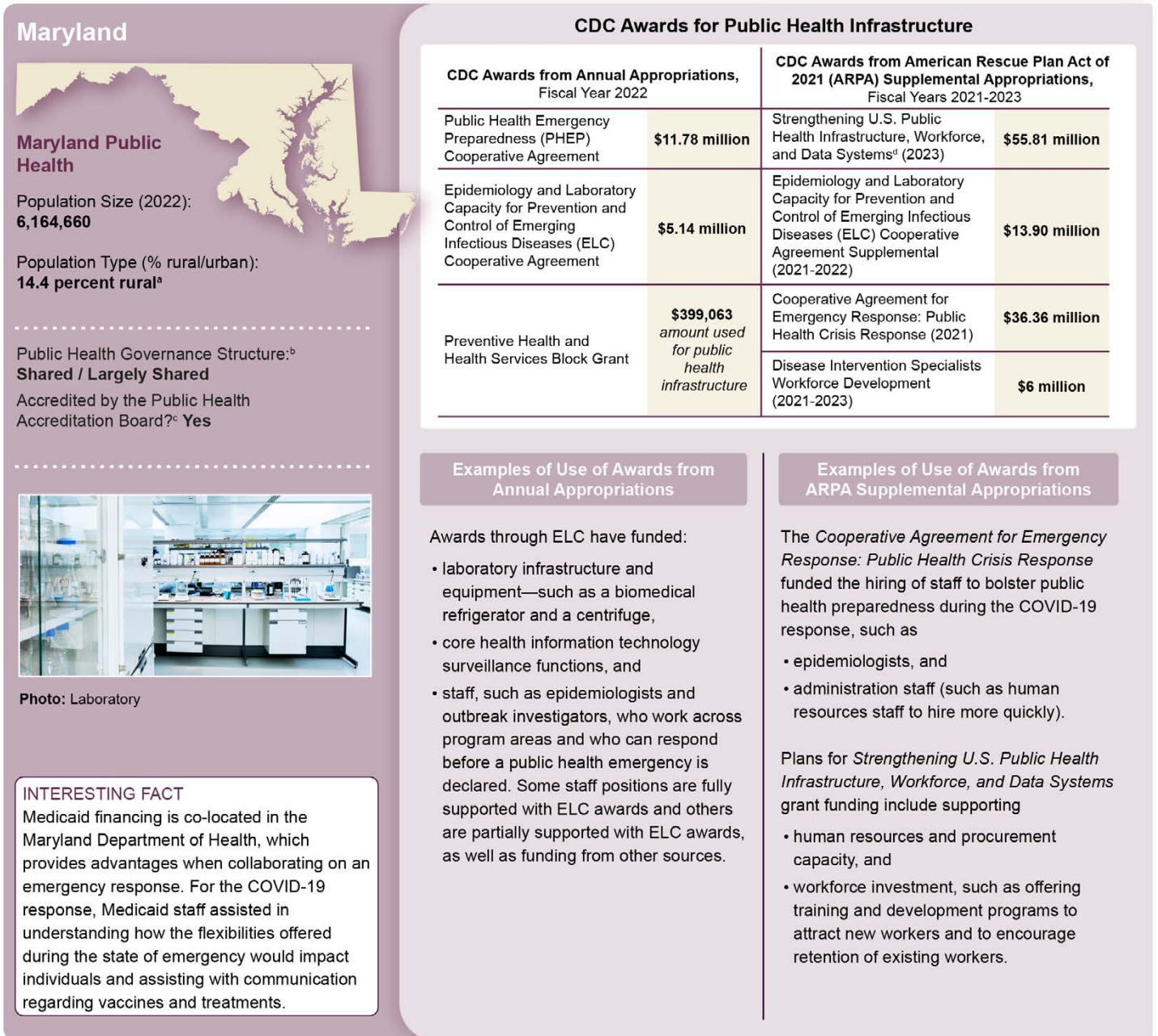
<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Mixed governance indicates that some local health units are led by employees of the state and some are led by employees of local government.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 8: Maryland Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the Maryland Department of Health information); GAO (map); ChrisRyan/KOTO/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

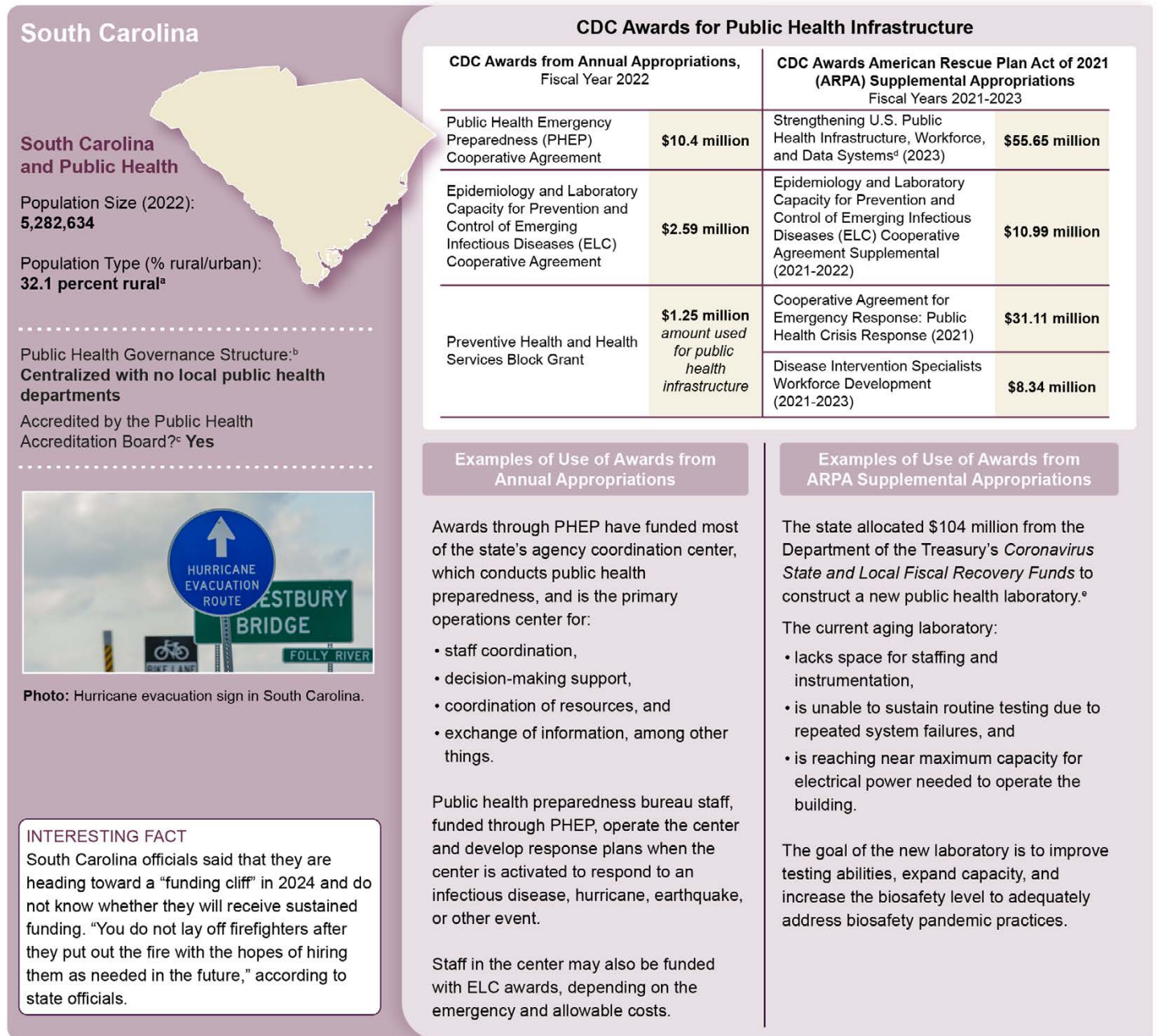
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<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Shared/largely shared governance indicates that local health units are either (1) primarily led by employees of the state and some, if not all, authorities reside with the local government, or (2) primarily led by employees of the local government and some, if not all, authorities reside with the state government.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 9: South Carolina Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the South Carolina Department of Health and Environmental Control (information); GAO (map); eric/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau’s 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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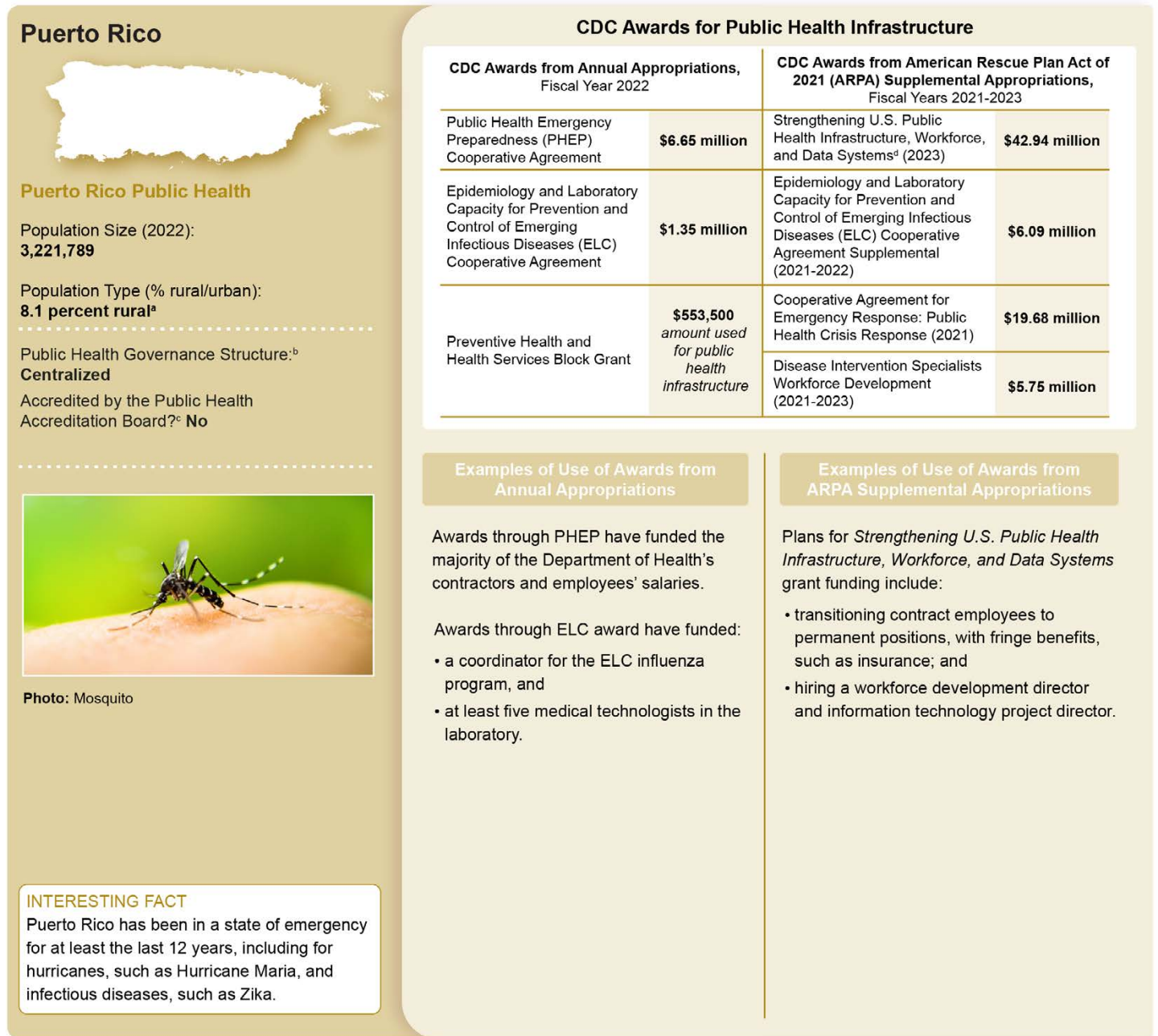
<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Centralized governance indicates that local health units are primarily led by employees of the state and governed by the state.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

<sup>e</sup>The *Coronavirus State and Local Fiscal Recovery Funds* are administered by the Department of the Treasury and provided billions of dollars to jurisdictions to help them recover from the fiscal effects of the COVID-19 pandemic. Jurisdictions had broad discretion in using the funding and could use it to build public health infrastructure.

Figure 10: Puerto Rico Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the Puerto Rico Department of Health (information); GAO (map); auimeesi/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

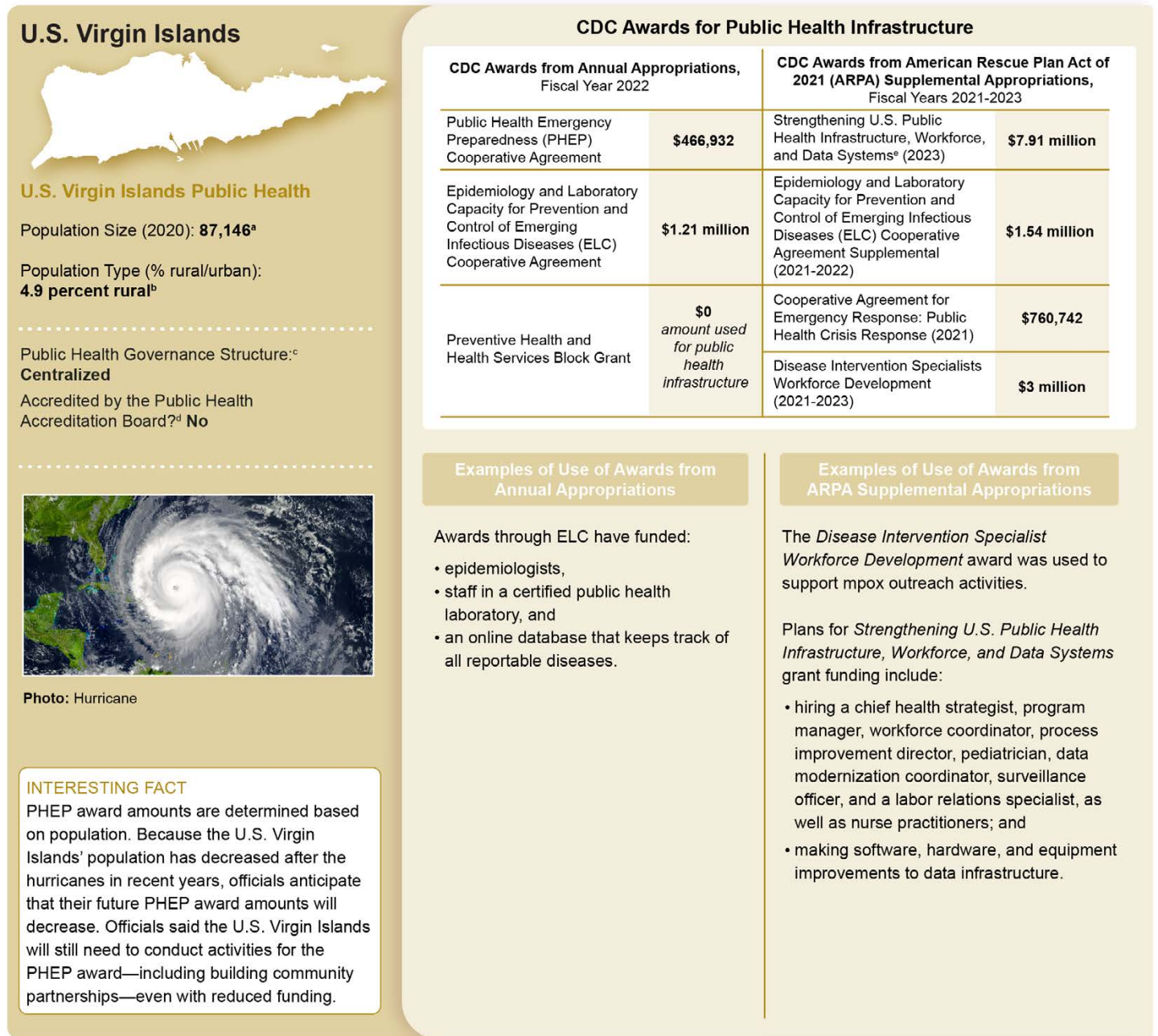
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<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Centralized governance indicates that local health units are primarily led by employees of the state and governed by the state.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 11: U.S. Virgin Islands Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the U.S. Virgin Islands Department of Health (information); GAO (map); Mike Mareen/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>Data from the 2020 U.S. Census were the most recent data available for U.S. Virgin Islands.



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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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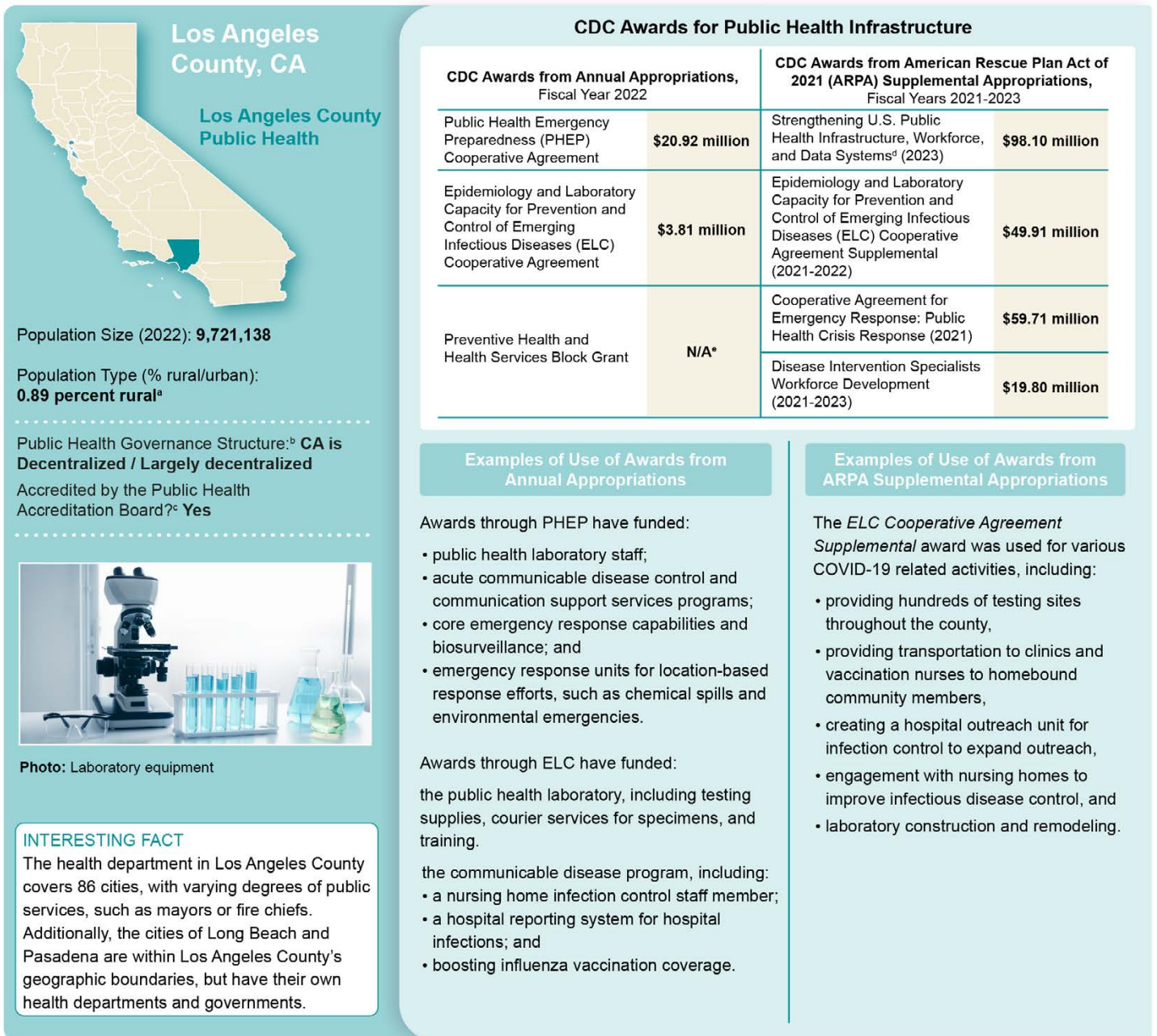
<sup>b</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

<sup>c</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Centralized governance indicates that local health units are primarily led by employees of the state and governed by the state.

<sup>d</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>e</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 12: Los Angeles County, California, Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the Los Angeles County Department of Public Health (information); GAO (map); Maha Heang 245789/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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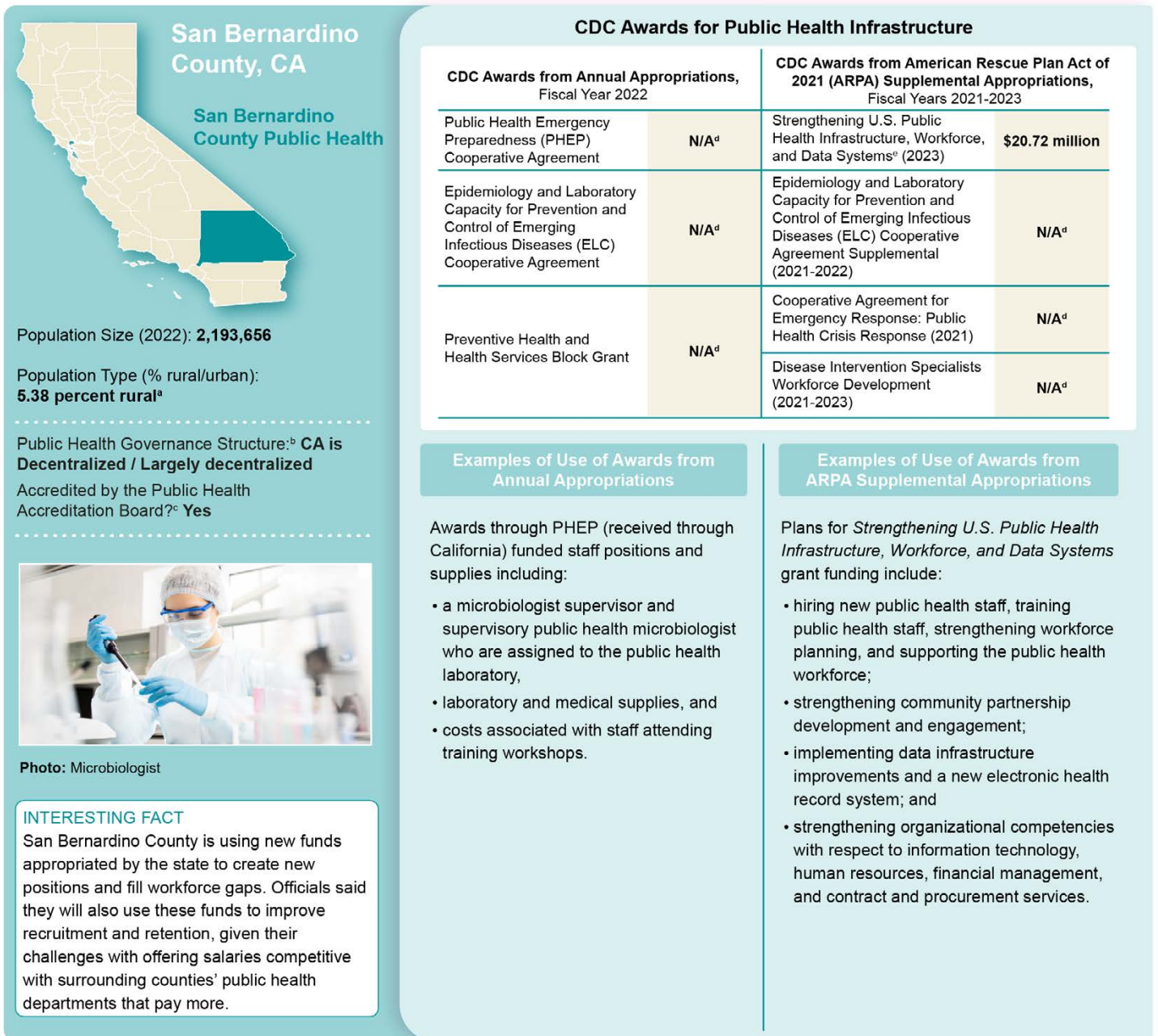
<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Decentralized/largely decentralized governance indicates that local government employees primarily lead their local health departments and local governments govern their local health units.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

<sup>e</sup>CDC does not provide Preventive Health and Health Services block grant funding directly to the locality, and officials told us that Los Angeles County does not receive block grant funds from the state.

Figure 13: San Bernardino, California, Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the San Bernardino County Department of Public Health (information); GAO (map); Seventyfour/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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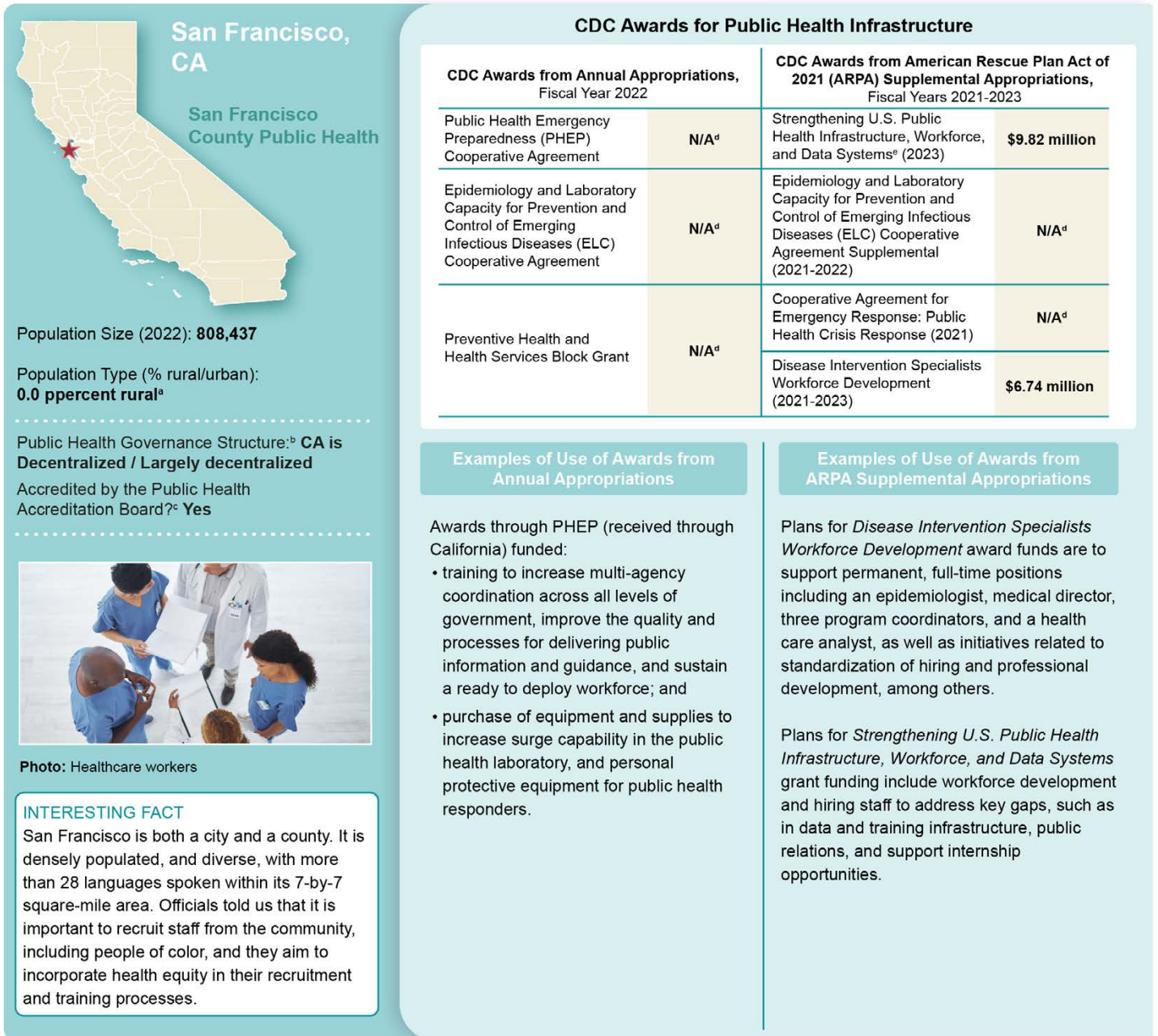
<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Decentralized/largely decentralized governance indicates that local government employees primarily lead their local health departments and local governments govern their local health units.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>CDC does not provide this award directly to the locality, though the locality may receive some award funds through the state. For example, San Bernardino County received some PHEP funds awarded to California.

<sup>e</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 14: San Francisco, California, Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the San Francisco Department of Public Health (information); GAO (map); Kirsten D/peopleimages.com/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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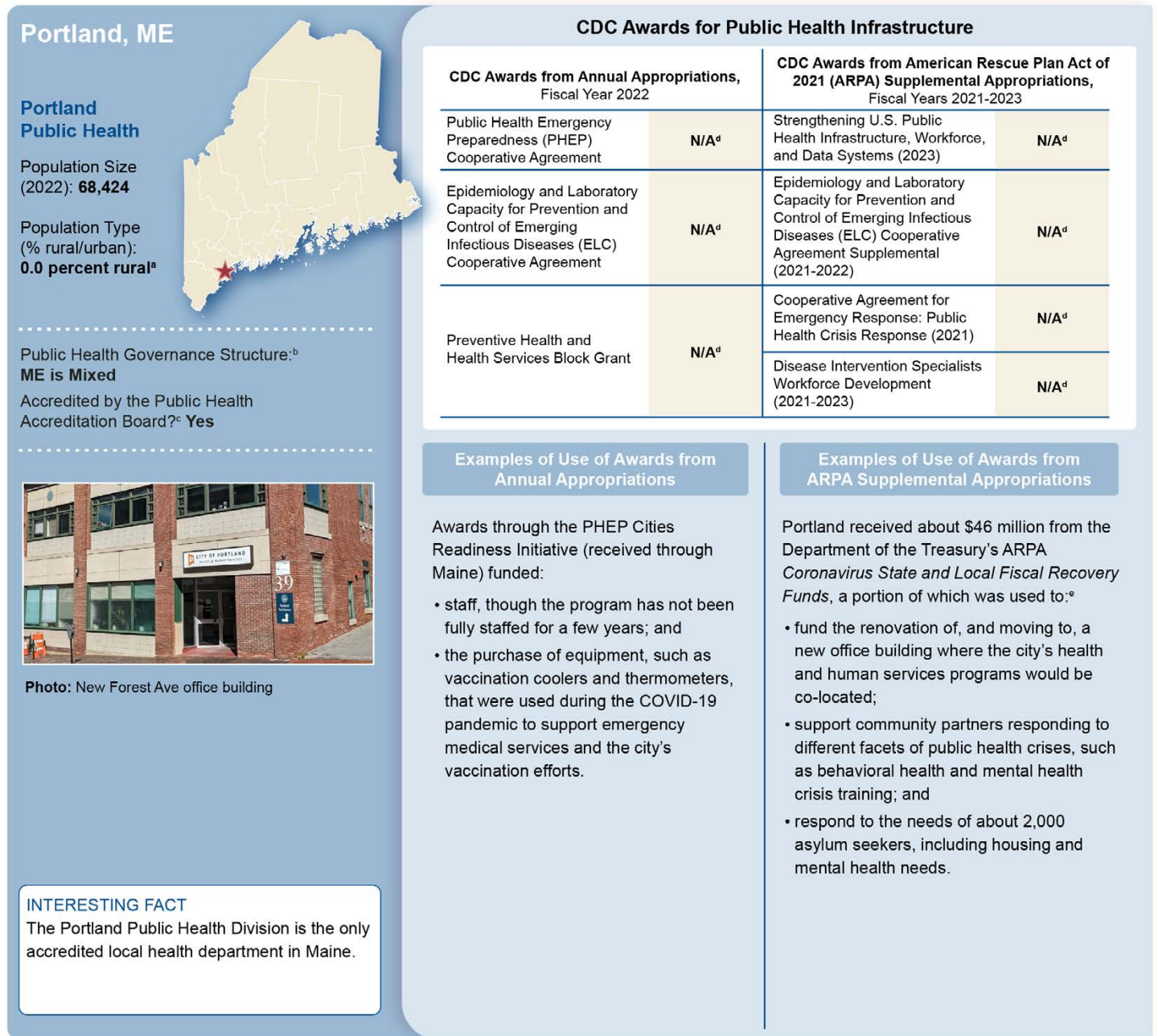
<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Decentralized/largely decentralized governance indicates that local government employees primarily lead their local health departments and local governments govern their local health units.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>CDC does not provide this award directly to the locality, though the locality may receive some awards funds through the state. For example, San Francisco received some PHEP funds awarded to California.

<sup>e</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

Figure 15: Portland, Maine, Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the City of Portland Department of Health and Human Services (information); GAO (map); City of Portland Department of Health and Human Services (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.



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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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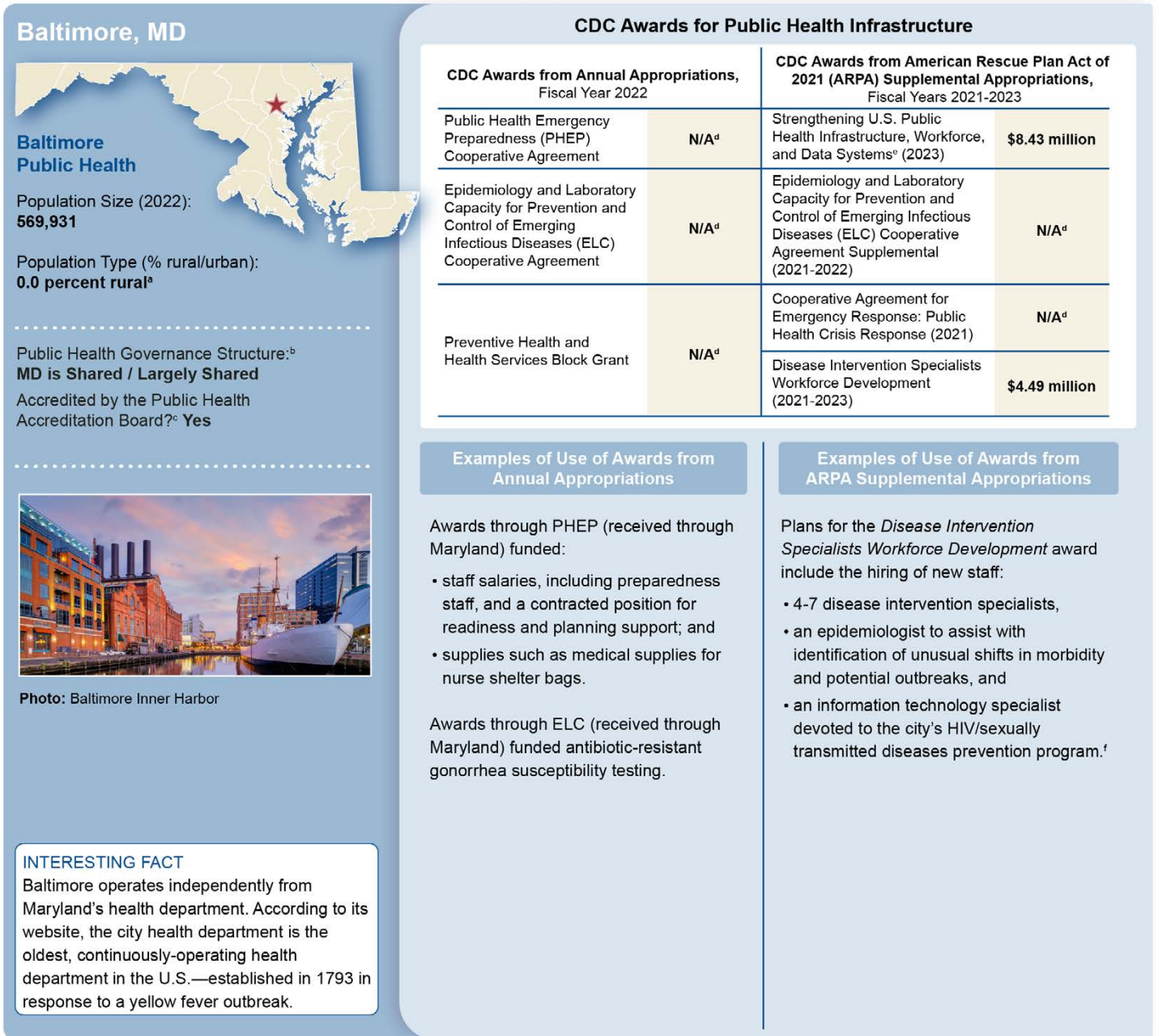
<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Mixed governance indicates that some local health units are led by employees of the state and some are led by employees of local government.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>CDC does not provide this award directly to the locality, though the locality may receive some award funds through the state. For example, Portland received some PHEP funds awarded to Maine.

<sup>e</sup>The *Coronavirus State and Local Fiscal Recovery Funds* are administered by the Department of the Treasury and provided billions of dollars to jurisdictions to help them recover from the fiscal effects of the COVID-19 pandemic. Jurisdictions had broad discretion in using the funding and could use it to build public health infrastructure.

Figure 16: Baltimore, Maryland, Public Health (city)



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the Baltimore City Health Department (information); GAO (map); f11photo/stock.adobe.com (photo). | GAO-24-105891

<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Shared/largely shared governance indicates that local health units are either (1) primarily led by employees of the state and some, if not all, authorities reside with the local government, or (2) primarily led by employees of the local government and some, if not all, authorities reside with the state government.

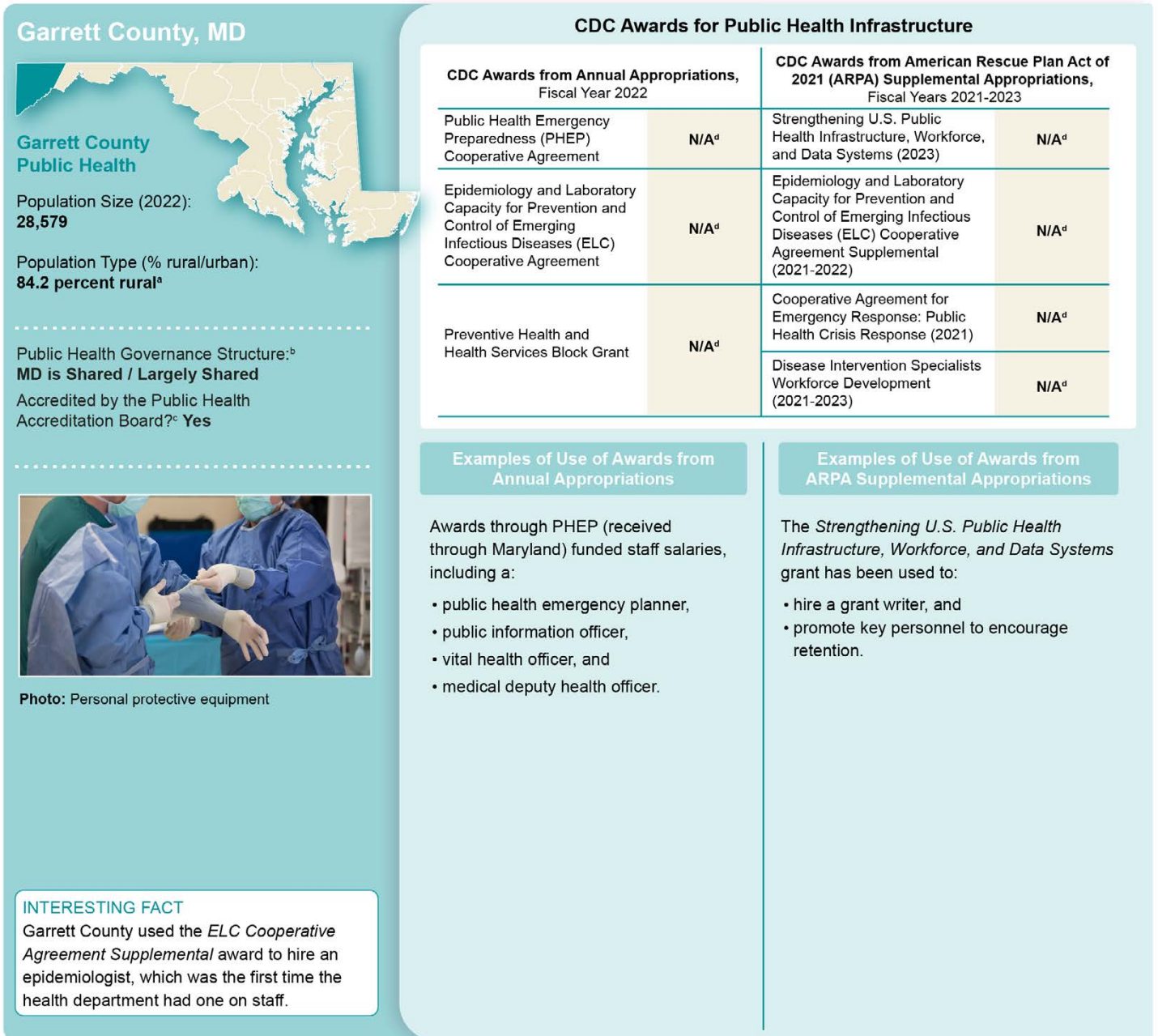
<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>CDC does not provide this award directly to the locality, though the locality receives some award funding through the state. For example, Baltimore received some PHEP funds awarded to Maryland.

<sup>e</sup>The award amount in this row also includes funding from CDC's annual appropriation, which the agency used to fund a portion of the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant.

<sup>f</sup>According to the website, the HIV/sexually transmitted diseases prevention program aims to help prevent the spread of sexually transmitted diseases across Baltimore City. It operates two clinics that hold more than 30,000 patient visits per year.

Figure 17: Garrett County, Maryland, Public Health



Source: GAO analysis of information collected through documents and interviews with the Centers for Disease Control and Prevention (CDC) and officials from the Garrett County Health Department (information); GAO (map); Rick Lohre/stock.adobe.com (photo). | GAO-24-105891

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**Appendix III: Selected State, Local, and  
Territorial Health Department Profiles**

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<sup>a</sup>The U.S. Census Bureau's 2020 data show the percent of the population that is rural versus urban within this area.

<sup>b</sup>Public health governance structure indicates the relationship between state health departments and local public health units. Shared/largely shared governance indicates that local health units are either (1) primarily led by employees of the state and some, if not all, authorities reside with the local government, or (2) primarily led by employees of the local government and some, if not all, authorities reside with the state government.

<sup>c</sup>The Public Health Accreditation Board recognizes health departments—including state, local, and tribal health departments—for meeting national accreditation standards.

<sup>d</sup>CDC does not provide this funding directly to the locality, though the locality may receive some award funding through the state. For example, Garrett County received some PHEP funds awarded to Maryland.

# Appendix IV: Selected Awards to Jurisdictions for Public Health Infrastructure from American Rescue Plan Act of 2021

In fiscal years 2021 through 2023, the Centers for Disease Control and Prevention (CDC) provided about \$7.1 billion in awards to jurisdictions (states, localities, and territories) using American Rescue Plan Act of 2021 (ARPA) supplemental appropriations. Most of these awards were focused on building workforce and laboratory infrastructure capacity.<sup>1</sup> (See table 6 for an overview of these awards.)

**Table 6: Overview of CDC Awards to Jurisdictions for Workforce and Laboratory Infrastructure from ARPA Supplemental Appropriations**

Type	Purpose	Funding
<b>Public health workforce</b>		
Cooperative Agreement for Emergency Response: Public Health Crisis Response	Recruit, hire, train, and retain public health workers for COVID-19 response, including local health staff	\$2 billion awarded in June 2021, can be used through June 2024 Recipients: 64 jurisdictions <sup>a</sup>
Community Health Workers for COVID Response and Resilient Communities <sup>b</sup>	Deploy community health workers to mitigate the COVID-19 pandemic's impact in populations at high risk and in hardest-hit communities	\$18.5 million awarded (more than \$9 million per year) in 2021 and 2022, can be used through July 2024 Recipients: 2 states and 3 localities
Disease Intervention Specialists Workforce Development	Expand, train, sustain, and support Disease Intervention Specialists workforce to strengthen public health departments' capacity to mitigate the spread of COVID-19 and other infections	\$600 million awarded (\$200 million per year) in June 2021 through February 2023 Recipients: 59 jurisdictions <sup>c</sup>
Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems Grant - Workforce Development	Hire, retain, support, and train the public health workforce	\$3 billion awarded in November 2022, can be used through November 2027. Recipients: 107 jurisdictions <sup>d</sup>

<sup>1</sup>We focused on awards from ARPA supplemental appropriations that were provided to jurisdictions' health departments to build and maintain their public health infrastructure. We did not focus on certain awards from ARPA supplemental appropriations that CDC provided to jurisdictions for other entities' use, such as \$10 billion to support reopening schools; and \$1.3 billion to address COVID-19 in specific congregate settings, such as nursing homes and jails.

**Appendix IV: Selected Awards to Jurisdictions  
for Public Health Infrastructure from American  
Rescue Plan Act of 2021**

Type	Purpose	Funding
<b>Laboratory infrastructure</b>		
Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) programs	Enhance laboratory resources through awards focusing on specific laboratory capabilities, construction and renovation, the Laboratory Response Network, and laboratory data exchange <sup>e</sup>	<p>\$385 million awarded in 2021 to 64 jurisdictions to detect, monitor, mitigate, and prevent the spread of COVID-19 in health care settings; this funding partially supported laboratory infrastructure<sup>f</sup></p> <p>\$240 million awarded in 2021 to 64 jurisdictions for advanced molecular detection, sequencing, and analytics, can be used through July 2024<sup>f</sup></p> <p>\$175 million awarded in 2021 to 5 states and 2 localities to construct or renovate public health laboratories, can be used through July 2024</p> <p>\$83.7 million awarded in 2021 and 2022 to varying jurisdictions for the Laboratory Response Network, laboratory data exchange, and advanced molecular detection</p>
Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems Grant - Data Modernization Initiative: Laboratory Data Exchange	Develop a seamless, bidirectional, automated Laboratory Data Exchange ecosystem, including advancing Electronic Laboratory Reporting and Electronic Test Ordering and Results implementation	<p>\$200M awarded in May 2023, can be used through November 2027</p> <p>Recipients: 64 jurisdictions<sup>f</sup></p>

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) information. | GAO-24-105891

Notes: The awards cited above include those that CDC provided to jurisdictional health departments to build and maintain infrastructure using supplemental appropriations from the American Rescue Plan Act of 2021 (ARPA). These awards were available for jurisdictions' use for 2 to 5 years, depending on the award. The awards do not include those that CDC provided to jurisdictions for other entities' use, such as funding to support reopening schools; and to address COVID-19 in specific congregate settings, such as nursing homes and jails.

Funding for the *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant includes annual and ARPA appropriations.

<sup>a</sup>The 64 jurisdictions included 50 states, six localities (including Washington, D.C.), and eight U.S. territories and freely associated states. Additionally, one Tribe received this award; Tribes were excluded from our review and therefore the award amount in this row does not include funding to this Tribe.

<sup>b</sup>The majority of the Community Health Workers for COVID Response and Resilient Communities awards were funded with supplemental appropriations from the CARES Act, which is not included in our review and therefore award amounts using CARES Act supplemental appropriations are not reflected in this table. A portion of this award also went to Tribes and ambulance districts; these entities were excluded from our review and therefore the award amount in this row does not include funding to these entities.

<sup>c</sup>The 59 jurisdictions included 50 states, seven localities (including Washington, D.C.), and two U.S. territories. In June 2021, CDC awarded an initial \$200 million, from ARPA supplemental appropriations, to these jurisdictions and had planned to award similar amounts each year for the remainder of the 5-year funding period, for a total of \$1 billion. However, the Fiscal Responsibility Act of 2023 rescinded certain unobligated funds appropriated by ARPA, including funds CDC had planned to use for this award. See Pub. L. No. 118-5, § 2(15) 137 Stat. 10, 24.

<sup>d</sup>The 107 jurisdictions included 50 states, 49 localities (including Washington D.C.), and eight U.S. territories and freely associated states.

<sup>e</sup>The Laboratory Response Network, established by CDC in 1999, is network of federal, state, local, veterinary, and other laboratories that can respond to emerging infectious diseases, biological and chemical threats, and other public health emergencies.

**Appendix IV: Selected Awards to Jurisdictions for Public Health Infrastructure from American Rescue Plan Act of 2021**

<sup>f</sup>The 64 jurisdictions included 50 states, six localities (including Washington D.C.), and eight U.S. territories and freely associated states.

The largest of these awards during this time period was CDC’s new *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant. For this new infrastructure grant, award amounts were based on population size and a U.S. Census Bureau measure of how at-risk neighborhoods are to the impact of disasters, including the COVID-19 pandemic (referred to as the Community Resilience Estimates). (See table 7 for award amounts individual jurisdictions received through this grant.)

**Table 7: CDC Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems Grant Awards to Jurisdictions, as of May 2023**

Amount in Dollars

<b>States</b>	
Alabama	57,537,352
Alaska	10,458,805
Arizona	26,518,938
Arkansas	35,812,005
California	144,993,860
Colorado	42,675,169
Connecticut	37,226,765
Delaware	13,087,139
Florida	180,132,441
Georgia	99,379,906
Hawaii	16,793,669
Idaho	20,240,774
Illinois	101,748,454
Indiana	60,705,614
Iowa	33,179,837
Kansas	30,904,660
Kentucky	43,486,429
Louisiana	53,621,418
Maine	16,408,004
Maryland	55,805,575
Massachusetts	62,580,778
Michigan	95,621,393



**Appendix IV: Selected Awards to Jurisdictions  
for Public Health Infrastructure from American  
Rescue Plan Act of 2021**

Minnesota	50,849,718
Mississippi	37,198,526
Missouri	58,926,854
Montana	13,774,591
Nebraska	16,930,858
Nevada	14,667,605
New Hampshire	15,298,312
New Jersey	93,185,453
New Mexico	26,642,518
New York	131,513,529
North Carolina	88,171,085
North Dakota	10,643,660
Ohio	110,490,898
Oklahoma	31,751,322
Oregon	36,415,563
Pennsylvania	115,444,383
Rhode Island	13,781,145
South Carolina	55,648,694
South Dakota	12,057,054
Tennessee	60,246,248
Texas	187,971,495
Utah	30,189,997
Vermont	9,320,925
Virginia	79,763,834
Washington	54,566,972
West Virginia	22,095,213
Wisconsin	53,506,756
Wyoming	8,629,029
<b>Localities</b>	
Alameda County (California)	15,353,152
Austin (Texas)	11,941,809
Baltimore City (Maryland)	8,428,472
Boston (Massachusetts)	8,994,809
Chicago (Illinois)	33,358,673
Columbus (Ohio)	9,020,511
Dallas County (Texas)	27,134,379
Denver (Colorado)	8,511,546
Detroit (Michigan)	9,248,900

**Appendix IV: Selected Awards to Jurisdictions  
for Public Health Infrastructure from American  
Rescue Plan Act of 2021**

Douglas County (Nebraska)	7,244,358
Duval County (Florida)	10,651,584
City of El Paso (Texas)	9,881,233
El Paso County (Colorado)	7,830,856
Fulton County (Georgia)	10,535,511
Harris County (Texas)	25,091,359
Hillsborough County (Florida)	15,112,397
Houston (Texas)	28,689,219
Kansas City (Missouri)	7,087,394
King County (Washington)	19,157,230
Long Beach (California)	6,719,638
Los Angeles County (California)	98,097,207
Louisville (Kentucky)	9,551,259
Maricopa County (Arizona)	39,760,988
Marion County (Indiana)	11,177,883
Mecklenburg County (North Carolina)	11,451,205
Miami-Dade County (Florida)	29,051,823
City of Milwaukee (Wisconsin)	8,151,554
Minneapolis (Minnesota)	6,142,604
Multnomah County (Oregon)	9,093,218
Nashville and Davidson County (Tennessee)	8,578,283
New York City (New York)	103,315,139
Oklahoma City and County (Oklahoma)	9,661,176
Orange County (California)	27,054,028
Philadelphia (Pennsylvania)	22,158,817
Pima County (Arizona)	11,924,381
Riverside County (California)	22,604,360
Sacramento County (California)	15,264,533
San Antonio (Texas)	21,543,094
San Bernardino County (California)	20,715,347
San Diego County (California)	28,273,128
San Francisco (California)	9,818,147
Santa Clara County (California)	16,515,503
Shelby County (Tennessee)	11,452,467
Southern Nevada Health District (Nevada)	22,889,114
Tarrant County (Texas)	20,162,748
Tulsa (Oklahoma)	8,351,233

**Appendix IV: Selected Awards to Jurisdictions for Public Health Infrastructure from American Rescue Plan Act of 2021**

Virginia Beach (Virginia)	6,003,499
Wake County (North Carolina)	10,927,123
Washington, D.C.	10,328,059
<b>Territories and freely associated states</b>	
American Samoa	7,206,933
Federated States of Micronesia	7,857,361
Guam	8,654,235
Marshall Islands	7,610,339
Northern Mariana Islands	7,277,541
Palau	6,928,951
Puerto Rico	42,943,557
U.S. Virgin Islands	7,908,911

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) information. | GAO-24-105891

Notes: In November 2022, CDC awarded \$3.14 billion to 107 jurisdictions to help meet short-term critical infrastructure needs, as well as to fund investments to benefit jurisdictions in the longer term. These awards were the first awards made as part of CDC's new *Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems* grant program. According to CDC, this funding will be used to support jurisdictions' public health infrastructure, including \$3 billion for jurisdictions' public health workforce and \$140 million for foundational capabilities, which could include surveillance, emergency preparedness, and other key elements of public health. For these awards, CDC used \$3 billion from ARPA supplemental appropriations and \$140 million from CDC's annual appropriation for fiscal year 2022. In fiscal year 2022, CDC received \$200 million through a new specific line item in its appropriation for public health infrastructure and capacity. See Consolidated Appropriations Act, 2022, Pub. L. No. 117-103, div. H, tit. II, 136 Stat. 49, 448. CDC received \$350 million for this line item in fiscal year 2023 and requested \$600 million in its congressional budget justification for fiscal year 2024. See Consolidated Appropriations Act, 2023, Pub. L. No. 117-328, div. H, tit. II, 136 Stat. 4459, 4860 (2022).

In May 2023, CDC awarded an additional \$545 million to 64 jurisdictions for data modernization: \$345 million for core data modernization activities and \$200 million for laboratory data exchange activities. For these awards, CDC used \$505 million from ARPA supplemental appropriations and \$40 million from its annual appropriation for fiscal year 2023. Only the jurisdictions that previously received awards from Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases for data modernization were eligible to apply for those funds.

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# Appendix V: Additional Challenges to Managing Awards during Public Health Emergencies

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During our review, officials from some of the 12 selected jurisdictions we interviewed identified additional challenges with managing awards made using COVID-19 supplemental appropriations. Though additional awards during the COVID-19 pandemic have bolstered their response efforts, jurisdictions shared the following challenges.

- **Challenges related to spending large amounts of awarded funds quickly.** Officials from the Centers for Disease Control and Prevention (CDC)—which provided multiple awards to jurisdictions during the COVID-19 pandemic—told us that all jurisdictions awarded additional funding from supplemental appropriations during public health emergencies, including the COVID-19 pandemic, have noted limitations in their ability to quickly absorb and mobilize the volume of funds awarded over a short period.
- **Challenges with flexibility.** Officials from many jurisdictions told us that some CDC awards from supplemental appropriations provided in response to the COVID-19 pandemic had limited flexibility, such as being able to be used for the mpox response.
- **Challenges managing various awards with heavy workloads.** Managing the awards from supplemental appropriations during the COVID-19 pandemic, such as tracking and reporting, was complicated and took a lot of staff resources, according to some jurisdictions. The pace and amount of award funding in response to the COVID-19 pandemic made it particularly difficult to manage, according to officials from one jurisdiction we interviewed, given the jurisdiction’s small workforce and insufficient staff early in the pandemic.

The challenges identified in our review are similar to some of the challenges identified in our prior work examining federal awards from supplemental appropriations provided in response to public health emergencies. See table 8 for challenges identified in prior GAO work by challenge category.

**Appendix V: Additional Challenges to  
Managing Awards during Public Health  
Emergencies**

**Table 8: Challenges GAO Previously Reported on Related to Federal Awards from Supplemental Appropriations Provided in Response to Public Health Emergencies**

Type of challenge	Examples
Spending large amounts of awarded funds quickly	<p>In January 2023, we reported that five states described challenges preparing and executing contracts with other organizations to implement programs supported by Centers for Disease Control and Prevention (CDC) awards from supplemental appropriations provided in response to the COVID-19 pandemic. These state officials cited factors such as the amount of time required for state contracting processes, and the need to ensure that organizations meet contract requirements. Additionally, we reported that according to officials from two states, sometimes the limited capacity of local community-based organizations constrained state and local health departments' ability to allocate these awarded funds.<sup>a</sup></p> <p>In April 2022, we reported that states and localities generally experienced more challenges with COVID-19 supplemental appropriations for new programs than with existing programs. Some state and local COVID-19 relief programs and related awards, such as the Coronavirus State and Local Fiscal Recovery Funds, were newly created under the COVID-19 relief laws. For example, states may have struggled to develop needed infrastructure to manage newer programs, according to officials from the three states and several associations we spoke with.<sup>b</sup></p>
Identifying allowable uses of awarded funds	<p>In April 2022, we reported that there may be some confusion among states and localities about which streams of awarded funding should be used for specific purposes when allowable uses are similar and overlap with other programs, according to association officials.<sup>b</sup></p> <p>In July 2021, we reported that Coronavirus Relief Fund recipients found the Department of the Treasury's guidance on eligible uses of the awarded funds to be unclear. For example, some states needed additional guidance on eligible uses of the awards, which delayed their transferring funds to subrecipients, such as local governments. In addition, unclear guidance increased the risk of recipients' noncompliance with award requirements.<sup>c</sup></p> <p>In May 2018, we reported that restrictions on authorized activities for awards from supplemental appropriations in response to the Zika outbreak added administrative burdens for officials while they were busy responding to that outbreak.<sup>d</sup></p> <p>In June 2011, we reported that states receiving awards from supplemental appropriations in response to the H1N1 influenza pandemic found it difficult to plan and manage response activities due to the different award-use limitations, according to the Association of State and Territorial Health Officials.<sup>e</sup></p>
Managing various awards with heavy workloads	<p>In January 2023, we reported that officials from two states told us it was challenging to allocate funds from multiple, large awards from supplemental appropriations while simultaneously addressing the emergent and dynamic health needs of the pandemic.<sup>a</sup></p> <p>In April 2022, we reported that states and localities may face challenges managing and meeting the various reporting requirements for multiple awards. Officials from one association we interviewed then told us there were concerns that some reporting requirements were duplicative and that it would be helpful to have more alignment among reporting requirements for different awards from supplemental appropriations.<sup>b</sup></p> <p>In May 2018, we reported that jurisdictions cited various time frames among multiple awards from supplemental appropriations while responding to the Zika outbreak as a source of added administrative burdens for officials to manage while responding to the outbreak.<sup>d</sup></p>
Hiring	<p>In January 2023, we reported that officials from all five selected states told us they experienced challenges hiring qualified personnel to fill needed positions using CDC awards from supplemental appropriations.<sup>a</sup></p> <ul style="list-style-type: none"> <li>• Officials from three states said this was due to increased competition in hiring from a limited workforce and the time-limited nature of positions supported by these funds.</li> <li>• Two states also reported facing delays recruiting for new positions due to the length of time it took to obtain state approval to create these positions, according to our interviews with state officials and review of state documents.</li> </ul>

**Appendix V: Additional Challenges to  
Managing Awards during Public Health  
Emergencies**

Type of challenge	Examples
Other	<p>In May 2018, we reported that recipients of awards from supplemental appropriations in response to the Zika outbreak cited challenges with adjusting their plans when awarded funding was more or less than anticipated.<sup>d</sup></p> <p>In June 2011, we reported that some local officials said that the specific requirements of awards from supplemental appropriations in response to the H1N1 influenza pandemic were heavily weighted toward vaccination activities, but neither flexible nor sufficient enough to address epidemiology and laboratory expenses.<sup>e</sup></p>

Source: GAO. | GAO-24-105891

<sup>a</sup>GAO, COVID-19: HHS Funds Allocated to Support Disproportionately Affected Communities, [GAO-23-105500](#) (Washington, D.C.: Jan. 24, 2023).

<sup>b</sup>See the COVID-19 Relief Funding to States and Localities enclosure in GAO, COVID-19: Current and Future Federal Preparedness Requires Fixes to Improve Health Data and Address Improper Payments, [GAO-22-105397](#) (Washington, D.C.: Apr. 27, 2022).

<sup>c</sup>See the Coronavirus State and Local Relief and Recovery Funds enclosure in GAO, COVID-19: Continued Attention Needed to Enhance Federal Preparedness, Response, Service Delivery, and Program Integrity, [GAO-21-551](#) (Washington, D.C.: Jul. 19, 2021).

<sup>d</sup>GAO, Zika Supplemental Funding: Status of HHS Agencies' Obligations, Disbursements, and the Activities Funded, [GAO-18-389](#) (Washington, D.C.: May 14, 2018).

<sup>e</sup>GAO, Influenza Pandemic: Lessons from the H1N1 Pandemic Should Be Incorporated into Future Planning, [GAO-11-632](#) (Washington, D.C.: Jun. 27, 2011).

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# Appendix VI: GAO Contact and Staff Acknowledgments

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In addition to the contact named above, Deirdre G. Brown (Assistant Director), Sarah Resavy (Analyst-in-Charge), Robin Burke, Giao N. Nguyen, Catherine Paxton, Erin B. Pearson, and Celia C. Sawyerr made key contributions to this report. Also contributing were Todd Anderson, Jennie Apter, Kaitlin Farquharson, Diona Martyn, Eric Peterson, Shana Sandberg, and Roxanna Sun.

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