

# The future of the public's health

Reimagining the health ecosystem: Programs, policies,  
and systems for strengthening public health



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# Executive summary

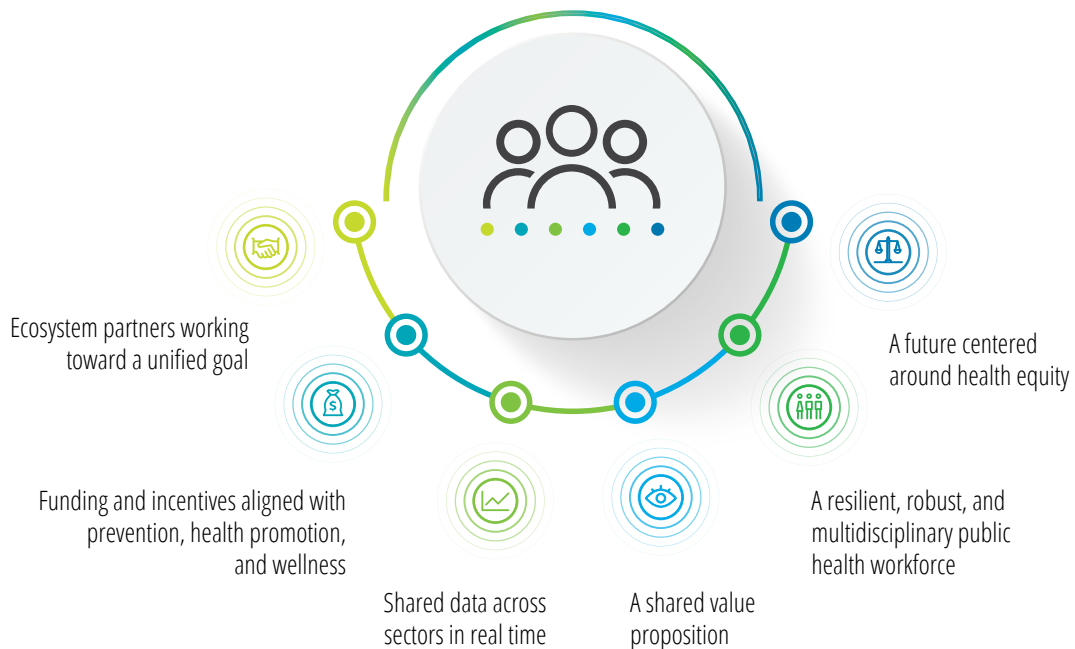
FOR DECADES, MANY visionary leaders have imagined a transformed future of public health: a resilient system of health where the focus is to predict and proactively prevent illness at a community level rather than provide reactive care when an individual gets sick. Preventing disease before it happens can reduce both health care spending and the occurrence and severity of disease. But it's not a simple task. Because one's zip code is a better predictor of health than one's genetic code, achieving drastically improved health

outcomes implies both systems change and cross-sector coordination.

Today there are unique opportunities—both in public attention *and* government financial support—to reform the underlying structures of public health. However, there are also extreme challenges: a decades-long backlog of funding needs, a global pandemic, ongoing preventable chronic disease epidemics, the growing threat of climate change, and pervasive inequities that threaten our health, longevity, and trust in

FIGURE 1

## Six mutually-reinforcing dimensions of the future of public health



Source: Deloitte analysis.

government and its leadership. These uncertainties influence the likelihood of possible public health futures. Recognizing the inherent complexity of the health ecosystem, in this report we lay out both an aspirational vision of the future of the public's health as well as pragmatic steps public health leaders can take to approach this vision.

***Conceptualizing the future.*** In this vision of the future, a community-driven, multisector health ecosystem seeks to ensure every American has the opportunity to thrive. Public health's most vital role as a steward of population health will remain unchanged, guiding the disparate systems that influence the nation's health, such as education, transportation, and housing. Public health leaders will serve as principal health strategists of their communities, forming partnerships across sectors and setting goals to improve community health, inspiring investment from local businesses and others. Shared community indicators will serve as benchmarks to evaluate performance against goals and hold leaders accountable.

This report further explores this strategic vision through six mutually-reinforcing dimensions, and aims to help public health and health care leaders identify what steps they should take here and now to reach this vision for the future:

- 1. Ecosystem partners working toward a unified goal:** Public health agencies will be integrated health partners working closely with private and nonprofit sectors. Public health investment will be a well-established businesses imperative, though public health agencies will not need to be at the center of all public health innovation.
  - Public health leaders can start by assuming the role of convener and nurturing new

relationships with ecosystem partners. These partnerships can strive to improve processes, innovate, and strengthen collaborative infrastructures across offices and agencies.

- 2. Funding and incentives aligned with prevention, health promotion, and wellness:** Future public health funding models will include blended and braided mechanisms to streamline a patchwork system; private equity funding and social impact investing; public health trusts; community development financial institutions (CDFIs); and environment, social, and governance (ESG) investments.

- Public health leaders can start by leveraging existing and untapped funding sources, such as Medicaid waivers and workplace wellness efforts, incentivizing health plan and provider investment in prevention, and capitalizing on next-generation financial investment models that could promote health.

- 3. Shared data across sectors in real time:** Future public health data systems will enable cross-sector, real-time data-sharing. A federally established vision will articulate the architecture and data standards, and each state will require a public health data governance organization (PHDGO) to oversee data collection. Ecosystem partners will use community health indicators to address the root causes of poor health. And leaders will combine genomic-sequenced lab and surveillance data with real-world and nontraditional data sources, such as internet search terms, which can be used for predictive data analytics and population health monitoring.

- Public health leaders can harness real-world and nontraditional data solutions, join growing networks for real-time data sharing, leverage existing research tools, and extend the reach of current resources through automation.

**4. A shared value proposition:** Shared value is created by ecosystem partners investing collaboratively in public health and is based on timely and transparent evaluation and measurement of public health initiatives. Honest public health communication will be critical to defining shared value, and community codesign will generate shared stewardship and strengthen trust.

- Public health leaders can quantify the business case for public health investment, include community members in public health decision-making from the start, combat mis- and disinformation like a national security threat, and borrow from the commercial sector to employ effective communications strategies.

**5. A resilient, robust, and multidisciplinary public health workforce:** The future public health workforce will be racially and ethnically diverse and include a broader skill set base, such as data analysis expertise and improved

ability to connect with and explain concepts to the public. Public health will also be incorporated into K-12 education, creating a career path that begins early.

- Public health leaders can invest in the workforce capacity with new federal funds, extend the workforce by leveraging the gig economy, for example, and upskill the workforce. Universities can generate cross-disciplinary training programs with fields such as engineering and business to increase interest in and awareness of public health.

**6. A future centered around health equity:**

Achieving health equity requires closing the opportunity gap; placing equity at the center of public health aims; incorporating health equity measures into public health initiatives from the start; and infusing diversity, equity, and inclusion (DEI) into the workforce. Public health leaders cannot tackle health equity alone.

- Public health leaders can start by empowering community partners to lead change, building health equity metrics into funding and national guidelines, and galvanizing communities to advocate for equitable fiscal policy as a public health imperative.

# Introduction

IN 2015, THE United States public's health began to deteriorate. Life expectancy began to decline, driven by a widening socioeconomic gradient, with those in the bottom income brackets more likely to die early from drug overdose and suicide.<sup>1</sup> Then in early 2020, the COVID-19 pandemic struck. The virus thrived on the shortcomings of a public health infrastructure composed of chronically underfunded federal and state public health agencies and 2,800 local health departments across the country.<sup>2</sup> The pandemic often fed off populations with inconsistent access to adequate housing, nutritious food, and basic health care—the same populations facing an already deteriorating life expectancy and a growing share of disease burden.

The US public health and health care systems were unprepared for COVID-19 and experienced excess premature mortality rates higher than peer countries.<sup>3</sup> Mortality from COVID-19 was even greater among low-income and racially and ethnically diverse communities,<sup>4</sup> as we know that the economic, environmental, and social challenges (the drivers of health) that a person confronts influence their health outcomes.

These challenges are not new—COVID-19 only exacerbated the long-standing consequences of a country relying on a broken health infrastructure. Indeed, every system is perfectly designed to get the results it gets.<sup>5</sup> Instead of encouraging wellness, our

health system puts a premium on sick care. The United States spends twice as much on health care than any other OECD nation, driven primarily by higher payments to physicians and hospitals.<sup>6</sup> Yet, the nation has the lowest life expectancy compared to peer nations, with its health system recently ranked last against 11 wealthy countries on health-care outcomes.<sup>7</sup> Our top causes of death include preventable chronic conditions exacerbated by or caused by lifestyle and environmental conditions—and this has been consistent since at least 1990.<sup>8</sup>

**“Public health is what we do together as a society to ensure the conditions in which everyone can be healthy.”**

— *Public health 3.0: A call to action for public health to meet the challenges of the 21st century*<sup>9</sup>

For decades, public health leaders have envisioned a future in which multiple sectors work to promote the shared aims of population health and wellness. The challenge that has confronted us is *how* to get to that future.

## METHODS

We identified current challenges, a future vision for public health in the United States, and examples of public health innovation through conversations with more than 30 eminent leaders in public health, health care, and government. These conversations and the promising practices we identified help lay out a vision for public health that is radically reenvisioned from the system that we know today.

# Our central vision of the future of the public's health

**G**IVEN THE COMPLEXITY of today's health ecosystem, any prediction of the future of public health involves considerable uncertainty. While this report lays out an aspirational vision of the future as well as steps leaders can take today to approach that vision, a fully reimagined set of priorities and strategies for the future of public health should be codeveloped with the National Academy of Medicine. This effort should build upon its landmark 1988 report on the future of public health, which summarized evidence that public health systems were in disarray, and galvanized investment in governmental public health activities to define necessary resources and essential public health services.<sup>10</sup>

**“Our future is contested. There are many dynamics that create division, but those same forces can also create interdependency and strengthen shared stewardship. We have to be willing to work together across boundaries more than we are now.”**

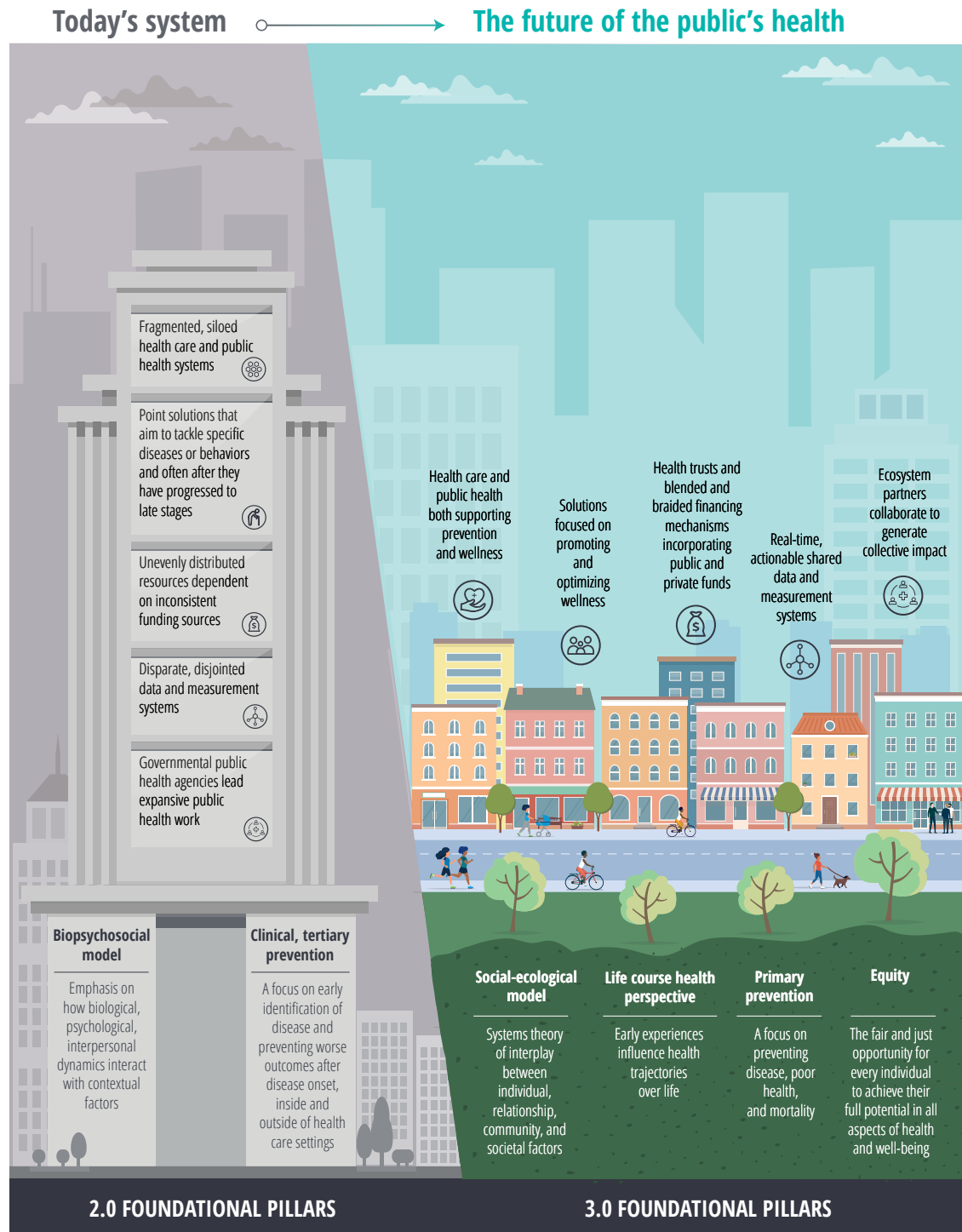
— *Bobby Milstein, PhD MPH, director of systems strategy, Rethink Health*

Many components of this future are already clear today. This is a [vision](#) in which our health care system will join the public health mission of sustaining population wellbeing; addressing the root causes of poor health in addition to supporting acute care needs. Public health and health care systems will not only activate to effectively shut down the spread of a novel virus that threatens to kill more than a million people across the country, but also will help ensure a future where every child has the opportunity to enter kindergarten ready to learn. The homes, neighborhoods, and cities we live in will foster better health instead of contributing to asthma, obesity, diabetes, and other chronic conditions. And persistent racial and economic inequalities will be fundamental targets of future public health initiatives, with health equity at the center.

Public health transformation will require shifting from a clinical paradigm focused on individuals to a health-promoting paradigm focused on communities, where goals extend into a longer time horizon to create a legacy of caring for future generations. Achieving the large-scale socioeconomic change required to improve health outcomes will necessitate support and collaboration from multiple sectors of society. Businesses will have the opportunity to do well by doing good, aligning private value with public good.<sup>11</sup> This will likely require an ecosystem approach and a radical shift from today's activities (figure 2).



FIGURE 2



Source: Deloitte analysis.

Though public health activities have traditionally included sanitation and hygiene, infection control, and reducing morbidity and mortality of chronic disease, the future of the public's health will likely also depend on its ability to coalesce data sources from genetically-sequenced data, community indicators, and self-reported data for prepositioned countermeasures, rapid response, and community planning.<sup>12</sup> Public health's most vital role as a steward of population health should remain unchanged. Leaders can build upon this fundamental responsibility to guide and convene the disparate systems that influence the nation's health, such as education, transportation, and housing.

**“No one leader can do it alone. Leading a community often means leading from behind; allowing someone else who knows more about it or has more credibility than you take the lead and reach out to people to effect change.”**

— *Hugh H. Tilson, MD, DrPH, FACPM, adjunct professor, UNC Gillings School of Global Public Health*

The future of public health is powered at the local level with local public health leaders serving as principal health strategists of their communities. These leaders will form partnerships across sectors and with community members to collect meaningful data about the health of their communities. They will convene community members, grassroots organizations, businesses, and others in shared stewardship to define

community health needs and act on public health aims. As a result, public health activities will look different in every community, but will be supported by overarching state and federal guidance.

Among other activities, state public health leaders will collect and distribute vital financial, workforce, data, and knowledge resources to bolster community initiatives while leading efforts to measure and demonstrate public health impact. Perhaps most importantly, states will convene and support regional learning collaboratives and innovation hubs where ecosystem partners can share ideas, test innovations, and pool resources.



In this future, the US Department of Health and Human Services (HHS) secretary will use the Healthy People 2030 objectives to steer funding decisions and to lead an annual press conference on the State of American Health, discussing progress toward these goals.<sup>13</sup> In addition to supporting an aligned health system, HHS leadership will join forces with other agency leads and nontraditional sectors to design policies that strengthen population wellness. Importantly, federal health leaders cannot lead alone with business on the sidelines. As the country faces mounting obstacles to human flourishing, public and private partners should collaborate in new ways.

Embracing this vision means the entire health ecosystem fully adopting Healthy People 2030's 355 10-year national objectives meant to improve the health and wellbeing of the US population, such as increasing the health literacy of the population.<sup>14</sup> And it means reframing our approach to measuring public health success beyond disease status to a more holistic view of wellbeing. Access to humane housing, a thriving natural world, basic

needs for health and safety, meaningful work and wealth, lifelong learning, reliable transportation, and belonging and civic muscle form a set of vital health conditions for wellbeing.<sup>15</sup>

Shared community indicators tied to vital health conditions will serve as benchmarks to evaluate performance against goals and to hold accountable the community leaders committed to driving forward change. These indicators are inextricably linked to the potential positive economic benefits that accrue accordingly: research suggests that for every US\$1 invested in the health of the population, the US gains up to US\$4 in economic benefit.<sup>16</sup>

Through the rest of this report, we lay out six founding principles that this conceptual vision is built upon. As our examples illustrate, these founding principles are interwoven and mutually-reinforcing. We dive deeper into the details of this future vision and offer steps that can be taken today to move toward that vision, demonstrating that the best way to create the future is to recognize it in the present.

**“The future is already here—it’s just not evenly distributed.”**

— *William Gibson, The Economist, December 4th, 2003*<sup>17</sup>



## Ecosystem partners working toward a unified goal

**M**ANY ASPECTS OF the modern economy have worsened health outcomes, from the processed foods we eat to pollutants in our air and drinking water. But these same dynamics have the potential to drive forward health improvement and shared value in the future. The vision for public health is principally one in which the public, private, and nonprofit sectors come together around a strategy to create the conditions for all people to thrive.<sup>18</sup> In this vision, public health agencies serve as integrated health partners, seamlessly collaborating with private organizations to support investments in the social, economic, and environmental dynamics that influence health. Private partners can bring unique resources, including technology and data expertise, to the table.

**“It’s a four legged-stool: state, local, and federal public health, and private sector partners who should see public health as part of what they do.”**

— *Georges Benjamin, MD, president, American Public Health Association*

The COVID-19 pandemic has made it apparent that a resilient public health infrastructure that emphasizes well-being, prevention, and preparedness is central to economic success. Recentering public health and health care around vital conditions of health can give rise to more social cohesion, greater consumer buying

power and consumption of business products, and a more skilled and healthier workforce.<sup>19</sup> Moreover, fostering healthy communities can help businesses recruit and retain workers.

In this future, collaboration between public and private organizations can extend the reach and impact of public health campaigns. We see examples of this already today: Uber partnered with the National Urban League, Morehouse School of Medicine, and the National Action Network to offer 10 million free or reduced-fare rides to low-income, Black Americans to get the COVID-19 vaccine, recognizing that this population is disproportionately affected by COVID-19.<sup>20</sup>

Public health agencies are poised to work across sectors by providing leadership, guidance, and convening capacity, supporting other entities in their shared efforts to foster the public’s health. The format (the who and the what) of collaboratives matters less than partners coalescing around achieving a future where everyone can thrive.<sup>21</sup> As businesses aim for greater resiliency and success, they can help to produce a more resilient and equitable society.

**“Public health is place-based at its roots, well-positioned to think across domains. Two key functions could be to convene and guide.”**

— *Douglas Jutte, MD, MPH, executive director, Build Healthy Places Network*



## TAPPING INTO ECOSYSTEMS PARTNERS TO ACHIEVE SUCCESS

Adopted by the San Diego County Government, **Live Well San Diego** is a collaborative of 500 partners, including health plans, pharmacies, city governments, hospitals, community health centers, school districts, chamber of commerce, national associations such as the American Cancer Society, tribal governments, military and veteran organizations, local, community-based nonprofits, and others.<sup>22</sup> Partners are required to commit to a collective vision to: 1) improve the health of residents and support healthy choices, 2) ensure residents are protected from crime and communities are resilient to disasters, and 3) cultivate opportunities for all people and communities to thrive.<sup>23</sup>

Live Well San Diego has demonstrated results at their 10-year anniversary in 2020, including a 12% reduction in deaths associated with preventable health threats, a 50% decrease in the air quality days ranked unhealthy, and a 21% increase in miles of available bikeways.<sup>24</sup>

**Healthy Davis Together (HDT)** is a joint effort between the City of Davis and the University of California, Davis, that integrates evidence-based epidemiological and behavior change methodologies to reduce COVID-19 transmission and reactivate communities safely. While HDT achieved success in many areas, one metric of success is vaccinating 83% of migrant farm workers in the area. To do this, HDT partnered with CommuniCare, a federally qualified health center, to stand up freestanding vaccination sites, and extended mobile vaccinations to migrant farm workers.<sup>25</sup>

While the goal should not be to remove public health wholly from government, certain tasks, roles, and activities to improve health outcomes do not require government agency involvement. Indeed, many of the leading examples of community health improvement involve cross-sector organizations, rather than public health agencies acting alone. As health care entities such as hospitals often house substantially more resources, they offer a natural avenue for partnership if they can agree on shared goals and shared accountability. Examples of public-private partnerships in support of public health are Live Well San Diego and Healthy Davis Together (HDT) (see sidebar, *Tapping into ecosystems partners to achieve success*).

## Where to start

With so many public health agencies facing difficult decisions about how to spend one-time funding resources, rebuild a fractured workforce, and

reinvent outdated processes, it can be dizzying to envision a future that feels far removed. However, there are several actions that agencies and their partners can take today to work toward public health transformation.

- **Assume the role of convener:** Public health agencies can take the lead, play the role of convener, and create public health improvement coalitions in every community. Many states and localities have developed new relationships due to the pandemic or have improved connections with prior contacts that were once hard to reach. Leaders should continue nurturing partnerships and devote available resources to communication and relationship-building. When agencies can garner fast responses from lab vendors, for instance, they have the potential to save lives.
- **Strengthen collaborative infrastructure:** A diversity of backgrounds and perspectives can lead to greater innovation.<sup>26</sup> Siloed, disease-centric offices can have the opposite effect: hindering the potential for

game-changing ideas from potential collaborators within another department or agency. Cross-agency collaboration is one way to better integrate diverse perspectives and generate new partnerships across offices. The Commonwealth of Virginia created a chief DEI

officer role in 2019, designed to support equity and inclusion initiatives across agencies.<sup>27</sup> Fostering these sorts of cross-office and cross-agency relationships can enhance collaboration and improvement efforts.

**“We talked to commercial labs before but never at the level and frequency we did over the last year, and the same thing with electronic health record vendors. Once the big dogs are at the table, they pull everyone else along. The relationships matter—being able to call someone at midnight and at 8 AM and get a reply matters.”**

— *State public health leader*



## Funding and incentives aligned with public health aims

**“We need a multiyear sustained, regulated investment in state public health infrastructure that the federal government facilitates or requires consistent standards, definitions, and architectures across the states.”**

— *David Blumenthal, MD MPP, president, Commonwealth Fund and former national coordinator for Health Information Technology*

**A** KEY PRINCIPLE IN this public health vision is its reliance on sustainable funding mechanisms that are not subject to political football. Future funding mechanisms should blend or braid private and public funding, given the limited public resources for public health. Businesses and other private organizations represent a growing share of public health financing and have vested interests in supporting mission-driven public health projects, with public health investment often demonstrating positive returns. Several innovative models along these lines are already taking hold in public health funding, including:

- Blended (seamlessly integrated) and braided (maintaining separate reporting mechanisms) funding models involve streamlining multiple funding sources toward a single purpose. This allows public health entities to weave together funding from both public and private financing.
- Public health trusts are organized to pool funds from different sectors in support of public health goals with less obvious fiscal returns.

- CDFIs receive federal investments matched with private funding targeting low-income communities. Public health is well-positioned to leverage these funds but should communicate concisely and clearly the value of public health investments to obtain buy-in from these organizations.

- Private equity funding and social impact investing can support public health goals via financial markets.

- Corporate sustainability investments will likely mature to include an explicit focus on health in addition to environmental, social, and governance (ESG) investing.<sup>28</sup> ESG investing can integrate key commercial players into efforts to improve our public health infrastructure and also serve as a vital source of funding for this movement. Investors in public markets will likely increasingly consider corporate products and practices in the context of public health infrastructure, marshalling financial resources in support of public health.

Pioneering communities have begun testing new funding models to help ensure public health priorities remain on the agenda (see sidebar, *Integrating funding streams from diverse sources*).

## INTEGRATING FUNDING STREAMS FROM DIVERSE SOURCES

Beginning in 2014, the **Allegheny County Health Department** used the Public Health Improvement Fund, created as a blended distribution fund by the **Pittsburgh Foundation**,<sup>29</sup> to take up initiatives such as the Plan for a Healthier Allegheny. This community assessment and improvement plan focused on access to care, disease risk behaviors, behavioral health, child and maternal health, and environmental health.<sup>30</sup>

The Reinvestment Fund, a CDFI, invests in loans and grants toward healthy food retail developments in underserved neighborhoods. The effort was initiated as part of a multisector task force in Minnesota that included public health, nonprofit, grocery, and community leaders.<sup>31</sup> The Reinvestment Fund's **Healthy Food Financing Initiative** (HFFI) offers US Department of Agriculture (USDA) financing for increasing access to healthy foods in vulnerable communities, with a new round of grants in 2021 supporting at least **US\$4 million** for healthy food enterprises and retail.<sup>32</sup>

The Kresge Foundation, Morgan Stanley, Capital Link, and LISC (a community development organization) partnered to develop a national initiative called the **Healthy Futures Fund**. The project supports development of community health centers in underserved neighborhoods and affordable housing that includes health and wellness programs for low-income residents. Loans, equity, technical assistance, and grants support Healthy Futures Fund goals.<sup>33</sup> The fund has invested US\$200 million in community health, with partner commitments to another US\$100 million to continue this work.<sup>34</sup>

## Where to start

- **Leverage existing and untapped funding sources:** Leaders should consider harnessing untapped or underutilized funding sources to enhance their capabilities, increase innovation, and achieve their objectives. For instance, using Medicaid Section 1115 waivers, Michigan provided Medicaid coverage to children and pregnant women affected by the Flint water crisis. Many states have used these waivers to address housing, food insecurity, transportation, and other drivers of health.<sup>35</sup> Workplace wellness programs are another potential way to further public health aims without increased funding. A 2017 study found that almost half of all worksites offer a health promotion or wellness program.<sup>36</sup> Finally, CDFIs offer substantial financial resources that could support community-based public health initiatives.
- **Incentivize payer and provider investment in prevention:** Health plans and health systems are often underutilized partners in public health; funds set aside for community health improvement, such as hospital community benefit funds, often fall short of their ostensible goals. Some states have partnered with hospitals, health systems, and providers to address public health needs within communities.<sup>37</sup>
- **Capitalize on next generation financial investment models:** According to Bank of America, millennials are expected to direct US\$15–US\$20 trillion into US-domiciled ESG investments in the next 20–30 years.<sup>38</sup> The implication is that the public investment markets will increasingly align the incentives of large for-profit companies with those of society at large. This will likely require engagement between public health leaders and financial industry leaders, specifically those driving the setting of ESG standards. Examples of such leaders include Morningstar, BlackRock, Calvert, MSCI, CFA Institute, and Sustainalytics.





## Actionable, reliable, shared health data

THE PUBLIC HEALTH data systems of the future will be bolstered by a federal-level vision of the key capabilities, architecture, and frameworks public health agencies need to enable real-time data-sharing. Federal agency leaders and partners will specify the types of data that will be collected by every community, known as a minimum public health data set. This will include not only data on population disease status, lab tests, and immunizations, but also genomic-sequenced lab data and measures of community wellbeing related to drivers of health.

Instead of point-in-time views into a small number of data elements extracted from individual health care encounters, the system will hinge on longitudinal, interoperable public health data. These will be built on data that cuts across public health concerns. (See sidebar, Reimagining actionable, reliable public health data, for two examples of such data.)

The minimum public health data set will be collected in real time as much as possible in every community across the United States and will be viewable at multiple geographic levels, aggregated at the census tract level, and rolled up to local and state health department jurisdictions. Defining new indicators will help communities to measure and improve health outcomes, create better local policies, attract state funding, and meet state

reporting requirements. Federal agency leadership has already begun work to define these standards.<sup>39</sup>

These standards will be supported by a governance organization in each state to oversee public health data collection and storage. This is often referred to as a PHDGO. The PHDGO will determine the collection, ownership, and decision rights of the minimum public health data set and additional public health data in each state. It will be composed of public health leaders, private sector representatives, and community stakeholders appointed by state governors.

Privacy will be protected using deidentified data and privacy features codesigned by community representatives. Moreover, leveraging models like [smart health communities](#) will empower individuals to proactively manage their health, fostering a sense of belonging using digital technology, behavioral science, and data-driven community decision-making.

Combining multiple sources of real-time data from multiple sectors can empower public health leaders to identify health trends and respond to potential threats. Ecosystems partners can both contribute to and benefit from predictive data analytics. Leveraging this data, leaders can tailor solutions to specific populations or even neighborhoods.

## REIMAGINING ACTIONABLE, RELIABLE PUBLIC HEALTH DATA

**Data Across Sectors for Health (DASH)** is a **Robert Wood Johnson Foundation**-funded program that collaborates with organizations across industries—from housing, health care, education, and more—to build multisector data-sharing capacity, aiming to improve the health of communities, promote health equity, and contribute to a culture of health. **Public Health Seattle** and **King County** used DASH to link administrative housing data with Medicaid claims to inform and implement targeted interventions, such as diabetes control and prevention classes among subsidized housing residents in a particular geographic area.<sup>40</sup> DASH's learning network, **All In**, offers a platform for sharing ideas, best practices, and lessons learned. From February 2017 to February 2020, 193 community collaboratives across 34 states and covering 21 social sectors participated in All In.

During the pandemic, the **Washington State Department of Health (WSDH)** created Washington's Healthcare and Emergency Logistics Tracking Hub (HEALTH). HEALTH helps state decision-makers decide where to deploy medical supplies and support, using transparent and real-time hospital data on staffing, bed availability, and personal protective equipment stocks. State officials expanded HEALTH capabilities to support more than 1,800 vaccine providers in their distribution efforts,<sup>41</sup> and worked with the Washington State Board of Health and community members to generate 71 new reporting categories for race and ethnicity. In 2021, the state passed HB1272, a law that requires hospitals to submit patient discharge information to DOH including race, sexual orientation, and gender identity. This is expected to improve the state's ability to identify and address inequities in health care treatment.

## Where to start

Public health leaders and health care organizations should continue to act on the momentum created by effective data-sharing throughout the pandemic.

- **Harness real-world and nontraditional data solutions.** Consider alternative data sources and partners, such as data sets available with the private and nonprofit sectors—for example, Our World in Data,<sup>42</sup> and self-reported health data via personal monitoring devices. Real-world data is often noisy and unreliable but can help leaders to understand little-reported disease states, behavior, and even sentiments that affect health outcomes. Non-traditional public health data sources, such as data on consumer spending, Internet search trends, weather, and air quality, can also be mined for early signs of public health risk events. For example, Internet search for cough and cold often peaks ahead of flu outbreaks, and airline travel data from Asia implied early on the impending outbreak of COVID-19.<sup>43</sup>
- **Join networks for real-time data-sharing.** Opportunities abound to experiment with new models and learn what works best. One innovative solution is electronic case reporting (eCR), which enables automated, secure, and real-time exchange of health data from electronic health records (EHRs) to local health departments.<sup>44</sup> Other efforts like DASH (see sidebar, *Reimagining actionable, reliable public health data*) are working to generate multisector data-sharing networks to target interventions based on social, economic, and environmental conditions that shape health.

- **Establish data-sharing agreements that offer incentives for all parties.** Data-sharing agreements form the bedrock of any effective public health data-sharing effort, but these agreements often represent a sticking point for partners. Some groups may not want to participate if doing so puts them at an economic disadvantage; so, it can be critical to ensure all participants benefit from the agreement by assessing costs and benefits up front. Take time to carefully develop these agreements.
- **Extend the reach of current resources through automation.** Existing resources can be supplemented with digital tools such as automated bots and cognitive AI machines. These tools can help with tasks like data cleaning and processing, contact center support, and disease-tracking and contact-tracing capabilities.

**“If we can see the current weather by zip code on our cell phone within seconds, we should be able to pull up community health data, too.”**

— *Vivian Singletary, director of the Public Health Informatics Institute (PHII)*



## Demonstrating shared value proposition

**“The closer the service is to the community, the more valuable it’ll be.”**

— *Gianfranco Pezzino, MD MPH, senior fellow, Kansas Health Institute*

**T**HERE IS AN evident public interest in reducing human suffering and improving quality of life—two goals of public health—yet demonstrating the value of investing in these aims can be tricky. The future of the public’s health will no doubt create shared value for communities, stakeholders, and investors. Embedding public health into other sectors will result in a new set of health measurement criteria, and evaluation will be built into public health initiatives from the start. For example, real estate developers seeking a permit to build a new condominium in a dense city will need to demonstrate that the construction will *promote* community health.

Thorough research, consistent measurement, and clear communication of results will be central to defining shared value and broadening interest in the public health mission. This will include raising the caliber of public health research using evidence-based methods and designing agility into evaluation systems to enable rapid response to crises. Public health leaders can use continuous quality improvement methods, with cycles of testing and evaluation of progress toward goals to elevate impact and ensure accountability. This allows public health leaders to change course if the data shows a project is not having the desired

effect, rather than continue with a flawed project design.

Success will depend on leaders being honest with the public about what they got right, what they got wrong, and what they still don’t know—with an emphasis on shared goals. Leaders can increase the reach and resonance of their communications by tailoring to specific populations using culturally sensitive language and using trusted agents within communities to deliver messages.

In this vision of shared value, community members will be an essential part of the public health decision-making process. Giving communities a critical role in defining the value of public health for their own purposes engenders a sense of shared stewardship and builds social trust. Moreover, they serve as critical accountability partners. Though businesses will derive shared value from public health activities, community-identified needs for alleviating human suffering and promoting wellbeing will direct investments in public health initiatives—not business interests.

Demonstrating shared value will catalyze greater investment in health across partners and sectors. In the Deloitte Center for Health Solutions’ 2021 [Drivers of Health Survey](#), 71% of health plan



leaders and 57% of health system leaders said that having more data or evidence that initiatives to address drivers of health reduce costs would lead them to increase investments. As an example, the Healthy Neighborhoods Equity Fund (see sidebar, *Investing in the shared value of community health*), has garnered financial support from major hospitals and health systems in the Boston area to build more affordable housing in livable communities.

### INVESTING IN THE SHARED VALUE OF COMMUNITY HEALTH

The US\$50 million private **Healthy Neighborhoods Equity Fund II**, a joint effort of the **Conservation Law Foundation** and the **Massachusetts Housing Investment Corporation**, invests in mixed-income, mixed-use developments near public transit in urban areas in and around Boston, with the support of banks, corporate and individual investors, hospitals, and insurers.<sup>45</sup> The 10-year term investment with a 6% target return has shown effective results with several mixed-use developments in process or already opened. Investors in HNEF include **Boston Medical Center**, **Dana-Farber Cancer Institute**, and other major health care providers who are supporting the fund's mission to create healthy neighborhoods that can improve public health and well-being.<sup>46</sup>

Key to the success of this effort is continuous measurement of outcomes data that is collected by communities themselves through a participatory research process. The **community-led research process** produced sharper measures and enhanced the project's direct connection with the community.<sup>47</sup> Outcomes data is regularly shared with investors and partners as well as community members.

## Where to start

There are many methods for public health leaders and partners to demonstrate the value of their prevention work to stakeholders and to the public. They should consider where the public is today: low on trust and often receiving mis- or disinformation about public health.

## “The public’s health ought to be public work.”

— *Bobby Milstein, PhD MPH, director of systems strategy, Rethink Health*

- **Quantify the business case for public health investment.** Measuring the benefits of health optimization, including fiscal returns to business and government and reduced costs, can help demonstrate shared value to partners. In cases where health improvements cannot be measured in dollars, common currency can be found in quality-adjusted life years (QALYs), which measure life years lost, indexing both length and quality of life in a single metric. Moreover, leaders will likely want to emphasize any applicable reduced costs to health systems and health plans. Public health leaders can leverage free online tools to assess costs and benefits of proposed initiatives.
- **Include community members in public health decision-making from the start.** In practice, working directly with communities can both build trust and demonstrate value. Meet communities where they are, even if that means taking smaller steps toward stated goals. Agreeing early on with communities and other partners on the costs and benefits of a public health initiative can be key to buy-in.

- **Combat mis- and disinformation like a national security threat.** Public health leaders, in collaboration with other agencies and private partners, should act quickly to counteract information that threatens public trust in public health messaging. This will likely require responding to threats surfacing online and engaging community leaders as public health champions and trusted messengers of accurate information about public health issues, such as COVID-19 vaccines.
- **Borrow ideas for communication strategies from the commercial sector.** Increasingly, agencies are investing in advanced methods, such as sentiment analysis, for public communication and [campaigns](#). While public health agencies have long operated in the background, they should strengthen communication efforts, as COVID-19 has brought their work into the limelight. It will be important to enhance capacity to communicate the complexity of public health issues clearly and concisely.





## A resilient, robust, and multidisciplinary workforce

**F**UTURE PUBLIC HEALTH efforts will shift away from sole dependence on workers with clinical expertise toward a system that taps into many different skill sets to achieve its goals. Disciplines such as data science, AI, and engineering will bridge with public health to solve problems more efficiently.

Routine measurement and evaluation depend heavily on a workforce with strong data analytics capabilities. The future workforce will require alternative mechanisms to bolster public health informatics capacity. One example is an effort to create a public health informatics corps—an organized workforce that will “learn how to apply new and well-established informatics techniques to solve other public health problems.”<sup>48</sup>

Additionally, public health education will start in the early years by, for example, teaching young students to identify solutions to public health problems through core disciplines like math and English. Introducing early learners to public health can help attract a new generation of workers who are excited both about the mission-driven aspects of the field as well as the opportunity to collaborate across sectors.

### REIMAGINING A PUBLIC HEALTH WORKFORCE

In 2017, a team within the **Agency for Toxic Substances and Disease Registry (ATSDR)** partnered with the **National Institute for Occupational Safety and Health (NIOSH)** and **Georgia Institute of Technology** faculty and students to build and test battery-powered devices that test the air for multiple chemicals under a variety of atmospheric conditions. The team leveraged academic partnerships to engage with and cultivate the next generation of STEM students.<sup>49</sup>

Officials and community members in **Cincinnati, Ohio** came together to launch the “Heroin Tracker,” a cloud-based dashboard used to spot opioid-related emergencies and trends. Each night, the tracker is updated using 911 call history and public safety dispatch data to identify hotspots. This allows health department officials and nonprofit caretakers to quickly respond to crises, anticipate spikes in drug activity, and organize patrols.<sup>50</sup>

**“Over their career, [public health professionals] are going to work in many areas, and they need to have a big picture in which they can put all of these different dimensions into context to come up with the right solutions.”**

— *Dr. Linda Fried, MD, MPH, dean of Columbia University’s Mailman School of Public Health*

## Where to start

Public health leaders have a rare opportunity to use federal funding to transform how their workers practice and deliver public health based on a vision that builds upon the traditional mission and core functions of public health.

- **Invest in a workforce with new federal funds.** The American Rescue Plan Act of 2021 (ARPA) will help state, tribal, local, and territorial health departments hire more than 100,000 new employees over the next several years.<sup>51</sup> Additional funding will be made available through the Office of the National Coordinator for Health Information Technology (ONC), which announced it will spend US\$80 million on a Public Health Informatics & Technology Workforce Development Program.<sup>52</sup> Public health leaders should identify, recruit, hire, and train this new workforce quickly and efficiently. More importantly, they should think strategically about how these new hires can make an impact now as well as after the threat of the pandemic has subsided.
- **Extend the workforce using available ecosystem resources.** This can include contractors and ecosystem partners as

extensions of the workforce and looking to the gig economy for workers as the need for resources ebbs and flows. As outlined in *Workforce ecosystems*, this will also call for a shift in managers' skills as well as workers'.

- **Upskill the current workforce and create incentives for workers to continually upskill themselves.** Workforce upskilling (helping workers develop new strategic skills) is emerging as an imperative.<sup>53</sup> For example, the HHS Data Science CoLab has launched an upskilling program on data science to enable employees from various agencies to solve real HHS problems.<sup>54</sup> These approaches should be adopted in other federal and state agencies. Moreover, workers need incentives—and time—to continually upskill themselves. Employers should allow flexibility and create the opportunity for workers to invest in new skills.
- **Invest in cross-disciplinary training opportunities.** Other academic disciplines, including engineering, data sciences, software development, and business are natural cross-training options for public health workers. Public health leaders can capitalize on existing programs to form new relationships and help bolster a multidisciplinary workforce.

**“The biggest sustained gift I can give to this department will be if we can fill the bus with capable people and have those people in a supportive environment where we tolerate occasional imperfection in order to achieve greater success.”**

— *State health commissioner*





## A future centered around health equity

**H**EALTH EQUITY IS the fair and just opportunity for every individual to achieve their full potential in all aspects of health and well-being.<sup>55</sup> Achieving health equity will require closing the health development opportunity gap that plagues today's families. Decades of research has demonstrated the importance of optimal health for future success and has begun to elucidate the root causes of many health problems and potential policy solutions. Strengthening the safety net can help those at the bottom of the economic ladder, but universal approaches are needed to address systemic inequity.

Public health agencies of the future will need to consider equity issues in all efforts as the center of a broader imperative to understand and address the root causes of poor health. Recognizing the importance of health equity to public health aims, the revised 10 Essential Public Health Services, a framework developed by the Centers for Disease Control and Prevention (CDC) and partners to clarify the role of public health and used by many agencies to define their work, has placed equity at the center of the model. Achieving health equity is also a *people* problem—one that will be tackled in the future by infusing DEI into all levels of an organization.

### SUPPORTING THE VITAL CONDITIONS OF HEALTH IN VULNERABLE COMMUNITIES

**Magnolia Community Initiative (MCI)** is a social innovation network comprised of more than 80 partners, including social services, faith-based organizations, universities, public services, financial services, schools, health care providers, and community residents. In operation since 2008, the network has a shared goal of improving the well-being of children and families living in low-income areas of Los Angeles. MCI serves 35,000 children within a 500-block catchment area who have historically faced poverty, low graduation rates, and poor nutrition, and are not prepared for kindergarten.

The main goals of MCI are to boost education and health outcomes in children and to improve the quality of nurturing care and economic stability delivered by their families and larger community. An essential component of this complex approach to improving childhood outcomes has been ensuring that the diverse set of partners work toward common outcomes. MCI built a population dashboard that includes measures of childhood health and outcomes and the enabling parental and organizational actions (e.g., daily sharing of books, providing empathy) and conditions (e.g., food security) that combine to influence those outcomes so that partners can focus on a "true north."<sup>56</sup>

Through this research, MCI found that community members faced duplicative and cumbersome paperwork, gaps in referrals, and confusing requirements for accessing multiple social services. It streamlined the service interface so that residents enter information only once to access all community-based services and created a cross-sector referral and follow-up system called CareLinQ.

Crucially, public health leaders cannot tackle equity alone; other sectors and stakeholders must also be accountable. Community members themselves will be key partners to achieve greater equity. This was an organizing feature of the Magnolia Community Initiative (see sidebar, *Supporting the vital conditions of health in vulnerable communities*). In addition to underscoring health equity, this case exemplified a number of dimensions of our public health vision, including collaboration across the ecosystem, health data sharing, and illustrating the shared value proposition of public health.

Empowering every American to thrive will require policy shifts in addition to community investments. Public health leaders recommended policies such as raising the minimum wage and ensuring all Americans pay their fair share in taxes as part of an overall policy package for driving economic equality. If inequities of opportunity remain, cross-sector community health initiatives may fall short of the vision for the future of the public's health.

## Where to start

Though addressing deeply rooted structures that promote inequities can seem overwhelming, public health leaders can begin with these key steps:

- **Empower community partners to lead change.** Public health leaders have long turned to community leaders and community-based organizations for help with achieving their goals. However, as public health goals change and expand, leaders may have to engage with new partners. These include nontraditional organizations such as barber and beauty shops, faith-based organizations, restaurants, and small businesses that can engage with individuals directly, as well as culturally competent grassroots organizations, to deliver services and champion new messages with populations that have been hard to reach or marginalized in the past.
- **Build health equity metrics into funding guidelines or standards.** Incorporating health equity into project measures from the start can make it easier to identify and address inequities. Measures like the California Healthy Places Index explore conditions that affect life expectancy such as access to uncrowded housing, active transportation, preschool enrollment, and more.<sup>57</sup> These measures can be used as critical tools to inform resource deployment in communities.
- **Infuse DEI into all levels of the workforce.** Leaders should cultivate employee resource groups and use a DEI lens to look at their talent and leadership pipeline and training opportunities across the organization. For example, epidemiologists need training—both formal educational programs and internal ones—in health equity to understand what questions to ask, where to ask them, and how to collect the right information.
- **Galvanize communities to advocate for equitable fiscal policy as a public health imperative.** Public health organizations can amplify community voices. When residents of South Fresno, California, were refused funds from the city for a “Parks for All” campaign to increase park space in poorer neighborhoods, they formed a campaign and got national attention. They ultimately won a 2018 California Supreme Court decision that allowed them to raise the funds to build the parks. Together, they changed the landscape through generating US\$2 billion for parks in their communities.<sup>58</sup>

# Legacy challenges persist

**T**HE COVID-19 PANDEMIC has shined new light on old public health challenges, presenting a potential window to establish sustained commitment to public health improvement. Yet, several obstacles threaten progress:

***Misaligned incentives prioritize sickness care at the expense of the public's health.***

Public health represents less than 3% of total US health expenditures.<sup>59</sup> Unlike Medicaid and Medicare, which are guaranteed funding through mandatory federal spending, public health funding is discretionary and subject to the annual appropriations process. Since the 1970s, the federal portion of total public health expenditures has fallen from approximately 45% of public health funding to approximately 15% in 2015.<sup>60</sup> State and local public health entities must rely on other funding to fulfill their goals and mission.

The costs of decades of underinvestment in public health are considerable; some argue US national security is at stake because of our broken public health infrastructure.<sup>61</sup> A workforce and skill set gap has resulted in endless cycles of burnout and turnover, exacerbated by the COVID-19 pandemic. But they have also faced numerous challenges throughout the pandemic—not the least of which is their declining numbers. At least 181 state and local public health leaders in 38 states resigned, retired, or were fired between April 2020 and December 2020.<sup>62</sup>

Moreover, a recent report found that half of all US hospitals have challenges with electronic exchange of information with public health agencies.<sup>63</sup> Many agencies still cannot accept genomic-sequenced

laboratory data used for tracking viral strains and contact tracing, relying instead on outdated technology, such as fax machines, for laboratory data receipt. It may take US\$4.5 billion in new and sustained investments in public health to protect the nation from future disasters.<sup>64</sup>

**“COVID-19 has imperiled the funding of many public health departments. There has been a massive burnout and retirement wave of public health officials. There is a potential moment: the question is will it be squandered by politics or will people try to move it forward differently?”**

— Anthony Iton, JD MD MPH, senior vice president, The California Endowment

***Politicization has created the conditions for public health systems to fail.*** Since the 1980s, federal, state, and local public health leadership has been increasingly politicized, and, in many cases, seen its authority limited. One state health commissioner explained that the average tenure for a state health official is two years,

health commissioner explained that the average tenure for a state health official is two years, making it extremely challenging to create programs with lasting benefits, invest in the workforce, or sustain relationships with partners.<sup>65</sup>

The COVID-19 pandemic has brought public health to the forefront of politics and public discourse. Politics and public health messaging are not always aligned: Effective public health intervention can often be perceived as an over-reaction to an emerging crisis because, when done correctly, the crisis is averted.

Many governmental public health leaders have resigned or been fired for political reasons. Some of these leaders' homes were defaced as part of public backlash against COVID-19 policy restrictions. And yet, health commissioners we spoke with exemplified enduring passion and unwavering commitment. Though hospitals are often considered the front line of the pandemic response, public health workers have been tirelessly operating in the background, beleaguered heroes of the COVID-19 pandemic.

Misinformation has further degraded trust in institutions and presents a significant obstacle to public health improvement. Much of the COVID-19 vaccine discourse occurs on social media, where it is hard to distinguish fact from fiction. **Disillusionment with rising inequality can also undermine public trust.** A recent Pew Research poll found that fewer than a quarter of Americans trust government overall, and only four in 10 Americans trust the government to manage public health crises.<sup>66</sup>

Though trust in government overall is low, citizens have higher levels of **trust in local governments.** As one public health leader described it, "We need to

talk to communities about what we want the future of public health to be. Community design is key to buy-in and trust. What is unclear is what society really wants."<sup>67</sup>

### THE CHRONIC EFFECTS OF THE POLITICIZATION OF PUBLIC HEALTH

In 1976, CDC pushed to vaccinate all Americans against what it anticipated could become a full-fledged swine flu pandemic. However, it never reached pandemic status, and they were criticized for what later was viewed as unnecessary action. This placed an increased focus on the balance between public and private risk-taking and heightened the need to weigh political risks against public health gains. Similar challenges are currently in play with the COVID-19 pandemic. Without the flexibility to adjust policies and priorities in real-time, public health cannot succeed at its prevention and control mission.

***Reversing pervasive threats to public health will require time we may not have.*** A person's zip code, more than their genetic code, determines their health outcomes: Just miles apart, people in wealthy neighborhoods can live 20 years longer than those in low-income neighborhoods.<sup>68</sup> Even with sweeping policy change to drive equality of economic opportunity, it may take years to see life expectancy and health outcomes improve significantly for disadvantaged populations. In the same vein, decades of underinvestment in protecting our planet presents challenges to public health. We can expect to see more severe weather-related disasters over the next 30 years which could result in greater incidence of cardiovascular disease, respiratory illness and asthma, and injuries and premature deaths.<sup>69</sup> Still, we can stave off further decay by investing in prevention now.



# Conclusion

LINGERING DEFICIENCIES IN our public health infrastructure are due to lack of collective purpose and will, not lack of knowledge. We know the conditions that produce health and wellness: parks and playgrounds, good schools, quality affordable housing, broadband internet access, reliable transportation, and a lack of segregation and violence. The present moment offers a unique opportunity to convert the broadening recognition of these deficiencies into action, guided by the founding principles we have discussed here.

*“It’s not a dark time for public health. It is our time. It’s the time that we’ve been preparing for since the start of public health.”*<sup>90</sup> Thus began one of our interviews with a prominent public health leader when asked what inspires him about the state of public health today. Despite the challenges the field faces, this leader remains resilient and committed to the mission of public health: ensuring the conditions in which everyone can thrive. He is just one of many who continue the charge forward. Now is the time to identify solutions and work toward a brighter future for the public’s health.





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