

Public Health 2030: A Scenario Exploration



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Using Public Health 2030: A Scenario Exploration

Visit www.altfutures.org/publichealth2030 for an electronic copy of this report, driver forecasts, and scenarios for three local health departments and one state health department. You will also find a “toolkit” with which any organization or community can conduct their own scenario workshop. The toolkit includes a workshop agenda, instructions, worksheets, videos, and presentation materials. The scenario workshop enables the groups to “step into” each of the futures and consider implications. Using the scenarios in this way can assure that plans address the larger picture and longer-term futures for public health.

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Introduction

The public health community is currently situated at the fulcrum of many of society's greatest challenges. Population health, chronic disease, emergency preparedness, and even the more familiar ground of infectious disease are all fraught with uncertainties to which public health will need to respond in the years to come. Such responses will often require significant changes from the kinds of responses public health agencies have utilized in the past. The four alternative public health scenarios presented in this report invite readers to recognize that the future is uncertain, but can be bounded using the knowledge we have today. Further, public health leaders have an opportunity to influence which future unfolds and how. This report seeks to equip these leaders with a broader awareness of the relevant trends and forces so that they can more adroitly shape the future of public health.

Background

The Institute of Medicine (1988) has defined public health as “what we as a society collectively do to ensure the conditions for people to be healthy.” Responsibility for many of the activities that ensure the conditions for people to be healthy is delegated to public health agencies in the federal, state, and local governments. These agencies have often taken on functions that no one else could or would do. For example, public health has long provided direct health care services to those with little or no access to health care. Similarly, public health has focused particularly on marginalized populations and on advancing health equity. As society's needs changed, public health evolved in form and scope since its formal organization in the 18th and early 19th centuries.

In form, public health in the U.S. has been primarily a government effort supported by academic and non-profit organizations. In the future, however, this may change. Some of the gaps in health care that are currently filled by public health may – particularly if health care reform is fully implemented – largely disappear, as access to effective health care becomes nearly universal. Further, functions that public health retains in the years to come are likely to change significantly in terms of how they are done, as in the case of automating inspections and surveillance. Therefore, what public health will do in the decades ahead is an open question.

In scope, public health started out with controlling and preventing infectious diseases, but has since grown to include health care, food safety, child and maternal health, screening for specific diseases, tobacco control, chronic disease control and prevention, emergency preparedness, environmental health, policymaking, and strategic leadership for communities. Along the way, public health has stimulated major improvements during the 20th century¹ that include:

- Mass vaccinations
- Increased motor-vehicle safety
- Safer workplaces
- Decline in deaths from heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies

¹ U.S. Centers for Disease Control and Prevention, “Ten Great Public Health Achievements – United States, 1900-1999,” cited in Bernard J. Healey and Cheryl D. Lesneski, *Transforming Public Health Practice*, San Francisco, Jossey-Bass, 2011, page 29.

- Improved family planning
- Fluoridation of drinking water
- Recognition of tobacco use as a health hazard

Going forward, however, federal, state and local public health agencies (PHAs) face major fiscal pressures. Government spending cuts challenge the ability of PHAs and other government agencies to ensure the conditions for people to be healthy. Moreover, climate change is bringing real and dramatic challenges to health in all parts of the country, with hurricanes, floods, droughts, and superstorms harming communities. To meet both emerging and ongoing challenges, PHAs will need increased public support, as well as additional resources and/or new ways to address the challenges ahead.

The context for public health thus continues to change. **What will be the greatest accomplishments for public health in the next two decades? What obstacles may prove insurmountable? What will public health look like in the U.S. in the year 2030? What should public health leaders be doing today? What do we want public health to be in the U.S. in 2030 that can inform today's agenda?**

Why Scenarios?

Given the multiple uncertainties facing public health, scenarios are needed to consider plausible alternative paths for the field in order to choose the best way forward. Scenarios are parallel stories describing how the future may unfold (in ways both good and bad). They help us view the dynamic systems around us in more complex terms that accept uncertainty, and then clarify and challenge the assumptions about what we can do. While the future is inherently uncertain, scenarios help us bound that uncertainty into a limited number of likely paths. Some paths may lead to futures we want to avoid while others point to surprisingly favorable outcomes. Once these alternatives have been articulated, we can more easily explore the inherent uncertainty to find opportunities and challenges we might otherwise miss. **These insights can then inform strategic planning processes. Strategic planning should assume a future that is both most likely and best preferred. People and organizations that work with scenarios – rather than develop plans based only on the past and present – develop strategies that are not only actionable, but also future-independent and increase the likelihood of a more desirable future.**

To find more creative options for public health and improve strategic planning in and for public health, the Institute for Alternative Futures (IAF) developed a set of four alternative scenarios of public health in the year 2030. These consider the range of forces, challenges, and opportunities shaping public health in the U.S. Leaders in public health, policy, and communities can use the scenarios to gain a broader perspective on how public health may evolve, and on how they can shape this evolution in the years to come. This perspective includes:

- Gaining a systemic understanding of future possibilities, including risks, challenges, and opportunities;
- Clarifying assumptions about the future to assess likely and preferred outcomes; and
- Formulating more robust strategies with a greater potential to advance public health toward more preferable futures, while providing better contingencies in the face of challenging futures.

Origins and Development of the Public Health 2030 Scenarios

This project to develop scenarios of public health emerged from IAF's earlier work with the Kresge Foundation and the Robert Wood Johnson Foundation (RWJF). RWJF had turned to IAF to explore the future of vulnerable populations and to produce a set of Vulnerability 2030 scenarios (www.altfutures.org/vulnerability2030) that were published in 2011. The following year the Kresge Foundation funded IAF's Primary Care 2025 scenario project (www.altfutures.org/primarycare2025), which made clear that the population health agenda would prove vital. The Kresge Foundation then suggested that it would be beneficial to develop scenarios for public health. At around the same time, RWJF sponsored a scenario exploration of health and health care 2032 (www.altfutures.org/health2032) as part of its 40th anniversary recognition. For RWJF, these projects set the stage for a project on the future of public health to explore this vital component of the evolving health landscape in the U.S. Hence the Kresge Foundation and RWJF joined forces to have IAF explore the future of public health in the U.S.

For this project we recruited a small advisory committee of public health leaders, identified in the appendix. These advisors gave us invaluable input and guidance on design and directions and reviewed draft forecasts and scenarios. They also took part in the national Public Health 2030 workshop. Likewise, our project officers—Phyllis Meadows from the Kresge Foundation and Sallie George and Paul Kuehnert from the Robert Wood Johnson Foundation—gave us important input in the development of the scenarios. We interviewed a wide range of experts in public health and the surrounding fields, both individually and within assembled public health groups, which are also listed in the appendix.

Defining Public Health and Identifying Drivers

For the purpose of this project, we used a modified Institute of Medicine definition of public health: “Public health is what we as a society collectively do to ensure the conditions for people to be healthy.” This includes the organized efforts of society through government and other means. To further understand what governmental public health does, we considered the 10 essential public health services:

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships and action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. Assure competent public and personal health care workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions to health problems.

With that in mind, we identified drivers or key forces shaping public health and used our “aspirational futures” approach (see next page) to develop a set of expectable, challenging, and visionary forecasts for each of the drivers. The forecasts describe future economics and public health financing, chronic disease, climate change, technology and information systems. Using the same approach, the Prevention Institute also developed forecast sets for community prevention, and injury and violence prevention. We then interviewed experts and conducted focus groups using the forecasts to explore the interaction of the driving forces. These driver forecasts, experts’ reactions to them, and the experts’ other forecasts and their implications, then fed into the alternative scenarios for public health. The driver forecasts are available at www.altfutures.org/publichealth2030.

State and Local Public Health Agency Scenarios

Given the diversity of public health agencies across the U.S., we determined that we should also develop scenarios for a few state and local public health agencies. In selecting jurisdictions, we sought diversity in size, region, political and economic conditions, and organizational forms. We chose a rural jurisdiction, a mid-sized jurisdiction (population of 250,000 to 750,000) and a large jurisdiction (population over 750,000). With assistance from Robert Pestronk, Executive Director of the National Association of City and County Health Officials (NACCHO), we recruited the following three local public health agencies: Fargo Cass Public Health (North Dakota), the Boston Public Health Commission (Massachusetts), and the Cuyahoga County Board of Health (Ohio). As our state case, we sought a state that had centralized or largely centralized governance of its local health departments, and still balanced the range of other characteristics across our local health departments. With assistance from Paul Jarris, Executive Director of the Association of State and Territorial Health Officials (ASTHO), we recruited the Virginia Department of Health. We are grateful for the partnership of: Ruth Bachmeier, director of Fargo Cass Public Health; Barbara Ferrer, executive director of the Boston Public Health Commission; Cynthia Romero, former state health commissioner of Virginia, and Marissa Levine, Virginia State Health Commissioner; and Terry Allan, health commissioner at the Cuyahoga County Board of Health and president of the National Association of City and County Health Officials.

In each of these four jurisdictions, IAF worked with the leaders and staff to consider key forces shaping public health both in general and for their jurisdiction in particular, as well as trends in the major public health functions (e.g. communicable disease control, health promotion, assuring access to health care services, and environmental health and emergency preparedness). In developing these state and local scenarios, we also benefited from our work with the Public Health Informatics Institute, as part of a separate RWJF-funded project, to develop scenarios focused directly on public health informatics. The resulting sets of local and state public health scenarios are available at www.altfutures.org/publichealth2030.

Aspirational Futures

IAF’s “aspirational futures” approach (see Figure 1 below) helps people understand and clarify where current trends may take us, what challenges we face, and what success might look like. Scenarios must assist in clarifying the systems in which we operate, the key forces shaping those systems, and how they will most likely evolve. Given the range of challenges, including the growing potential for “collapse” in many systems, those difficult possibilities need to be explored. Most importantly, scenarios must also help us understand where our visions or aspirations would take us—that is, what a “surprisingly successful” future would look like and how we might achieve that future. Thus, IAF develops scenarios in each of the following three zones:

- A “zone of conventional expectation” reflecting the extrapolation of current trends, a “most likely” or expectable future (scenario 1);
- A “zone of growing desperation” which presents a set of plausible challenges that an organization or field may face, a challenging future (scenario 2); and
- A “zone of high aspiration” in which a critical mass of stakeholders pursues visionary strategies and achieves surprising success (scenarios 3 and 4). Two scenarios are developed in this zone in order to offer two alternative pathways to highly preferable or visionary futures. Since public health seeks to ensure the conditions for all to be healthy, success would be indicated by a future in which all can be healthy. Scenarios 3 and 4 explore two different paths to this type of future.

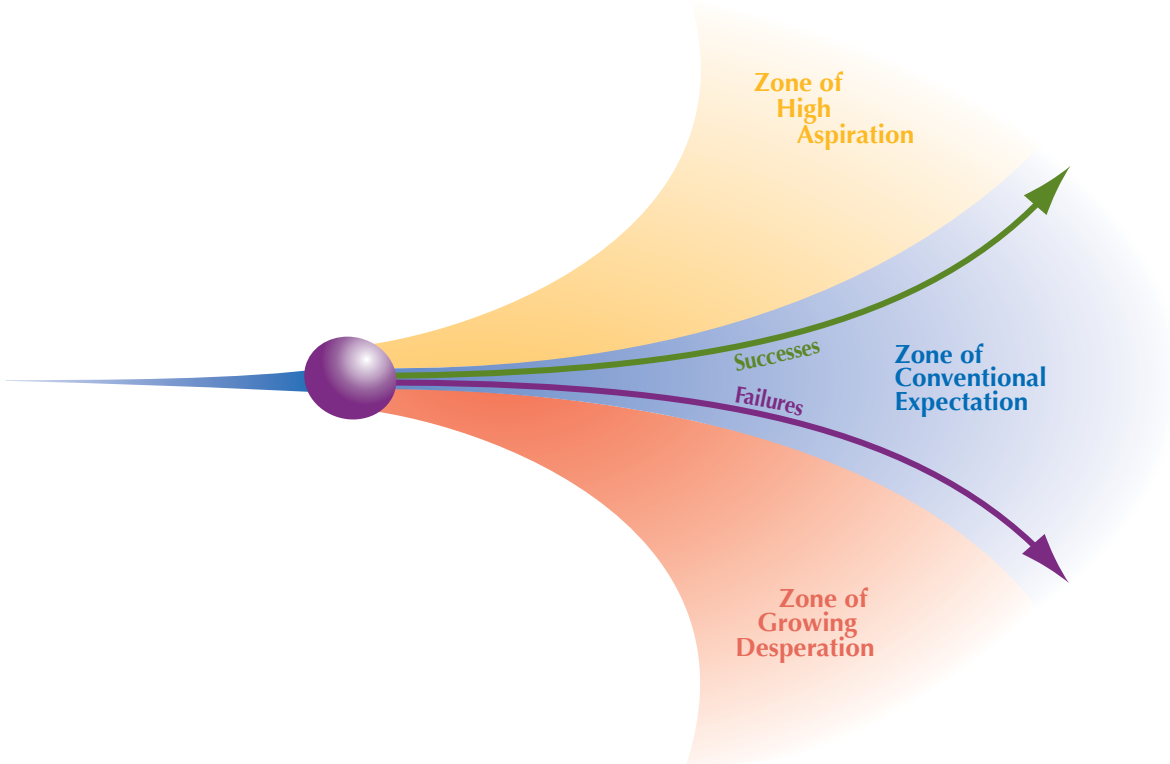


Figure 1. IAF’s aspirational futures approach.

Four Public Health Scenarios

Overview of the Four Scenarios

Using the Aspirational Futures approach and research described in the previous pages, IAF developed four alternative scenarios describing public health over the years to 2030. Leaders explored preliminary versions of these scenarios in a March 2014 workshop and many of their comments have been incorporated. The finalized scenarios are summarized below and presented in their entirety in the following pages.

Scenario 1: One Step Forward, Half a Step Back

Amidst continued fiscal constraints, public health agencies and health care slowly advance their capabilities. Many use automation and advanced analytics to improve services and community and population health. However, climate change challenges continue to grow, and there is little progress in improving the social determinants of health. Great variations in technological capabilities, funding, and approaches to prevention – along with a continuous rise in health care costs – significantly limit public health gains.

Scenario 2: Overwhelmed, Under-Resourced

Funding cuts and a hostile political context undermine the role of public health agencies, which subsequently fail to attract talented young people. Public health crises grow worse and more frequent, largely due to climate change. Private sector initiatives produce significant innovations for health and wellness, but these primarily benefit the middle-class and affluent groups. Technological, economic, educational, and health disparities grow, and the institutions of public health have little capacity for doing anything about them.

Scenario 3: Sea Change for Health Equity

National and local economies gradually grow, and changes in values and demographics lead to “common sense” policies and support for health equity. Public health agencies develop into health development agencies that use advanced analytics, gamification, and diverse partnerships to identify problems and opportunities, and catalyze and incentivize action to improve community health. While some disparities persist, in 2030 the vast majority of U.S. residents have attained greater opportunity for good health through quality improvements in housing, economic opportunity, education, and other social determinants of health.

Scenario 4: Community-Driven Health and Equity

Public health agencies, partners, and local health improvement initiatives coalesce via technology and social media into a national web of community health enhancing networks. These networks help communities exchange their innovations and best practices, and leverage the expertise of public health agencies and others. The nation also strives to come to terms with its racial and socioeconomic histories, and supports real changes and legislation to create a more equitable society. This value shift to equity is accelerated by the proliferation of new community economic models that help households sustain themselves and improve health and wellbeing. Public health sheds many functions and facilitates these movements to improved health.

Scenario 1: One Step Forward, Half a Step Back

Life in this Scenario:

“Alright, let’s start this month’s strategy session by going over the latest numbers and maps.” Karla, who had been County Health Department director for more than a year now, pulled up the latest health maps for the others to see. Under Karla’s direction, the department had become a leader in “big data” analytics for community and population health improvement. This included ensuring that the electronic health records used by health care providers were interoperable and secure, and that the aggregations were accessible to the County Health Department and linkable to data from environmental monitors, reimbursements, and other sources. Using this data, health care providers collaborated with the Karla’s staff to conduct community health needs assessments and to support community groups to address the findings.

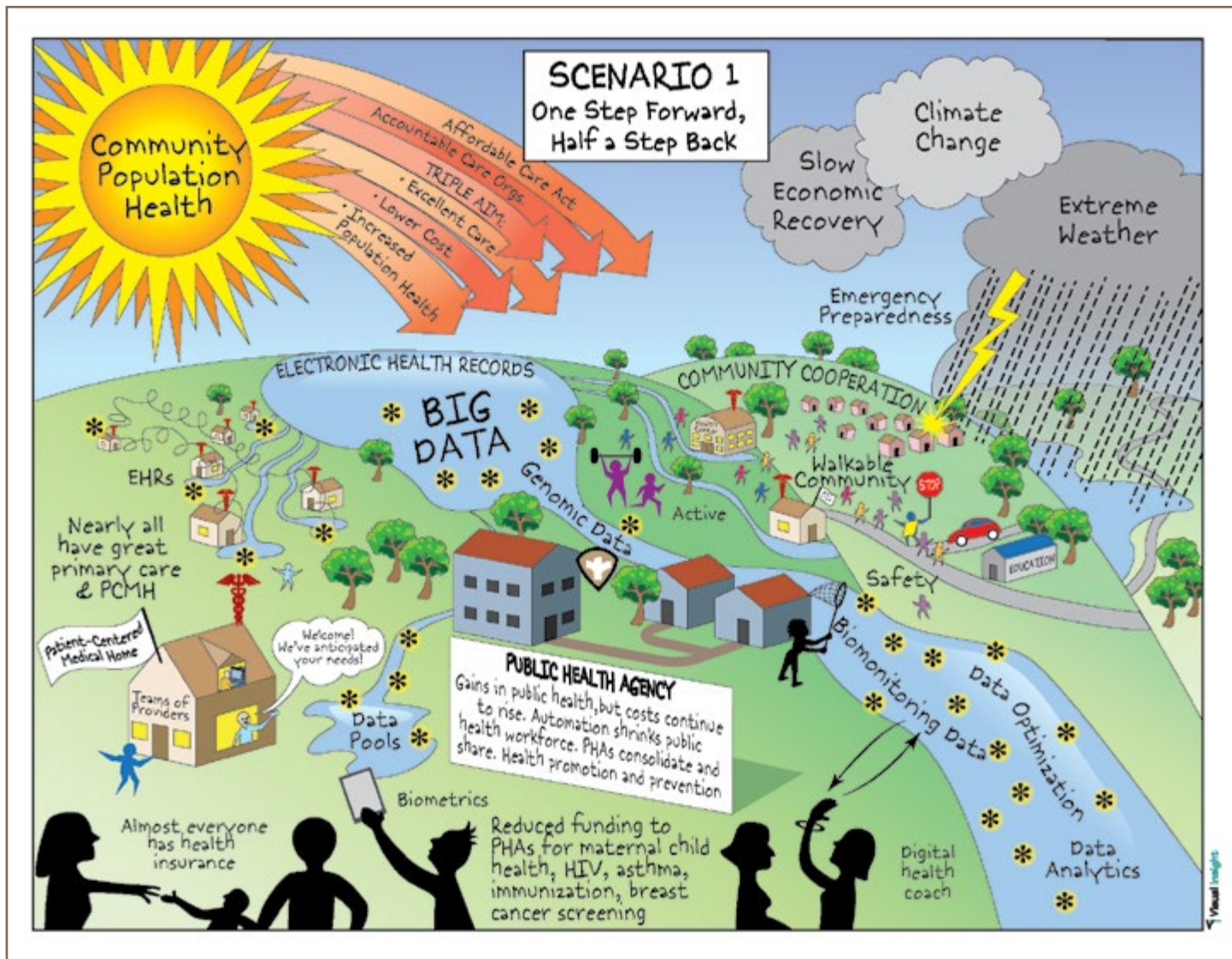
George, a pediatrician at a local Accountable Care Organization, could not contain himself. “That’s great progress!” he exclaimed, pointing to a few neighborhoods where the average resident had lost more than four pounds over the past six months. Tobacco sales had also declined, largely due to improved access to cessation programs through health care providers, and the work of the County Health Department with faith-based and community groups in creating positive peer pressure to reduce smoking rates among teens and young adults.

Raymond chimed in. Raymond was the executive director of the local YMCA. “We’ve been named one of the best counties in emergency preparedness.” As extreme weather events grew frequent, Karla’s team used online games and simulations, and advanced mapping to better prepare their communities for emergencies, which also included outbreaks of vector-borne diseases like Lyme disease and dengue fever. Funding these efforts was possible due to the automation of many traditional monitoring and inspection activities, which now required fewer employees.

In health care, the patient-centered medical home (PCMH) model was widely adopted in the county, and the vast majority of residents now had access to affordable and effective care. This change reduced the need for personal clinical services from the County Health Department. The department shifted to put a stronger focus on prevention in order to improve preconception health, increase birth outcomes, lower obesity rates, and reduce injuries.

Karla frowned as she looked at a low-income section of the county. “What will need to happen to make a dent over here?” she asked. George and Raymond gave no answer. They knew that public health in the county had become smarter, leaner, and faster over the past two decades, but that the county’s consistent overall gains in nutrition, physical activity, and other key health indicators, as well as continued decreases in rates of smoking, had not been distributed evenly. Investments in the broader social determinants of health such as housing, education, and economic opportunity had remained few. The three were distraught by the persistent health disparities in the county.

“Clearly, we still have a long way to go,” Karla noted. “What should we do next?”



Scenario 1 Highlights:

Public health agencies (PHAs) slowly advanced their capabilities in technologically enhanced monitoring of health across populations, emergency preparedness, and inspections. As the Patient Protection and Affordable Care Act expanded health care coverage, PHAs stepped back from personal clinical health services and focused on prevention and improving community conditions. PHAs used automation, diverse data streams, and big data analytics to improve community and population health, and demonstrated positive returns on investment for the services they still offered. However, great variations in their capabilities, funding, and approaches to prevention – along with a continuous rise in health care costs – held back public health from advancing as far as it should have by 2030.

Scenario 1 Details:

The two decades leading to 2030 were largely characterized by recurring fiscal and health challenges. Public health programs and technologies improved only slowly. In terms of the opportunities for all to be healthy, there were improvements overall in some health measures (especially reductions in obesity and some chronic diseases). Nevertheless, several disparities continued across race and class in almost all measures. Public health agencies (PHAs) tried to address them, but varied widely in their access to the funding, capabilities, and services needed to make a difference. Most consistently, however, public health continued to shift away from personal clinical services, and moved toward prevention, health promotion, advocacy, advanced analytics, and emergency preparedness. Some states confined PHAs to provide only legislatively required or mandated services (e.g. infectious disease control, restaurant inspection, and other regulatory activities) or aspects of emergency preparedness. Where this was the case, PHAs could do little prevention or community-focused activities.

While PHAs were forced to reduce or put a strain on their prevention and community-focused activities, their roles expanded in emergency preparedness and response, particularly as climate change took its toll on the nation. The 2020s saw increasing frequencies of extreme weather events such as droughts, floods, tornados, hurricanes, and other storms that challenged communities. Vector-borne infection outbreaks, such as Lyme disease and dengue fever, became more frequent and severe. Many PHAs used ever better games and simulations to prepare their communities for these and other types of emergencies. Federal, state, and local health and other agencies, as well as non-profits and the business community, got better at successfully coordinating their preparation, response, and recovery. PHAs also increasingly automated their monitoring and inspection activities, focusing on designing and approving monitoring and inspection systems, and providing quality control for these systems, these data streams, and analyses based on them. Thus, fewer but more technically savvy employees were needed to manage these systems and to deal with potential food-borne contaminations, air pollution, and environmental toxins.

Most PHAs sought to keep pace with “big data” and advanced analytics to improve coordination in disaster preparedness, response, and recovery, as well as ongoing public health improvements. These PHAs ensured that the electronic health records (EHR) systems used by health care providers were interoperable and secure, and that the aggregations were accessible to PHAs. PHAs also strongly advocated for privacy and discrimination protections, which were ultimately put in place. Personal health information in EHRs was thus effectively integrated with environmental monitoring, social media data, Medicare and Medicaid reimbursement data, motor vehicle records, employment records, and other government data. Most PHAs accessed the anonymized data through cloud computing services for health surveillance.

Analyzing the increasingly larger and more diverse data, however, required well-trained staff who were often at risk of being hired away to better paying jobs. Many PHAs (particularly those with small staff sizes, or those which could not share advanced analytics with other PHAs) thus left big data analytics to private sector contractors and local Accountable Care Organizations (ACOs). In any case, the growth of increasingly complex and sophisticated analyses strengthened emergency preparedness, response, and recover efforts, and improved PHAs’ ability to target community needs, to monitor health trends, to provide better forecasts, and to plan. PHAs collaborated with health care providers and private companies to improve public health analyses and the design of public health services, and interventions aimed at individuals and behaviors. For example, one emerging challenge for PHAs was the fact that next-generation social networking platforms facilitated intensive and continuous interaction among people, and this interaction often reinforced negative health behaviors. PHAs spent significant time and effort using advanced analytics to understand the social dynamics that played out in these networks and “nudge” the conversation toward better health.

Technological advances improved the clinical services provided by PHAs and others, but the successful implementation of the Patient Protection and Affordable Care Act (PPACA) was even more influential. By the end of the 2010s, over 90 percent of U.S. residents had health care insurance. This gave them affordable access to a health care system that had become more effective through the widespread adoption of the patient-centered medical home (PCMH) model. The PPACA assured age appropriate preventive services without copays and enhanced financial incentives for primary care, effectively doubling the volumes of federally qualified health centers. Providers in PCMHs anticipated patients' needs by routinely analyzing large pools of data, including genomic and biomonitoring data (often transmitted to the EHR from the patients' smart phones and wearable devices). Patient protocol systems became more sophisticated through the expanded use of cognitive computing tools, such as IBM's "Doc Watson" and its successors. Most ACOs and community health centers also provided their patients with some form of digital health coach that used personal health information to help them make healthier choices in their daily lives.

Ultimately, the PPACA reduced the need for personal clinical services from PHAs. For example, in the states where Medicaid expansion covered mothers and children, PHAs' maternal and child health programs shifted away from being payer or the provider of last resort for that care toward primary prevention in order to improve preconception health, increase birth outcomes, lower obesity rates, and reduce injuries. Similarly, federal funding for HIV/AIDS programs provided by PHAs declined as health care providers routinely treated the newly insured HIV/AIDS patients.

In addition to improving the quality and per capita cost of clinical care, health care providers played larger roles in improving population health. However, their relationships with PHAs for this purpose varied widely. Most providers were part of ACOs that were required to conduct community health assessments and address the resulting findings. Based on the assessment and findings, most ACOs funded or otherwise supported community groups to improve population health. On one end of the spectrum, PHAs led the analysis, and collaborated with ACOs in conducting the needs assessment, facilitating community priority setting, and joining community groups and others in addressing the priority needs (including issues such as housing, education, neighborhood safety, physical activity, and access to food). At the other end of the spectrum, however, ACOs did not see the PHA as having much to offer in terms of analysis or as a cost-effective supplier of programs.

Another jigsaw puzzle was state and local public health funding. Virtually all states continued to face severe fiscal constraints. Many cities and counties teetered on the brink of bankruptcy, with some falling over the edge. Cost pressures on PHAs, the automation of several functions, and the ability to serve communities in digital and virtual spaces led to more sharing of services and consolidation among local health departments.

Funding for some federal programs was stable or slightly expanded, while funding for health services programs (e.g. Ryan White, Maternal and Child Health, cancer screening) was reduced. PHAs still complained about the restrictions of categorical funding, particularly for building infrastructure across their programs. However, the Centers for Disease Control and Prevention (CDC) allowed PHAs to use up to five percent of some CDC grants to pay the costs associated with the public health agency accreditation process. Most PHAs pursued accreditation. Many also implemented a uniform chart of accounts, which enabled agency-to-agency comparability and recurring quality improvements. PHAs increased their evaluation activities and showed positive return on investment for many programs. What's more, big data studies showed that addressing the social determinants of health was far more cost effective in reducing health care costs, improving community economies, and strengthening the overall wellbeing of populations, than investments in health care. Yet decisive and sustained investments to improve housing, education, and economic opportunity remained few.

Given all of the developments in technology and health care reform, one of the biggest surprises in the field of public health between 2014 and 2020 was the absence of so-called “game-changers.” While “big data” had proven useful in many contexts, including disease surveillance and health needs assessment, it had not transformed society in the ways that some in the mid-2010s had expected. While genomic data is now included in most EHRs, it rarely provides a “smoking gun” for health researchers working on a specific disease or condition, or for population health researchers to identify useful genetic markers that would positively affect community prevention efforts. While the PPACA was a significant step toward universal access and health equity, there were no parallel improvements in the social determinants of health (such as housing, education, and economic opportunity) that would have been necessary to fundamentally improve the nation’s health. In 2030, late-career public health officials can look back on a series of important successes for the field, while at the same time recognizing that the field never made it as far as it should have. The consensus in the field is that public health made gains, but the continuous rise in health care costs had limited these gains to half steps or “baby steps.” PHAs and public health leaders recognize that they still have a long way to go to improve population health, reduce disparities, and optimize their use of emerging technologies.

Scenario 2: Overwhelmed, Under-Resourced

Life in this Scenario:

As Allison read over the latest round of budget cuts, David could see anxiety and exhaustion in her face. David had joined the City Public Health Institute (CPHI) only three months earlier, eager to apply his new MPH and specialty in data analysis. Allison had joined the city health department in 2015. She became the Executive Director of CPHI in 2024 when the city fell into bankruptcy. The City Health Commission was abolished and the commissioner resigned. CPHI was created as a nonprofit to take over the city's public health functions. CPHI had lower pay, fewer benefits, and an employee-funded retirement plan rather than a city pension, but David had hoped that he would at least have the resources he needed to put his new knowledge to work.

A phone call notification interrupted the silence, and David answered it. It was Rob McCall from the local online newspaper, wanting to interview Allison. Since the 2020 flu pandemic, health agencies had become an easy political target, often blamed for their allegedly inadequate responses to everything from floods to dengue fever. The reporter told David he was doing a series on the poor performance of the state's health agencies and the non-profits like CPHI that had replaced them in many jurisdictions.

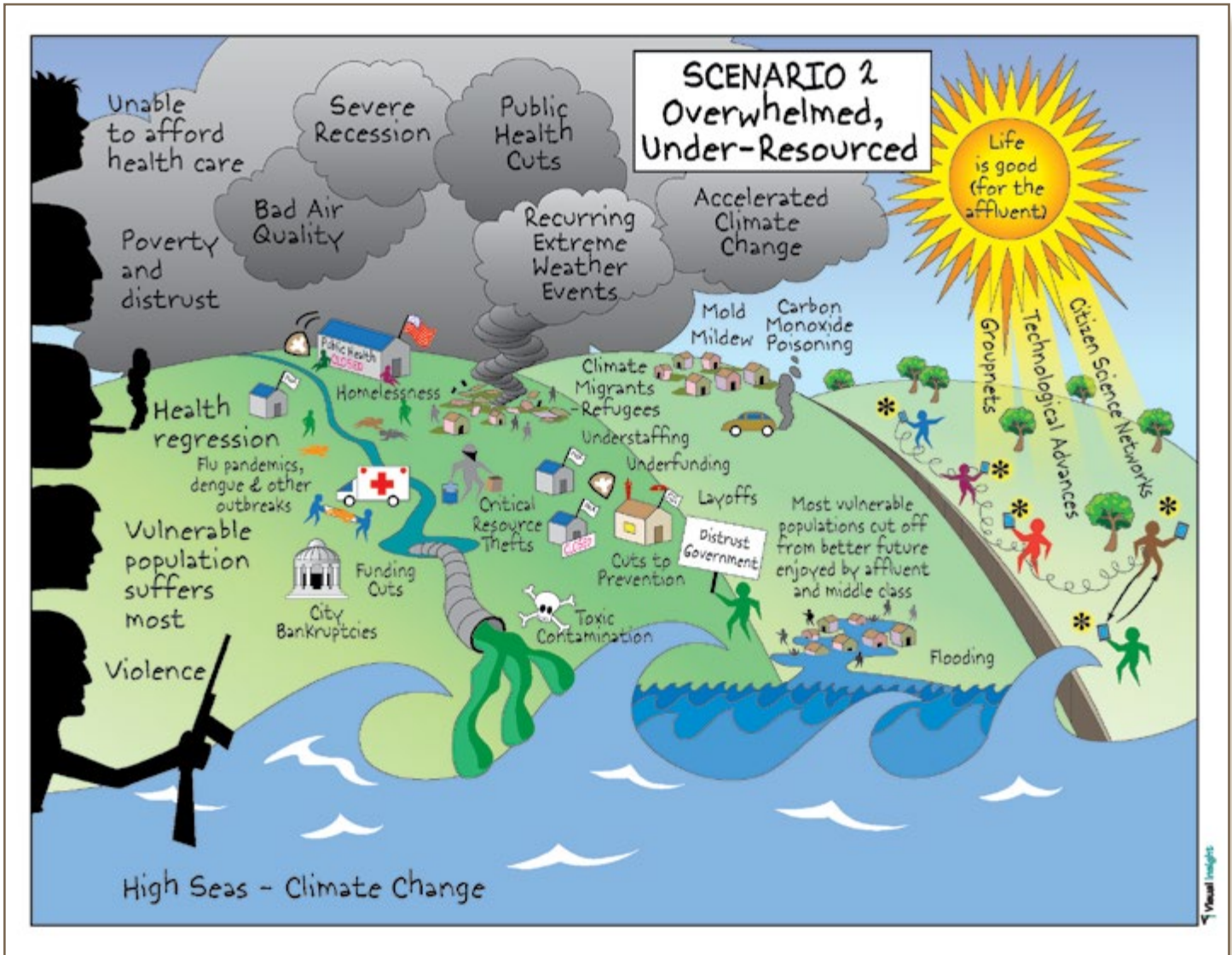
Allison took the call, and explained to Rob that she had been hired to work on smoking and obesity, but that both of those programs had been severely cut back after the 2016 recession. In the 2023 recession, health programs faced even heavier cuts, and many programs were eliminated altogether. That's when CPHI was created to provide basic public health services for the city.

Allison became agitated as she continued her story. "Those cuts may have done the trick for the city's public finances," she said, "but those changes had real consequences for the city's health. Obesity and chronic diseases have increased, especially in poor neighborhoods. Tobacco use has increased cigarette taxes and smoking restrictions have been rolled back. And now vaping is getting so many teens started before they move to tobacco."

"But what are you doing about it?" Rob asked. "And I should add that we're also seeing historically high rates of infectious diseases, in addition to extended drought and devastating hurricanes, floods, and heat waves. How is CPHI addressing these issues? You know, State Representative Carey recently said that public health agencies and the non-profits that replaced some of them are doing nothing to improve health and emergency preparedness – that they are in her words 'a complete waste of tax dollars.' How would you respond to that comment?"

"I have responded, Rob. Over and over again. Listen, our hands are tied," Allison explained. "And State Representative Carey should know, since she consistently votes against increasing health funding. With budget cuts and layoffs, we just don't have the staff and resources to do what needs to be done. I mean, you've seen our budget. On that budget, how could we possibly analyze health data, coordinate community action, perform mandatory inspections, enforce regulations, deal with climate change – you see where I'm going with this. No wonder our Environmental Health Director threw in the towel last week after thirty years of dedicated service to the community."

David put his head in his hands. He was starting to understand why everybody at CPHI was so down all the time. He started to wonder if he'd ever be able to put his degree to use to improve health in his hometown. Did the public even care? It didn't look like they did. David made a note to himself to reply to the job posting from the biomonitoring company for entry-level big data analysts.



Scenario 2 Highlights:

Funding cuts and a hostile political context undermined the role of public health agencies (PHAs) that subsequently failed to attract talented young people. Public health crises grew worse and more frequent, largely due to climate change, and created short-term infusions of resources targeted to the problem. Yet the political “blame game” justified further cuts in core public health functions. Private sector initiatives produced significant innovations for health and wellness. However, the most vulnerable populations could not afford the new means for getting healthy, and fell further behind middle-class and affluent groups. Technological, economic, educational, and health disparities grew, and the institutions of public health had little capacity to do anything about them.

Scenario 2 Details:

Given how many Millennials² and Globals³ had obtained degrees in public health by 2030, it is shocking in retrospect how few young people actually chose to *work* in public health. But then again, this might have been inevitable given the overwhelming problems in public health over the past two decades. Funding was cut repeatedly at the federal, state, and local levels. When public health calamities erupted – such as a disease outbreak, an extreme weather event, food and water contamination – public health agencies (PHAs) bore the blame in legislative hearings and in the press for lack of preparation or ineffective responses. Then politicians would announce new funds to fight each problem, hire new “problem solvers” (often their friends from the private sector), and then undermine those very efforts the next fiscal year with budget cuts. No wonder so many young MPHs decided to apply their skills in the private sector where they could make better salaries.

The situation outside the field of public health was not particularly rosy either. Severe recessions in 2016 and 2023 dashed the economic hopes for most Americans and shrank public budgets at the state and local levels. Many cities followed Detroit into bankruptcy, and some replaced their public health departments with nonprofit institutions to continue offering public health services. Political polarization and one-upmanship continued to block any substantive legislation. The health care crisis continued to monopolize the public’s attention, particularly after the 2020 election when the federal government finally abandoned the reforms of the Patient Protection and Affordable Care Act, hoping to save costs during the prolonged period of economic recession.

The economic recessions were mirrored by declining social conditions, especially for disenfranchised and vulnerable populations. Higher unemployment led to higher rates of depression, homelessness, substance abuse, violence, and crime. Chronic illness became more prevalent, while mental and behavioral health worsened. Health disparities became starker as safety nets were cut and access to health care declined. “Critical resource theft” (the stealing of food, water, etc.) became almost commonplace in most major urban and suburban areas. The economic downward spiral drove American politics, social bonds, and public health into a sustained period of regression.

Social media and online network users in part fueled this regression by spreading misinformation and vitriolic propaganda against government programs, including public health. The refusal of many Americans to get flu shots was one of several trends that reflected growing distrust of the federal government and the health care industry among the public. By 2020, this trend had ballooned out of control and a particularly virulent and powerful strain of the flu that emerged that year led to a flu pandemic breakout. PHAs tried their best to address the sudden demand for an instant and comprehensive response to this pandemic. However, they were underfunded, overworked, and very limited in their ability to communicate and coordinate with other governmental agencies and with residents. PHAs were unable to effectively analyze real-time data emerging in their communities and coordinate optimal flu vaccine distribution within and across cities and states. As a result, tens of thousands of people died. Congressional committees and news pundits scapegoated PHAs for not doing more to control the pandemic. PHAs’ claims of inadequate funding, overworked staff, and poor support from other agencies did little to assuage a public looking for someone to blame.

The flu pandemic disaster cemented the public perception of PHAs as ineffective bureaucratic strongholds for people who could not find jobs elsewhere. This reputation made it all the harder for PHAs to recruit and retain top people. PHAs had previously tried to improve their public image during the 2010s through the accreditation process. However, accreditation had failed to reach “critical mass” because many PHAs either could not afford the fees or could not provide all the services required to meet the standards for accreditation.

² The U.S. generation born 1983-2002

³ The U.S. generation born beginning in 2003

While many PHAs struggled to adequately perform their responsibilities and public distrust of public health, health care, and the government grew, “citizen science” services and activities expanded and advanced throughout the 2010s and 2020s, particularly in surveillance and monitoring. More and more residents decided to take community matters into their own hands. These networks and the data they produced raised the visibility of problems in the community, but they focused disproportionate attention on the affluent and middle-class areas where these individuals lived. Problems in poorer areas remained largely invisible because the networks did not connect marginalized populations. For example, poorer areas were more subject to high levels of air and soil toxins and pollutants, but there were few citizen science networks coming from or focusing on these communities. However, wealthier communities were able to reduce levels of toxins and pollutants in their own vicinities because strong data was coming from their own citizen science monitoring and surveillance efforts. Through this and other examples of citizen science disparities, an evidence base was created that justified allocation of resources to the well-to-do, particularly in the areas of health and wellness, while evidence on conditions in low-income areas was not as consistently gathered or analyzed.

These technological disparities were just another tourniquet cutting off the most vulnerable populations from the better future that the affluent and middle class would enjoy. As smartphones, wearable devices, and real-time social networking were becoming staples of mainstream American life in the 2010s, they reinforced economic and educational disparities that undergirded many of the nation’s most critical public health challenges. For example, by 2020 personal biomonitoring technologies were integrated into the electronic health record (EHR) systems of many high-end health care systems. Patients who could afford the higher insurance and the biomonitoring tools gained access to real-time personalized care. However, health care providers for most Medicaid patients and other vulnerable populations were stuck with more primitive EHRs that did little more than reduce the amount of time required for clinicians to talk to patients during a visit.

Health care’s disinterest in the wellbeing of vulnerable populations reflected a broader trend in the reduction of population health and prevention activities. Funding cuts combined with the highly publicized climate-related disasters and increase of infectious diseases, which reduced PHAs’ focus on prevention activities as they reeled from crisis to crisis. For many in public health, the historical familiarity of infectious disease provided a more understandable challenge than the more complex issues of community health change that were driving the nation’s chronic disease burden. The end of the Tobacco Settlement funds in 2025, for example, was a death knell for many PHA-led anti-tobacco programs. The tobacco industry got some restrictions weakened and aggressively renewed its advertising and promotion efforts. PHAs did not have the budget or political support for chronic disease prevention and community health improvement.

Disasters, however, periodically brought PHAs increased funding for disaster preparedness. Looking back from 2030, it is clear that the more newsworthy outbreaks of infectious disease diverted PHAs’ attention from the much greater burden of chronic illness that grew relentlessly during the 2020s. Mold and mildew exposure and carbon monoxide poisoning (from overutilization of and damages to portable generators) had become common as a result of climate change. Combined sewer systems in many cities produced major outbreaks of gastrointestinal illnesses, food and water contaminations, and water-borne illnesses, killing thousands. Rates of asthma, hay fever, and allergies increased every year, and air quality got so bad in some cities that residents wore protective air masks whenever they were outdoors.

New and re-emerging diseases became more common as well. To the surprise of many, malaria and dengue fever became more prevalent in some states. A robust strain of West Nile Virus emerged in seemingly unrelated parts of the nation in the summer of 2024. Increasingly antibiotic-resistant bacteria caused intense co-infections with new and re-emerging diseases, and also resulted in more intense infections and even deaths for more “traditional”

diseases. Alarm spread across the nation, and an exposé on “CDC Flunks Epidemiology” pressured Congress to hold more hearings and appropriate new funds for public health. This did little to prevent public health and health care from being overwhelmed by the multifaceted health impacts of climate change.

By 2025, the cycle of droughts, floods, tornadoes, and superstorms increased and worsened. Dramatic Arctic methane releases had produced what is now called “runaway climate change.” Emissions of methane, a much more powerful greenhouse gas than carbon dioxide, had rapidly accelerated with the melting of the permafrost and other frozen deposits in the Atlantic Ocean, Siberia, and the Arctic, thanks to anthropogenic global warming. By 2030, sea levels across U.S. coastal areas had risen by a staggering average of 14 inches over levels in the year 2000. Many residents of Florida, Alaska, Hawaii, and other low-lying areas were forced to evacuate so often that many simply relocated altogether, not returning to their original homes. In many areas, flash floods became more common and intense, and were more frequently associated with water contamination and deterioration of buildings, roads, runways, and other infrastructure. Some towns and small cities were rendered completely uninhabitable within a matter of weeks. This flooding was regularly preceded or followed by devastating drought.

Thus, conflicts intensified between states and within communities for water resources. Food security diminished as plants and animals died from illnesses, extreme weather events, wildfires, droughts, and hotter summers. These events, as well as water scarcity, rising food and energy prices, and worsening physical and mental health contributed to violent conflicts within many local communities for food and water. The millions of “climate refugees” worldwide who had relocated to less environmentally stressed areas were particularly susceptible to new and re-emerging diseases, violence, and sexually transmitted infections. Many communities proved hostile to climate migrants, whether from within the U.S. or abroad. By the mid-2020s, another wave of undocumented migrants began to move into the U.S. (or attempted to) as climate refugees. The U.S. instituted new immigration restrictions for individuals who came from nations with severe outbreaks of climate-related infectious diseases, while not allocating resources to assist international climate refugees residing in the U.S.

The worsening health of these immigrants was paralleled by the worsening health and economic conditions of many U.S. residents. Violent conflicts and discrimination escalated. Police, emergency responders, and firefighters across the nation were overworked and overstressed, and endured more disease and depreciating mental health. Amidst two recessions, budget cuts, and shrinking of the public health workforce, PHAs struggled to prepare for and mitigate the physical and mental health impacts of climate change. Many did not have the insurance to recover from damages in their buildings and infrastructure caused by extreme weather events, and their governments could not afford to rebuild.

In this tempest of highly complex challenges, PHAs could do little but provide some pre-disaster preparedness and futile post-event mitigation. As the value of PHAs further declined in their eyes, the public and policymakers looked to the private sector to apply newly available technologies to solve problems in both communicable and non-communicable diseases. Without fail, each year’s flu scare resulted in criticism for PHAs, supporting political efforts to reallocate PHAs’ funding to private sector health surveillance efforts. PHAs that retained a modicum of enthusiasm for their work struggled to replicate these private sector efforts with the little funding they had available.

For good reason, talented young people with a public health education preferred to work in the private sector rather than join a PHA and spend their career in demoralized offices responding to public criticism. With a steady supply of talented employees and investment capital, the private sector yielded innovative approaches to health challenges, particularly in advanced analytics, online health education, and preventive self-care. These innovations improved health for those with the ability to pay for them. Meanwhile, however, many universities shut down their schools of public health in the 2020s. A few merged their public health departments with their business schools. PHAs, as a

result, downsized and deteriorated over the years leading to 2030. Many local health departments were consolidated, eliminated, or subsumed into other government agencies. Those that remain by 2030 are underfunded, isolated, often politicized, and uninterested in taking any chances that might subject them to further public scrutiny. Some PHAs are led by the “cronies” of elected officials, or by physicians who no longer want to practice medicine but lack the financial resources necessary to retire. The health aspirations of the public are pursued not through the traditional public health establishment but through private sector innovations that overlook the needs of the most vulnerable members of society, who by 2030 lack access to quality health care, effective prevention, and other public health services. Ultimately, these members of society have lost hope for the future.

Scenario 3: Sea Change for Health Equity

Life in this Scenario:

“Let’s hear it, Mr. Nguyen!” It was near the end of her second 4-year term when Mayor Hayes began to prepare for her 2028 annual state of the city address. Mr. Nguyen, head of the city’s health development agency, was about to brief her on the city’s state of health and the agency’s contributions. Eliminating health disparities had been a major goal of the Mayor since she came into office. Mr. Nguyen outlined the advances that Mayor Hayes would review in her state-of-the-city address:

Resilience in face of superstorms – Last year’s superstorm hit the city hard. However, this time the city was better prepared. The health development agency helped combine increasingly better understanding of how to serve those in greatest need with public gaming activities and investments in mixed-income neighborhoods and access to healthy and affordable food. Together, they built the city’s capacity for and equity in rapid citizen response and recovery teams and made communities healthier and more resilient in the first place.

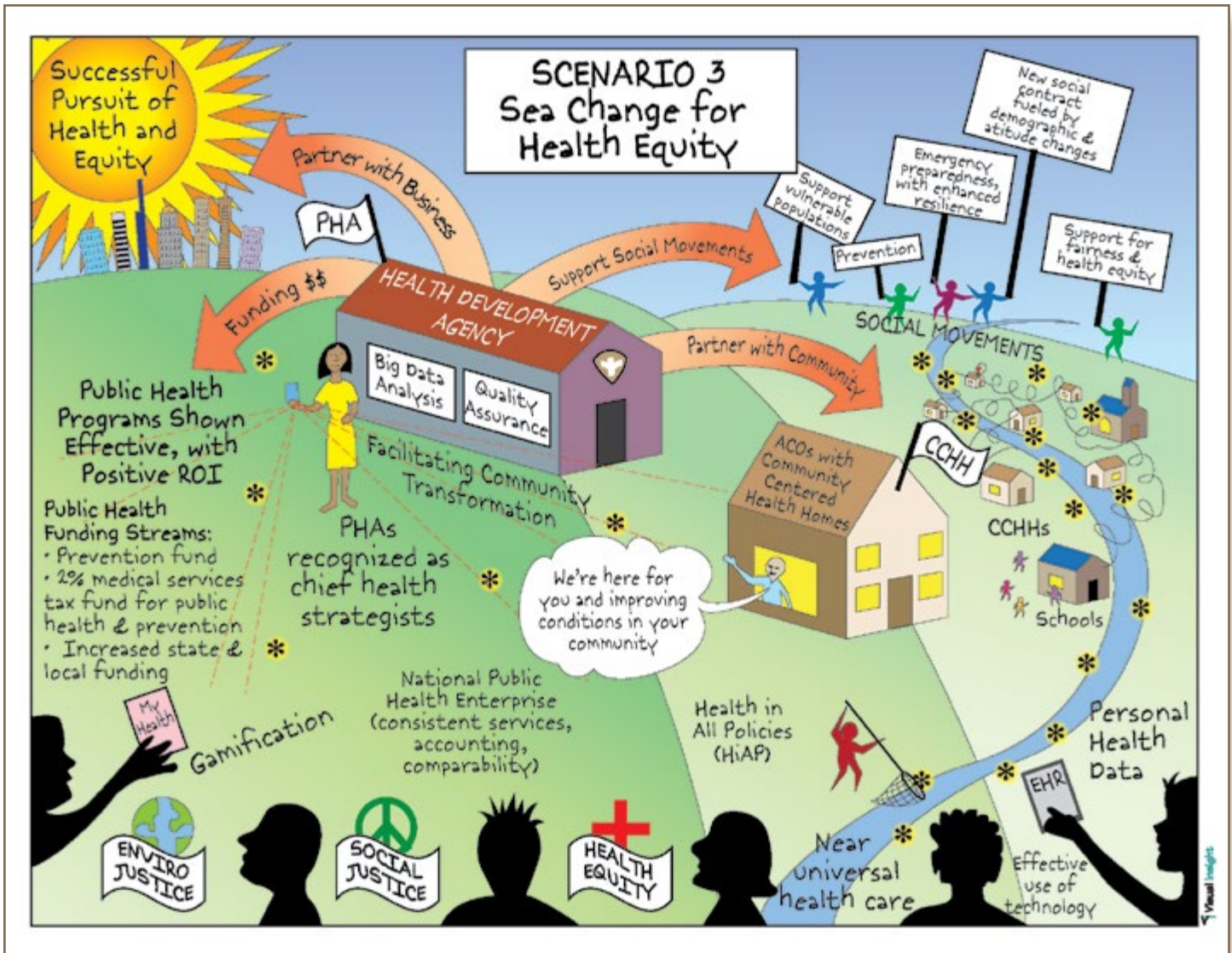
Health equity – As values and attitudes shifted, particularly with the growth of the Millennial and younger generations, the health development agency facilitated the growth of health equity as a shared goal for the city. This included adapting the PRIVILEGED game to the city’s context. The game was originally developed by the Boston Public Health Commission, and allowed players to role-play the lives of different hypothetical residents, ranging from the homeless to the wealthiest in the area. Players demonstrated significantly increased awareness for social justice and participation in equity efforts after playing the game. Now a few years later, the city saw important reductions in health disparities, and health indicators in low-income neighborhoods were improving fastest.

Community co-production and household self-sufficiency – Unemployment had grown in the city as more jobs were automated or digitized. To improve household self-sufficiency, the health development agency facilitated the growth of time banking and resource sharing, including community gardening and bartering of services such as home repairs and child care.

Demonstrating effectiveness and positive return on investment (ROI) – The health development agency had joined a national network of public health agencies (PHAs) that demonstrated a strong ROI for their programs. Collectively, the results from these PHAs convinced Congress to support a two percent tax on medical services to fund prevention and public health.

The Mayor felt proud of the agency’s accomplishments. Reflecting on her own experience, she had come from a low-income background and had been unemployed at various times in her 20s. With so many city residents struggling to make ends meet, she had helped lead and coordinate a movement for community co-production in the city. That organizing had instilled in her a recognition of the importance of health for a thriving city, and led her into politics to effect broader change. She had appointed Mr. Nguyen as head of the health development agency, which served as chief health strategist for the city.

Over the course of her two terms, the agency came to successfully use big data and advanced analytics to determine risks, needs, and opportunities; find best practice options from around the country; foster consideration of health in all the city’s policymaking; and engage the public in priority setting, community involvement, and emergency preparedness, often through games. In the process, the health development agency staff had become more analytical and strategic in their focus, and somewhat smaller in their numbers. However, the public and businesses in the city looked up to the agency to lead the city in adapting to new and different opportunities for health.



Scenario 3 Highlights:

National and local economies gradually grew, and large-scale changes in values and demographics over time pushed for “common sense” policies and support for health equity. Public health agencies became health development agencies that identify problems and opportunities to improve community health, and catalyze and incentivize action by community, business, health care, and other sectors. Their success as chief health strategists using advanced analytics, gamification, and diverse partnerships led to quality improvements in housing, economic opportunity, education, and other social determinants of health. Although some disparities persisted, in 2030 the vast majority of Americans had attained greater opportunity for good health.

Scenario 3 Details:

The 2010s and 2020s saw dramatic changes in the U.S. The nation's working population changed rapidly as Baby Boomers retired from elected office and government jobs, making room for younger cohorts that brought innovation and new technologies for improving outcomes. These younger cohorts generally held more tolerant attitudes towards lesbian, gay, bisexual, transgender, and questioning (LGBTQ) rights, also brought a clear and surprisingly rapid growth to governmental and private sector support of equity and fairness in the late 2010s.

By the mid-2020s, political scientists described a new social contract that had emerged in the U.S. over the previous decade. Americans expected their government to be effective, and were overtly willing to pay taxes to support the government functions that they saw as relevant to the nation's wellbeing. They supported government efforts in using the technologies that had become available to become transparent in its operations and to continuously innovate to do more good at less expense. The people expected that government agencies coach, lead, and cheerlead for fairness, including health equity.

The value shift and demographic change helped transform politics. Voters rewarded candidates that brought pragmatism and a "can-do" optimism to improve fairness and opportunity for the nation and its communities. Disagreements remained on many issues, but common sense and a spirit of cooperation became the norm. This included agreement on the value of and support for collaborations across sectors to achieve mutually beneficial goals, and the aggressive implementation of the "Health in All Policies" approach. Congress adjusted its "anti-lobbying legislation" to allow the Centers for Disease Control and Prevention and other agencies to engage in research, advocacy, and program planning related to legal products (e.g. sugar and guns) that could harm health. Congress also adjusted legislation for all public health agencies (PHAs) to use up to 10 percent of their categorical program funding to develop their foundational capabilities and achieve accreditation.

During this time, the national economy resumed its slow growth, with minor recessions. Federal finances gradually improved, as did the finances of most states and many cities and counties. Evaluation of public health interventions became routine and regularly demonstrated a positive return on investment for health interventions and programs. Public support for health programs and evidence of the interventions' effectiveness continued to grow, which led all levels of governments to stabilize or increase public health funding. In 2020, Congress restored the Prevention and Public Health Fund to the \$2 billion level called for in the Patient Protection and Affordable Care Act, adjusting funding upward for inflation.

While the economy and public health funding improved, however, structural unemployment continued to grow. Globalization, automation, and knowledge technologies fundamentally changed the economic reality for the U.S.; robotics, 3D printing, and digitization had taken over many manufacturing and service jobs by the mid-2020s. As structural unemployment grew, millions of Americans and their communities turned to themselves and to each other to produce and co-produce basic necessities for sustaining their households – including food, home repairs, child care, and other shared services.

Public health was subject to the same larger economic forces. In environmental health, for example, automated monitoring (e.g. for toxins and pollutants) and inspections (e.g. for restaurants and health facilities) required fewer and better trained PHA employees to oversee regulated establishments, licensing activities, and worker training and testing in food safety; to provide quality control and improvements of the reporting systems; and to deal with regulatory violations and food-borne illness outbreaks. Moreover, the licensing process integrated assurance that the business is in compliance with labor pay and worker safety regulations – but this too was largely automated.

As the public health workforce became smaller and more technologically savvy, PHAs increasingly drew on advanced informatics to transform the nation's health. In the realm of PHA operations and capabilities, most PHAs implemented a uniform chart of accounts and achieved accreditation during the 2010s. These changes improved their ability to compare and learn from their peers in other jurisdictions, provide comparative cost analysis, and secure state and local funding. To improve the science and art of public health, PHAs partnered with Accountable Care Organizations (ACOs), universities, and citizen scientists, to explore the dynamics of health and prosperity. PHAs converted data from a wide range of medical, social, behavioral, environmental, and economic sources into real-time virtual simulations of public health in communities. PHAs could now explore the implications of trends shaping communities, and quantify the costs of events such as a flu pandemic using indicators such as lost work time and business income or reduced educational attainment. Policies, programs, and expenditures could now be routinely assessed for their effectiveness and return-on-investment (ROI). These modeling and analytics capabilities led to sweeping advances in epidemiology, community interventions, and the guidance of behavior change that were key to reducing the country's chronic disease burden.

Highly energized cohorts of public health leaders built on the growing consistency and effectiveness of PHAs throughout the 2020s to develop an increasingly interrelated network of PHAs into "health development agencies". These PHAs performed strong fiscal management, learned and applied innovation principles from each other and other sectors and organizations, leveraged other stakeholders and resources from other sectors to improve health and wellbeing. Their staffs had the interdisciplinary training and skills needed to work with other stakeholders and support the agencies role in fostering and promoting prevention strategies. These PHAs identified problems and opportunities to improve community health, and catalyzed and incentivized action by multiple sectors. They targeted highly sophisticated and effective messages and interventions. They led in the analysis and dissemination of best practices for community interventions, and in the identification of the most cost-effective and appropriate providers of a program or service. Sometimes the PHA itself was the optimal provider, but for many efforts other community groups were more appropriate. By the early 2020s, most PHAs had demonstrated a positive ROI for their remaining services and programs.

PHAs were using a uniform chart of accounts, pursuing accreditation, sharing best practices and generally cooperating. Noting similarities to private franchise models, many leaders referred to this collaborative network of PHAs as the "public health enterprise." The public health enterprise helped accelerate program activities and enabled the enhanced, targeted creation of opportunities for all to be healthy.

Their move to become health development agencies and the resulting achievements in improving community health over the years to 2030 earned PHAs public recognition for their role as chief health strategists for their communities. Based on their analyses and evaluations, PHAs had raised additional resources for public health activities from the business community, foundations, and their local health care providers. Some had developed "pay for performance options" that allowed gain sharing for effective health promotion that reduced health care costs (this was an important factor when Congress created the health services tax for public health in 2022). Based on the leadership and evidence of effectiveness provided by PHAs, all levels of government ultimately realized that if budgets needed to be reduced, public health spending was too important to be cut. If public health spending ultimately had to be reduced, governments sought to minimize its cuts.

Simulations and predictive analytics also contributed to the spread of games that changed communities' awareness of and commitment to achieving health. One such game, named PRIVILEGED, quickly went viral after 2020 and prompted a major public conversation about fairness. The game allowed players to role-play the lives of different hypothetical residents – from the most privileged to the more vulnerable – in virtual communities. Players thus explored their degree of privilege and hardship, and worked with other players to devise equity-enhancing strategies.

Although communities varied widely in the needs and goals that they identified, factors that emerged most often included: support for mixed-income neighborhoods and community development, employment, community resilience, and the promotion of alternative community economic models such as self-production, co-production, community and home gardening, and Time Dollar exchanges.

While the existence and strength of equity-enhancement initiatives varied among communities, nearly all U.S. residents gained access to capitated and effective care during the 2010s and 2020s. Preventive services no longer required co-pays. Primary care evolved to the “Community-Centered Health Home” model where health care providers—particularly ACOs—worked to improve population health. As care and access thus improved, federal funding for public health programs in screening and treatment were cut. Nevertheless, HDAs continued to receive funding for the provision of supportive services for HIV/AIDS, maternal and child health, and primary care (for the small percent of those still lacking access to health care).

Unfortunately, health care costs remained far too high. In 2022, this prompted Congress to implement a recommendation that the Institute of Medicine had made a decade earlier. Given the continued evidence on the ability of community-focused prevention programs to reduce illness and health care costs, Congress instituted a two percent tax on medical services. State health departments were tasked with distributing this tax revenue to communities for community prevention purposes. PHAs led most communities in facilitating the analysis and shared goal-setting that targeted this funding. In some cases, the funds went to PHA programs. In most cases, however, they went to other community organizations or community development efforts. Many people strongly opposed this tax or debated how it should be implemented. By 2030, however, this policy has begun to show health improvements and reduce demand for health care.

Taken together, opportunities for all to be healthy improved dramatically in the decades leading up to 2030, and public health played important roles in leading this transformation. PHAs lead coalitions of stakeholders in a wide range of activities that promote health. They work with developers and urban planners to ensure the availability of safe, attractive places where people can be physically active. They foster mixed-income neighborhoods, entrepreneurship, and job matching and training programs, as well as self-production and community co-production. PHAs also work with app and game developers and health care providers to ensure that new technological developments are made affordable and culturally appropriate for vulnerable populations. While some disparities have persisted, there is greater equity in 2030 than in previous decades. Almost all communities have improved opportunities for good health and health equity by advancing quality improvements in housing, economic opportunity, education, and other social determinants of health.

Scenario 4: Community-Driven Health and Equity

Life in this scenario:

Priya finished her morning run around the local community gardens and aeroponics facility, all within “reduced emissions” and “no emissions” zones. She thought of her next health equity and resilience time bank assignments as she checked the data from her run. The environmental monitoring apps on her subsidized smartphone had sent the data in real-time to the local health department, where it was factored into big data analytics on the community’s health.

It was hard to believe that a year earlier the area had been hit by a powerful hurricane. Back in the 2010s, this kind of hurricane would have wreaked much more havoc on a “poor” community such as Priya’s. However, throughout the early 2020s, Priya and other residents had been participating in emergency preparedness games and simulations facilitated by the local health department. They had built resilience into the neighborhood, among other things, growing mixed income neighborhoods, fostering co-production of food, and getting the Time Bank ready to exchange rebuilding services. Recovery from the last hurricane was swift because of these pre-storm efforts.

Changes in Priya’s neighborhood also include the growth of networked local initiatives, community co-production, and collective self-care efforts to reduce disparities, strengthen community health, and improve neighborhood resilience. As chief health strategist, the local health department played a key role in facilitating community health and resilience. It also served as a network facilitator with Groupnets as part of its health equity and prevention efforts, as well as co-host of the Truth and Reconciliation hangouts. Hangouts were informed by social monitoring apps and designed to improve indicators such as the ratio of pleasant to hostile exchanges between community members of different racial and ethnic backgrounds. The data regularly fed into the health department’s community health dashboard on indicators for the community’s physical, social, mental, nutritional, and spiritual health.

After a quick shower, Priya tuned into the Groupnet session using both audio and video feeds. Her husband Marcus was already tuned into the session. To make time for it, they had been trading their citizen science hours for child care offered by other time bank members.

MarcusLee98 “David, how’s it all look?”

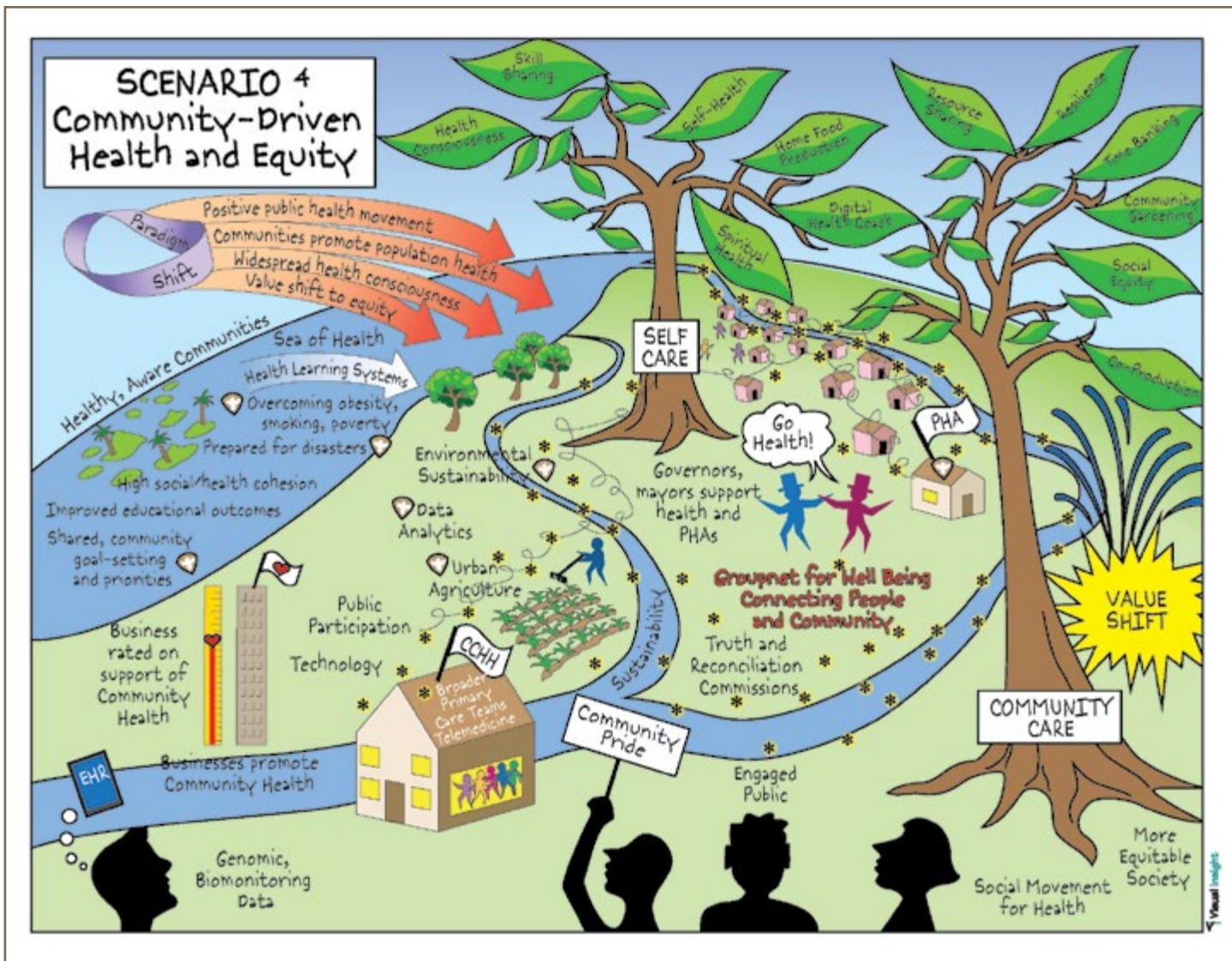
YourfriendlyneighborhoodDataMan: “Good news, the ‘uMonitor’ app has just been integrated with our remote sensor network. That bumps our data acuity up by another 10 percent. The aggregated time-specific results from all the apps now show about the same carbon and NOx levels around the gardens as our remote sensors network.”

Priya2020 “Are we still on track for meeting emissions targets?”

Lucky City_Prevent_Promote_Protect “We need a few more sessions to confirm, but it looks like the local air pollutant levels are down 35% from 2020! DataMan, can you share with us a verified screenshot of your comparisons?”

YourfriendlyneighborhoodDataMan: “Done. The results are pretty similar.”

Lucky City_Prevent_Promote_Protect “Fantastic. We’ll be asking you all to do some monitoring assignments to feed into the early-warning forecasts and community health dashboard. We’ll need to specifically check if the improved air quality is helping reduce asthma, allergy, and hay fever reductions. Great job, everybody!”



Scenario 4 Highlights:

Public health agencies, partners, and local health improvement initiatives coalesced via technology and social media into a national web of community health enhancing networks. These networks helped communities exchange their innovations and best practices, and leverage the expertise of public health agencies and others. The nation also strived to come to terms with its racial and socioeconomic histories, and supported real changes and legislation to create a more equitable society. This value shift to equity was accelerated by another major recession and the ongoing transformation of the economy, including significant digitization of jobs. New community economic models helped households sustain themselves and improve health and wellbeing. As chief health strategists, public health agencies shed many functions, and facilitated these movements to improved health.

Scenario 4 Details:

Excitement gathered as President Thompson, the first African-American woman to win the White House, began delivering her 2030 State of the Union address to a holoconference of more than 200 million American viewers. There was much for the speech to celebrate given the nation's achievements over the previous 15 years, particularly in public health. These improvements had become a foundation of strength supporting the broad-based reinvention of the country's economy and society.

This societal change had its roots in the late 20th century. New technologies and new ways of organizing around health had been producing encouraging results in many communities since the 1990s through the Healthy Communities movement, federal programs for communities such as REACH and Community Transformation Grants, and extensive support from national and local foundations. As the 2010s progressed, a combination of economic and environmental challenges, evolving technologies, and changing values accelerated community transformations while advancing health and equity.

As chief health strategists, state and local public health agencies (PHAs) played a major role in stimulating more intelligent and collaborative health generation in their communities. For example, PHAs used new trends in social media to influence and generate better behavioral health at the micro-level. In the late 2010s and early 2020s, social media had evolved as more and more people joined "Groupnets," circles of around 10 people who interact with one another in real time and with great intensity. Such online engagement proliferated as cities provided their own free wireless networks, and as access to smart phones and data plans were subsidized.

PHAs sought to improve community health and personal health behavior through "peer uplift," and through effective collaborations and interactions with and within Groupnets. Groupnets had created new kinds of good and bad "peer pressure" or "friend pressure," as people in the Groupnets influenced group behavior much more directly through real-time video and audio interaction. PHAs supported the fusing of Groupnets into a vast and organic social networks that were much more influential than any social network in the past. Consumers and communities were using Groupnets and other forms of social media to organize, evaluate, rate, and share activities and experiences across a wide range of areas. These networks, local health improvement initiatives, public health agencies, and partners converged into a broad, national network through which communities could exchange their innovations and best practices, and leverage the expertise of PHAs and their leaders.

Although this national network greatly enhanced and accelerated successful public health activities, there were widespread concerns about the quality of the information being propagated via the network. People were as often impressed by the "wisdom of the crowds" as they were startled by the "insanity of the mob." For health, food safety, and health care, the public increasingly looked to experts in PHAs and academia to help them distinguish good information from bad, and knowledge from opinion. For example, the public expected PHAs to aid Yelp!, Urban Spoon, their successors, and other consumer rating websites in maintaining quality-rating processes (which included the use of PHA-required safety monitoring data for restaurants and other organizations).

In addition to the evolution of social media, public health was also greatly affected by major changes in the health care delivery system. The health care reforms of the early 2010s expanded access to health care insurance, while incentivizing health care systems to take responsibility for population health within their communities. Research and evaluation drew on the spread of electronic health record systems that collected genomic, biomonitoring, and socioeconomic data. PHAs drew on them as well to identify groups and neighborhoods whose social, genetic, and environmental risks could be addressed through targeted prevention strategies. Health care providers used these analytics to direct their funding priorities for population health strategies.

As the field of advanced analytics rapidly evolved it helped create a "community health learning system" that had been envisioned decades earlier. This system helped PHAs, community groups, local businesses, and health care

providers to multiply their collaboration and effectiveness, and to build upon earlier tools like the Robert Wood Johnson Foundation County Health Rankings and [CommunityCommons.org](https://www.communitycommons.org) (which offered informal “progress reports” using population health metrics that could be tailored for a particular community). By 2020, public health officials and researchers were using sophisticated, real-time, virtual simulations of individual neighborhoods and communities. These models drew data from many sources, including reimbursement, real-time environmental and biomonitoring, and various forms of crowd-sourced data. Interventions could now be modeled and analyzed for impact and cost-effectiveness in virtual space before they were implemented in the real world. This learning system vastly enhanced PHAs’ role in population-level analytics and research, particularly in communicable disease surveillance and prevention, emergency preparedness, and environmental monitoring. As their role in community strategy development and facilitation grew, PHAs cut their clinical health services as access to effective health care became nearly universal.

In the background, droughts, floods, heat waves, and severe storms increasingly took their toll on all parts of the country. Part of the “mind-change” that took place in the 2010s was recognition of the threat of climate change, and a national commitment to mitigating its effects. PHAs and others advocated for the integration of environmental resilience, sustainability, and mitigation into all parts of local, state, and federal policies. This was reflected in PHAs’ emergency preparedness activities, but also in the results of community goal setting activities and growing support for Health in All Policies (HiAP). PHAs worked with citizens, businesses, policymakers, and various agencies to reduce environmental impact and expand renewable energy. This included establishing “no emissions” and “reduced emissions” zones. PHAs also encouraged reduced reliance on cars and promoted anti-idling policies for vehicles; worked with private and nonprofit organizations to expand the number of hybrid and electric vehicles in communities; encouraged more biking, car-sharing, and ride-sharing; encouraged and provided quality control for automated and networked citizen science monitoring for and reduction of toxins and pollutants; and fostered greater energy efficiency and renewable energy use in buildings and communities. PHAs were active partners in preparing local neighborhoods to create and implement community health preparedness and resilience plans in the face of extreme weather events. These activities were all part of a shift from traditional views of “environmental health” to one of environmental improvement, listed under the uniform chart of accounts as “Environmental Responsibility and Sustainability,” which had also become an important part of PHA accreditation standards by 2022.

Accreditation standards by the 2020s also required PHAs to ensure health equity. For this purpose, a growing number of PHAs advised in the development and dissemination of consumer tools—such as web and mobile applications—to ensure the enhancement of public health and health equity. PHAs monitored these tools and other innovations and emerging knowledge technologies for quality and effectiveness in community engagement, and ensured that they benefited low-income populations as quickly as possible.

One major use of these community engagement tools was to address environmental health and disaster preparedness. PHAs facilitated pre-event resilience games and simulations to minimize the potential costs and impacts of environmental disasters. These simulations and games helped community groups imagine and practice “emergent” roles they could play in disaster response. These engagement and involvement tools proved important in 2024, after Superstorm Richard pounded the coasts of Delaware, New Jersey, and New York. Together with community groups and other responders in the region, members of the Tri-State Time Bank led in quickly collecting, distributing, and delivering food and supplies, and in getting homes and apartments ready for reoccupation.

The advent of Time Bank networks reflected the major economic shift that had been emerging throughout the 2010s and 2020s. Many jobs were lost to automation and distributed manufacturing (e.g., the use of 3D/4D printing) and greater productivity through cognitive computing and knowledge technologies. Declining revenues forced federal, state, and local government to spend smarter and to cut programs and services. Income support programs, including the Earned Income Tax Credit, had expanded, yet remained insufficient to address the growing structural unemployment. Many Americans responded to these trends by creating their own local livelihoods – made up

of diverse activities with their own revenue models – rather than relying on a steady paycheck. New community economic models included Time Banks where many Americans exchanged their labor hour-for-hour with their neighbors. Time Banks became important community networks that helped build social coherence as neighbors helped neighbors, and their impacts were widely noted particularly after Superstorm Richard. Many people also joined collaborative consumption schemes (e.g., Zipcar) to rent or share cars, bikes, and other goods rather than owning the items themselves. Community gardening and home food production (including 3D-printed food) offered new opportunities for households and communities to feed themselves. This more distributed economy often supported community members in crowd-sourcing and crowd-funding health improvement efforts that they deemed most important at the local level. Communities that actively sought to improve social coherence by merging the interests of the wealthiest and poorest residents ultimately performed far better economically than those communities that maintained the status quo.

During the late 2010s, as this economic and social justice movement progressed, more communities began to understand the practical need to address racial and discriminatory injustices. Leaders in social services realized that it was foolish to expect oppressed minority groups to be capable of full participation in 21st century society if their contemporary and centuries-old wounds continued to be left untended. Many communities therefore undertook a courageous process of “truth and reconciliation” of the nation’s racial past and present. These initiatives focused on open discussion of the long-lasting impacts (for both people of color and for whites) of, for example, slavery in the history of African Americans; the torture, forced assimilation, and displacement of Native American Indians throughout the 18th and 20th centuries; 20th and 21st century segregation (including hyperghettoization); the War on Drugs; incarceration; contemporary economic and social oppression; immigration histories; contemporary Islamophobia; and lynchings. Discrimination against lesbian, gay, bisexual, transgender, and questioning (LGBTQ) persons was also widely acknowledged and discussed. Foundations funded sessions that held the space for these groups to speak their truths without fear of retaliation or rejection. As this Truth and Reconciliation Movement grew, it offered a deep catharsis as all Americans came to see themselves in the experiences that were being shared. In conjunction with the increasing momentum of the Truth and Reconciliation Movement, awareness of economic injustice grew. These were key factors in generating new legislation to promote social and economic fairness, including more tax fairness, a national living wage requirement, and an expanded Earned Income Tax Credit that effectively created the negative income tax first proposed by the Nixon administration in the 1970s.

These shifts in technology, health care, social media, and the roles of residents and public health, called for a new kind of public health worker. Fortunately, schools of public health had been realigning their programs in order to develop a public health workforce with the skills that were appropriate to the times, particularly advanced analytics and community engagement expertise. PHAs thus benefited from a stream of public health graduates equipped with advanced technical and social knowledge.

In 2030, Americans celebrate the movement toward a more equitable society, though there are still gaps and economic injustices. Moreover, they recognize that their efforts must continue and focus more on the spiritual dimensions of health. Those who felt this need most strongly paid great attention to the President as she beamed herself into living rooms across America. Standing at her podium, she declared, “We, the public, have come together around a shared vision of health. We have begun the journey to that vision by working together and by combining new technologies with the strength, passion, and spirit of our communities. We, the public, must now move more powerfully toward that vision – a bold vision that pulls us into a future where all Americans can enjoy living healthy, productive, and meaningful lives. Will you join me in creating this future?”

Two hundred million heads nodded.

Scenario Matrix

The following pages offer a side-by-side comparison of the scenarios across multiple dimensions. Each column is consistent with but not solely duplicative of the respective scenario.

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
MACRO ENVIRONMENT				
U.S. Economy	Slow growth with recessions in 2016 and 2022.	Slow growth. Severe recessions in 2016 and 2023. High unemployment. Political polarization and one-upmanship block substantive legislation.	Strong recovery. National minimum wage fixed at living wage level, with inflation adjustments Persistent structural unemployment. New community economic models help households sustain themselves.	Slow and uneven recovery. Major recession in 2017. Expanded earned income tax credit. National living wage. Persistent structural unemployment. New community economic models help households sustain themselves.
State and Local Fiscal Health	Virtually all states face severe fiscal constraints. Many cities and counties are at risk for bankruptcy.	Recessions hurt most public budgets at state and local levels. Many cities declare bankruptcy.	Most states and cities follow the recovery.	After some healthier years, recession constrains government spending.
Internet and Social Media	Subsidized smartphones with basic data packages lower digital divide. Social networking platforms reinforce negative health behaviors. Internet of Things (IoT) enhances social and environmental monitoring.	Digital divide grows, reinforces economic, educational, and health disparities. Social networking platforms often reinforce negative health behaviors and spread misinformation. IoT is poorly integrated and maintained; riddled with security vulnerabilities, and targeted by malicious hackers.	Subsidized smartphones with basic data packages lower digital divide. Use of health apps grows, integrated with personal biomonitoring, community health. Social networking supports widespread personal and community wellbeing. IoT enhances social and environmental monitoring.	Highly intuitive and adaptive technologies and subsidized minimum connection data packages eliminate digital divide. Social networking improves dissemination and civic engagement. IoT enhances social and environmental monitoring.

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
MACRO ENVIRONMENT				
Environmental Threats and Impacts	<p>More intense and variable weather extremes; hotter and drier summers; floods, tornados.</p> <p>Occasional super-storms.</p> <p>New viral and bacterial outbreaks, multiple pandemics.</p> <p>Increased prevalence of cancers, mental and behavioral health problems, asthma, chronic diseases.</p>	<p>Multiple 100-year floods per decade, in some regions followed by scorching summer droughts.</p> <p>Periodic superstorms cause extensive damage.</p> <p>Frequent major outbreaks, increased deaths.</p> <p>Multifaceted health impacts overwhelm public health and health care.</p>	<p>More intense and variable weather extremes; hotter and drier summers; heat waves and short-term droughts.</p> <p>Superstorms more common and strike the east coast most frequently.</p> <p>Bacterial and infectious disease outbreaks.</p> <p>Challenges to air and water quality are better reduced or managed.</p>	<p>More intense and variable weather extremes; hotter and drier summers, heat waves, short-term droughts.</p> <p>Floods and periodic superstorms.</p> <p>Bacterial and infectious disease outbreaks.</p> <p>National commitment to slow or reverse climate change and its effects.</p>
Health Care	<p>Vast majority are insured, have access to effective, age-appropriate preventive services without copays by 2020.</p> <p>Most care is integrated and capitated.</p> <p>Electronic health records (EHRs), integrated information, digital health coaches common for most providers.</p>	<p>Number of uninsured rise.</p> <p>Most care remains fee-for-service.</p> <p>Having insurance coverage does not ensure access to actual and good care.</p> <p>Unreliable “virtual doctor” solutions proliferate to meet demand.</p>	<p>Virtually all have access to affordable, high quality, and comprehensive health care.</p> <p>Most care is integrated and capitated.</p> <p>EHRs, integrated information, digital health coaches common for most providers.</p>	<p>40% of patients are enrolled in Consumer Directed Health Plans and use effective self-care technologies.</p> <p>Most care is integrated and capitated.</p> <p>EHRs, integrated information, digital health coaches common for most providers.</p>

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
MACRO ENVIRONMENT				
Primary Care	<p>Patient-centered medical home (PCMH) model and enhanced primary care teams are the norm.</p>	<p>Wide variation; many practices become PCMH; others remain fragmented and not integrated. Many lack primary care.</p>	<p>PCMH evolves to Community-centered health home (CCHH) model and expanded teams with community health workers (CHWs). Digital health coaches improve care, especially for low-income individuals, families.</p>	<p>Most systems move to CCHHs, expanded care teams, CHWs, and digital health coaches. Many individuals and families self-manage their own primary care with digital health coaches and peer support.</p>
Tobacco Control and Prevention	<p>Improved access to cessation programs. E-cigarettes are regulated as tobacco products, with age and marketing restrictions. Overall use of tobacco continues to decline. Racial and geographic disparities in tobacco use grow.</p>	<p>E-cigarettes and negative social network influences increase tobacco use among young people. Weakened Tobacco smoking, marketing and sales restrictions in some states. Tobacco use increases overall.</p>	<p>Policies raise taxes, ban smoking in or adjacent to parks, workplaces and schools, raise smoking age. Near universal access to cessation programs. Targeted efforts for special populations. Tobacco use declines dramatically.</p>	<p>“Nudges” via social networks prevent youth initiation. Expanded access to cessation programs. Targeted efforts for special populations. Tobacco use declines dramatically.</p>
Health Equity Outcomes	<p>Some improvements in absolute health measures. Continued disparities across race and class on almost all measures.</p>	<p>Starker health disparities.</p>	<p>Significant improvements in health equity across racial and ethnic groups and neighborhoods. Some health disparities are eliminated entirely.</p>	<p>Significant improvements in health equity across racial and ethnic groups and neighborhoods.</p>

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Prime Public Health Roles	<p>Provide communicable disease control.</p> <p>Analyze, interpret, and respond to surveillance.</p> <p>Improve emergency preparedness, response and recovery.</p> <p>Provide health and safety assurance, inspections.</p> <p>Promote enhanced health conditions, including healthy food and activity.</p> <p>Conduct or disseminate comparison effectiveness research and evidence-based practice.</p> <p>Promote Health in All Policy analysis.</p>	<p>Provide communicable disease control.</p> <p>Provide emergency preparedness, response, mitigation, and recovery.</p> <p>Perform mandated inspections, regulation.</p>	<p>Function as “health development agency”</p> <p>Provide or assure assessments and evaluations, planning, and policy development.</p> <p>Forecast public health trends, test in simulations, and plan responses to trends.</p> <p>Conduct or disseminate comparison effectiveness research and evidence-based practice.</p> <p>Provide quality control and improvement of automated inspection systems.</p> <p>Promote Health in All Policy analysis. Guide public and private investments that/to promote health.</p> <p>Recruit and facilitate partners.</p> <p>Stimulate or lead community goal-setting activities.</p>	<p>Guide public and private investments that/to promote health.</p> <p>Conduct or disseminate population-level analytics and research, comparative effectiveness research, and evidence-based practices.</p> <p>Promote community engagement.</p> <p>Stimulate community goal-setting activities. Help the public separate good information from bad.</p> <p>Provide quality control and improvement of automated inspection systems.</p> <p>Support capacity building. Advise and promote public- and private-sector collaborations and solutions.</p>
	PUBLIC HEALTH			

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
PUBLIC HEALTH				
Funding for Public Health <i>Federal Funding</i>	<p>Reductions in public health spending for primary care, rural health, health professions, and health care systems. Funding priorities fluctuate.</p> <p>Federal spending is reduced for screening and treatment, especially for HIV/AIDS, breast cancer screening, asthma, maternal and child health, immunizations.</p>	<p>Crisis-driven funding, with repeated funding cuts.</p> <p>Needs increase, but federal spending for screening and treatment programs is cut.</p> <p>Remaining funding best supports delivery of mandated services, infectious disease control, and emergency preparedness.</p>	<p>Programmatic funding structure largely maintained.</p> <p>Stable or increased funding for surveillance and prevention; emergency preparedness; feeding programs; food standards and safety enforcement; and water supply and pollution protection.</p> <p>Federal funding cuts to personal health care services for screening and treatment.</p> <p>Prevention and Public Health Fund restored. 2% tax on health care services.</p>	<p>Funding supports public health action on broader determinants of health.</p> <p>Federal funding cuts to personal health care services for screening and treatment.</p>
<i>State and Local Funding</i>	<p>Funding level varies widely. Modest increases in fiscally healthy cities and states. Spending reductions in most fiscally challenged jurisdictions.</p> <p>Increased sharing of services and consolidation among local health departments.</p>	<p>Repeated funding cuts in most jurisdictions to public health, health care, and safety-net services.</p> <p>Many local health departments are consolidated, eliminated, or subsumed into other government agencies.</p>	<p>Wide variation, but tech savvy PHA staff do more with less.</p> <p>Fiscally healthy states and city/counties slightly increase public health spending.</p> <p>Accreditation and evidence of effectiveness and positive return on investment (ROI) give some protection from cuts to public health.</p> <p>Federal Prevention Fund and much of the 2% medical services tax flow through state and local PHAs.</p> <p>PHAs foster private sector/foundation funding, crowd funding, and gain sharing or social impact bond development.</p>	<p>Wide variation, but tech savvy PHA staff do more with less.</p> <p>Fiscally healthy states and city/counties slightly increase public health spending.</p> <p>Accreditation and evidence of effectiveness and positive ROI give some protection from cuts to public health.</p> <p>Smarter spending based on sophisticated simulations and assessments.</p> <p>PHAs foster crowdsourcing, private sector and foundation funding, and generate more public health resources, rather than dollars, from co-production, and time dollar exchanges.</p>

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
<i>Philanthropy, Foundations and Other Funders and Support</i>	<p>Foundations shift some health care funding to community prevention/public health approaches as health care coverage increases.</p> <p>Emergence of a global market for social-impact investing and social impact bonds leads to knowledge and experience with gain-sharing approaches. PHAs help foster these kinds of programs with local health care providers/payers that lead to measurable reductions in health care costs.</p>	<p>Foundations split; as economic challenges rise, some concentrate their efforts on providing communities and families with basic requirements; others shift health care funding to efforts focused on changing community conditions that will yield the greatest health.</p>	<p>Major foundations lead in shift from health care to health/public health support; more community-focused public health funding, some of which flows through PHAs.</p> <p>Other foundations join to support improving community conditions after effectiveness and return on investment (ROI) of public health programs are shown clearly.</p> <p>PHA analysis of needs and effectiveness support foundations in targeting investments; PHAs provide analysis and targeting for gain-sharing investments by health care payers.</p>	<p>Foundations make major shifts from health care to community health.</p> <p>Some foundations drive to create a “culture of health”; others shift in response to clarity in effectiveness and ROI of community/public health programs.</p> <p>Many support community economics models (e.g., Time Banks, community gardening, collaborative consumption efforts).</p> <p>Communities themselves, with their time and dollars, crowd-source and crowd-fund health improvement efforts at the local level.</p>
	Public Health Agency Role in Health Care Delivery and with Health Care Providers	<p>PHAs drop most direct clinical preventive and primary care services, as health care access expands.</p> <p>PHAs provide quality assurance of clinical functions and population health improvement.</p>	<p>Wide variation but most PHAs provide screening, preventive, and supportive services in those categorical programs – those most have reduced funding.</p>	<p>PHAs aid providers in including social determinants of health (SDH) related risks in screening and assessments.</p> <p>Evaluate effectiveness, accessibility, quality of health services.</p> <p>Provide supportive services (e.g., HIV/AIDS, MCH), and primary care for uninsured.</p>
PUBLIC HEALTH				

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
PUBLIC HEALTH				
Health Care Providers' Role in Population Health	Varies by region and provider. Ranges from pursuing population health by focusing on their sickest patients, to working with community organizations and health departments in addressing the built environment and socio-economic factors.	Most define population health as managing their sickest patients - hot spotting.	All do hot spotting, case management of their sickest. Most use big data analytics and community goal setting to target highest priorities. Community benefits funding shifts largely to changing community conditions; net revenues to invest in community benefits are reduced by competition and reductions in medical care payment and reductions in demand.	All do hot spotting, case management of their sickest. Most use big data analytics and community goal setting to target highest priorities. Community benefits funding shifts largely to changing community conditions; net revenues to invest in community benefits are reduced by competition and reductions in medical care payment and reductions in demand.
Surveillance and Epidemiology	Integrates data from electronic health records (EHRs), Internet of Things, social media, biomonitoring, and mobile phones to varying degrees of effectiveness. “Citizen science” monitoring supports some PHAs. PHAs facilitate hot spotting efforts by health care providers. PHAs forecast community health trends, provide early-warning by neighborhood. But cannot mobilize timely pre-event response.	Data collection and quality are limited by public distrust in government; neglect surveillance done by marketers. “Citizen science” monitoring focus on better-off neighborhoods. Policymakers look to the private sector to apply newly available technologies to solve problems. PHAs are overwhelmed by citizen, social media and internet-based reporting.	Increasingly automated surveillance; integrates data from EHRs, Internet of Things, social media, mobile devices, environmental monitoring. PHAs lead in big data analysis in most communities – enhancing surveillance and epidemiology. PHAs forecast community health trends and provide early-warning for challenges by neighborhood.	Automated surveillance, integrates data from EHRs, universities, community-based organizations, citizen scientists, social networks, PHAs. PHAs provide technical assistance, training, and quality monitoring of community health trends forecasting, early-warning, surveillance and analyses conducted by others. PHAs incentivize public- and private-sector solutions and consumer tools that facilitate surveillance.

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
PUBLIC HEALTH				
Emergency Preparedness, and Response, and Recovery	<p>PHAs facilitate improvements in coordination, preparation, response, and recovery by non-profits and the business community.</p> <p>PHAs use gaming activities to improve preparedness, minimize costs and impacts of environmental disasters, and help community groups imagine and practice “emergent” roles in disaster response.</p>	<p>Communities are under-prepared for physical and mental health impacts. Frequently ineffective responses to emergencies due to low funding, overworked staff, inability to analyze real-time data, and poor communication and coordination among organizations and residents.</p>	<p>PHAs use simulations and gaming activities to improve environmental monitoring, preparedness, and ensure effective response and recovery aid for vulnerable populations.</p>	<p>PHAs work with social networks and technologists to automate monitoring, improve preparedness, and ensure effective response and recovery aid for vulnerable populations.</p>
Environmental Protection, Climate Change	<p>PHAs focus on resilience, adaptation, and mitigation for extreme weather events and climate-induced disease outbreaks.</p>	<p>PHAs work to prepare for and mitigate the physical and mental health impacts of climate change.</p> <p>PHAs are often unable to recover from damages to PHA buildings caused by extreme weather events.</p>	<p>PHAs promote sustainability practices, use environmental health promotion to build community resilience, and prevent and mitigate emergencies.</p> <p>Environmental resilience, sustainability, and mitigation are integral parts of local, state, and federal policies.</p>	<p>PHAs promote sustainability practices, use environmental health promotion to build community resilience, and prevent and mitigate emergencies.</p> <p>Environmental resilience, sustainability, and mitigation are integral parts of local, state, and federal policies.</p>

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
PUBLIC HEALTH				
Environmental Health and Safety Inspections	<p>Increasingly automate inspections and/or conduct through private sector companies. PHAs provide quality control and improvements.</p> <p>Smart apps speed up and integrate data, results are public, and for restaurants, included in consumer ratings.</p>	<p>Increasingly automate inspections and/or conduct through private sector companies.</p> <p>PHAs focus on mandated inspections, regulation.</p>	<p>Increased self-regulation among licensed and inspected businesses and institutions as inspection automated.</p> <p>PHAs provide quality assurance of the system and compliance; link this data to consumer rating services.</p> <p>PHAs use licensing process to also enforce labor and wage protections, environmental regulations.</p>	<p>Increased self-regulation among licensed and inspected businesses and institutions as inspection automated.</p> <p>PHAs provide quality assurance of the system and compliance; link this data to consumer rating services.</p> <p>PHAs use licensing process to also enforce labor and wage protections, environmental regulations.</p>
Injury and Violence Prevention	<p>Health care provides universal screening for intimate partner violence.</p> <p>Technological innovations in design and monitoring reduce overall rate of unintentional injuries.</p> <p>PHAs move away from one-on-one services (e.g., in child safety seat education) to population-level education; and expand focus on elder violence.</p> <p>Rates of violence continue to be closely tied to poverty, race, education, and geography.</p>	<p>Cuts to health care and safety net services for vulnerable populations, and injury and violence prevention programs</p> <p>Economic and environmental challenges drive growth in prevalence of depression, homelessness, substance abuse, violence, and crime.</p> <p>PHAs increase reliance on law enforcement to control and prevent injuries and violence.</p>	<p>Debate on violence prevention and control reframed to a population-level discussion.</p> <p>PHAs more strategic in promoting community programs with local non-profits, faith-based organizations, businesses, and school systems.</p> <p>PHAs provide population-level education and assist school districts in enhanced violence prevention programming.</p> <p>“Smart design” movement and technological innovations improve product safety.</p>	<p>Schools, faith-based institutions, local businesses, state and local agencies integrate injury and violence prevention into strategic planning, business practices, and policies.</p> <p>PHAs assure population-level education, and work with communities to change cultural norms.</p> <p>PHAs assist school districts in designing and coordinating the most impactful educational efforts, including mentoring, tutoring, or after school programming.</p>

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
PUBLIC HEALTH				
Chronic Disease Prevention	PHAs guide community benefits investments to address housing, education, neighborhood safety, physical activity, and access to food. PHAs research social dynamics of networks, find ways to “nudge” them for better health.	Chronic illnesses become more prevalent. PHAs work to counteract negative influence and misinformation relevant to chronic disease prevention propagated via social networks.	PHAs target highly sophisticated and effective messages and interventions to improve community health. PHAs monitor, facilitate the growth of urban gardening and other activities to improve nutrition and physical activity.	PHAs promote the integration of chronic disease prevention throughout communities, into strategic planning, business practices, and policies. Assist communities in designing and coordinating the most impactful changes.
Health Equity Promotion	PHAs work to institutionalize a health equity focus throughout their units. Goals for certain indicators (e.g., infant mortality, vaccination) are shared across departments.	PHAs remain committed to health equity but can do little to reverse the growth of health disparities. Private sector innovations overlook the needs of the most vulnerable members of society.	PHAs lead other state and local agencies to incorporate equity metrics and goals into their strategic planning, business practices, policies. PHAs push for community-level interventions (e.g., mixed income neighborhoods, transit-oriented neighborhood development, community development); and entrepreneurialism, job matching and training programs.	PHAs monitor programs, partnerships and innovations for quality, cultural competence, equity in access, and effectiveness in community engagement. PHAs push for community-level interventions; and entrepreneurialism, job matching and training programs.
Evaluation, Return on Investment (ROI) and Effectiveness of Public Health Interventions and Programs	Good ROI and effectiveness shown for behavioral programs and interventions, as well as strategies addressing social determinants of health. Help stabilize funding in fiscally healthier cities, states.	Good ROI and effectiveness outcomes are available for some PHAs, but ignored in program cuts. Many PHAs have low effectiveness, little or no ROI. Most PHA and community programs are not evaluated.	PHAs drive consistent evaluation of interventions and programs. PHAs model and explore ROI and effectiveness prior to implementation. Success of public health programs and high ROI contribute to passage of 2% medical services tax.	PHAs drive consistent evaluation of interventions and programs. PHAs model and explore ROI and effectiveness prior to implementation. Where community partners are more cost-effective, PHAs pass programs to them.

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
PUBLIC HEALTH				
IT and Informatics	<p>Cloud-based and secure.</p> <p>Most PHAs keep pace with “big data” analytics, using it to target community needs, monitor trends, and make better forecasts.</p> <p>Smaller PHAs, if they have the funds, rely on private contractors and local ACOs to provide big data analyses.</p>	<p>Poorly maintained, unsecure, and cloud-based.</p> <p>Most PHAs don’t have staff or funds to do big data analytics. Most rely on private care providers.</p>	<p>Cloud-based and secure.</p> <p>PHAs utilize big data analytics to enhance surveillance, assessments, and evaluations.</p> <p>Networked PHAs improve planning and policymaking, and rapid learning.</p>	<p>Cloud-based and secure.</p> <p>Utilize big data analytics in surveillance, assessments, and evaluations.</p> <p>Networked PHAs improve planning and policymaking, and rapid learning.</p>
Accreditation	<p>Pursued by most PHAs, proves useful in grant seeking, and improves agency-to-agency comparability and recurring quality improvements.</p> <p>Consistency aided by uniform chart of accounts</p> <p>PHAs can use up to 5% of federal funding for accreditation costs.</p>	<p>Most PHAs cannot afford the fees or are unable to provide all the services required to meet the standards.</p> <p>Uniform chart of accounts not uniformly applied across PHAs.</p> <p>No federal funding support for accreditation.</p>	<p>Most PHAs become accredited.</p> <p>Accreditation standards include equity.</p> <p>PHAs can use up to 10% of federal funding for accreditation and building foundational capacities.</p>	<p>Most PHAs become accredited.</p> <p>Accreditation standards include equity, environmental responsibility and sustainability measures.</p> <p>PHAs can use up to 10% of federal funding for accreditation and building foundational capacities.</p>

Public Health 2030 National Workshop

On March 6–7, 2014, leaders and experts from across the United States participated in a national workshop convened by the Institute for Alternative Futures (IAF) in Alexandria, Virginia. (Workshop participants are listed in the appendix.) Participants “stepped into” each of the Public Health 2030 scenarios, explored the implications, and then developed implications for public health and other stakeholders, as well as strategies relevant to each of the scenarios. They compared these results, identifying the “robust strategies” and key recommendations that would advance public health in multiple scenarios. These recommendations are presented on the next pages. Participants also voted on the likelihood and preferability of the scenarios. After presenting the scenarios at the workshop, IAF asked participants to rate each scenario, on a scale from 1-100%, in terms of its likelihood (the probability that it will actually occur) and preferability (the extent to which they would like it to occur). The results of this survey are shown in the table below.

Participants’ averaged ratings of the likelihood and preferability of the four scenarios

	LIKELIHOOD	PREFERABILITY
Scenario 1: One Step Forward, Half a Step Back	62 %	29 %
Scenario 2: Overwhelmed, Under-Resourced	50 %	7 %
Scenario 3: Sea Change for Health Equity	43 %	82 %
Scenario 4: Community-Driven Health and Equity	35 %	84 %

Scenario 1 was viewed as the most likely. This is consistent with IAF’s Aspirational Futures approach to developing scenarios, where Scenario 1 is the best estimate of where current trends are taking us. Scenarios 2 and 3 were viewed as relatively less likely, with Scenario 4 considered the least likely.

When participants rated the scenarios on preferability, however, the tables turned. Scenario 1 was not viewed as particularly preferable. Nor was Scenario 2, although it is interesting to note that participants did attribute some preferability to this scenario, even though it described a grim and dire future within the “zone of growing desperation.” The attribution of some preferability to desperate futures is a consistent finding in IAF’s scenario

work, and indicates a recognition many people have (and express, when asked) that a society often needs to hit “rock bottom” before it can begin in earnest to build a better future. The highest preferability ratings went to Scenario 3 and – even more so – Scenario 4, as would be expected since these scenarios are in the “zone of high aspiration.”

The mismatch between the participants’ ratings of likelihood and preferability suggests that there is much work to be done to create a preferred future for health and public health in the U.S. It identifies a persistent failing with strategic planning, which often directs the community or organization on a course in response to the most likely future and thus reinforces a suboptimal future. This Public Health 2030 Scenarios exercise reinforces the need to keep our vision or preferred futures clear and our planning working to achieve them.

Recommendations

One benefit of considering a wide range of alternative futures is that some strategies emerge that will be effective no matter what the future holds. These “robust” strategies that will advance public health in multiple scenarios are presented in this section.

Recommendation 1:

Transform Public Health Agencies into “Health Development Agencies” with Dedicated, Sustainable, and Sufficient Funding.

The current programmatic approach in public health leads to limited flexibility and does not necessarily address the major drivers of health. Many public health agencies and the communities that support them have been pursuing changes to address this issue for some time. However, conceiving of public health agencies (PHAs) as “health development agencies” is new. We believe that taking steps toward the realization of this endeavor will pave the path for developing and recruiting the people and resources needed to innovate, and to make major inroads into improving population health and eliminating health disparities.

The health development agency of 2030 will identify problems and opportunities to improve community health, and will catalyze and incentivize action by sectors within health and outside health. These agencies will carry out some but not all of the traditional assurance and protection functions of PHAs today. They will promote health in the broader context, assure inclusiveness, and are fully incorporated into community improvement processes. Together with other community leaders and organizations, health development agencies will provide trusted leadership as chief health strategists in creating a culture of health with the promotion of prevention strategies. Health development agencies will also use their roles as chief health strategists to facilitate the partnerships and collaborations that are needed to assure inclusiveness. These agencies will perform strong fiscal management (“No margin, no mission”), learn and apply innovation principles from other sectors and organizations, and leverage stakeholders and resources from other sectors to improve health and wellbeing, and have adequate funding for the necessary infrastructure. Health development agencies will employ staff with the interdisciplinary training and skills needed to work with other stakeholders and to support the agencies’ role in fostering prevention, health promotion, and disease management strategies.

To transform public health agencies into health development agencies, we recommend to:

Recommendation 1A:

Develop Dedicated, Sustainable, and Sufficient Funding

Health development agencies will require dedicated, sustainable, and sufficient funding streams that lie outside of traditional categorical programs. A starting point for such a funding stream would be establishing a capitation rate for a package of foundational capabilities that will position public health agencies to become health development agencies. The per-person cost for providing foundational capabilities in a community would be based on state and local level cost estimation models that forecast the costs of maintaining these capabilities. This capitated funding would then be sustained through general or special revenue sources from federal, state, and local governments.

Recommendation 1A Action Steps:

- Define with specificity what is needed for the health development agency and what it will cost, with accountability measures attached (including potential return on investment).
- Review and support current efforts to define and estimate the costs of foundational capabilities and experiments in funding.
- Define options for developing revenue streams to support the foundational capabilities. Options considered should include:
 - Defining a capitation rate for these health development capabilities,
 - A federal-state matching program similar to Medicaid,
 - Dedicated state and local taxes,
 - Shared savings,
 - Mechanisms for investment by venture capital, and
 - Alternative funding sources (e.g. social impact bonds, special fees) for public health agencies.
- Enable flexible use of grant funding, and expand federal block grant funding to dedicate a portion specifically to supporting the foundational capabilities.
- Integrate standards for goodness (appropriateness and effectiveness) and fairness (equity) into federal grant and programmatic partnership requirements as well as foundation and other grants.
- Design grant requirements to promote multi-sector participation and collaboration by PHAs, other government agencies, and the private sector. Include enhanced reimbursements for expenses related to demonstrated collaboration and participation.
- Promote National Public Health Accreditation (phaboard.org).

Recommendation 1B:

Implement Policies for the Systematic Use and Development of Evidence and Best Practices

Strong fiscal management and effectiveness will require continual and enhanced research, evaluation, and translation of policies, programs, and services. Moreover, evidence and best practices information on a few policies already exists, but this information is not used systematically by PHAs and community organizations.

Recommendation 1B Action Steps:

- Assure adequate data collection, analysis, and utilization to support the mission of public health agencies.
- Develop metrics and tools to support policy and impact assessments.
- Capture value and improved outcomes through a defined evaluation process.

- Improve the systematic collection, growth, and use of evidence of what works in public health, and identify and disseminate existing best practices. Consider and use existing sources for evidence-based practices to identify promising practices, including (not an exhaustive list):

The Practical Playbook (www.practicalplaybook.org), developed by the de Beaumont Foundation, Duke Community and Family Medicine, and the Centers for Disease Control and Prevention;

“Strategies for Reducing Health Disparities — Selected CDC-Sponsored Interventions, United States, 2014” (http://www.cdc.gov/mmwr/preview/ind2014_su.html#HealthDisparities2014), a Morbidity and Mortality Weekly Report (MMWR) Supplement released by the CDC’s Office of Minority Health and Health Equity;

The Guide to Community Preventive Services (www.thecommunityguide.org/index.html), developed by the Community Preventive Services Task Force, CDC, and other partners;

Healthy People 2020 (www.healthypeople.gov/2020/topicsobjectives2020/ibr.aspx?topicId=24), the program of nationwide health-promotion and disease-prevention goals set by the United States Department of Health and Human Services;

“Compendium of Proven Community Based Prevention Programs” (<http://tfah.org/report/110>), developed by the Trust for America’s Health and the New York Academy of Medicine;

County Health Rankings (www.countyhealthrankings.org/roadmaps/what-works-for-health/our-sources), a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute;

The THRIVE tool (<http://thrive.preventioninstitute.org/thrive/index.php>) that allows you to understand and prioritize the factors within your own community that can help improve health and safety, developed by the Prevention Institute; and

Various examples from state and local PHAs, such as www.health.ny.gov/prevention/prevention_agenda/evidence_based_public_health.htm and <http://www.healthpolicyohio.org/tools/health-policy-tools/guide-to-evidence-based-prevention/>.

- Develop tools and resources for health development agencies to use that are equivalent to those used in economic development, but with community health improvement indicators as the outcome measures/ROI.
- Design successive versions of the public health accreditation standards and measures to drive innovation, particularly consistent with the development and funding of the foundational capabilities as well as the prioritization of PHAs as health development agencies. This will require nationally accepted public health standards against which national public health accreditors can evaluate state and local governmental PHAs in their role as health development agencies.

Recommendation 1C:

Build Public Health Agencies’ Role in Fostering Prevention and Health Promotion Strategies

To function as a “health development agency” and create a culture of health, PHAs need to build capacity and provide trusted leadership for the promotion of prevention strategies. They should also help facilitate the partnerships and collaborations needed to assure inclusiveness. Public health agencies can provide this trusted leadership but will require the expansion of prevention research and subsequent publication and dissemination of findings, as well as improvements in workforce development and agency communications capabilities.

Recommendation 1C Action Steps:

- Demonstrate the value of PHA leadership in fostering prevention and health promotion strategies to other stakeholders.
- Promote the foundational capabilities of state and local public health agencies. Engage outside stakeholders in this conversation (e.g., business community, community groups, and policymakers).
- Incorporate the necessary skills and competencies for these capabilities into current leadership training for public health professionals. This includes:
 - Working with schools of public health and public health associations,
 - Reevaluating the curriculum of schools of public health, and
 - Integrating and providing more interdisciplinary training.
- Identify best practices already in existence that demonstrate these capabilities, and promote these practices.
- Assure adequate information technology capabilities, data collection, analysis, and utilization to support these foundational capabilities.
- Enhance PHAs' communication capabilities in the evolving Internet, social media, and broadcast era.
- Develop marketing skills to build support for and create coalitions in support of the “health development agency” concept.
- Assure that all PHA processes amplify hidden or muffled community voices.
- Expand prevention research, including enlarging the number of researchers focused on prevention.

Recommendation 2:

Partner in Health Care Transformation to Facilitate the Evolution from a Health Care System to a Health System

The Patient Protection and Affordable Care Act (PPACA) has stimulated discussion on health and health care that highlights opportunities and is leading people to think in new ways. New models of delivery and payment are under discussion—and in some cases being implemented—that will foster far greater attention to and investment in community health and prevention. This shift is far overdue: Only three percent of U.S. health care spending is focused on prevention. However, socioeconomic and environmental determinants of health beyond health care account for 70 percent of the variance in people's health. While access to medical care is vitally important, only a small portion (15–20%) of overall health and longevity can be attributed to clinical care. This reality makes the case for identifying and combining forces to address the upstream root causes of health inequities.

Some of the specific trends in health care supporting this shift to emphasizing community health and prevention include:

- Health care systems, particularly those pursuing the Triple Aim (the simultaneous pursuit of improving the experience of care, improving the health of populations, and reducing per capita costs of health care) and its goal of improving population health, are exploring, supporting, and doing more public health, community, and prevention work;

- The move away from fee-for-service payment toward pay for value and global budgeting approaches adopted by both public agencies and private not-for-profit clinical entities; and
- Siloed primary care is transitioning into Accountable Care Organizations (ACOs) and over time into Accountable Care Communities (ACCs). So too Patient-Centered Medical Homes are evolving into Community-Centered Health Homes (which require analysis of and actions on community conditions).

In its role as chief health strategist, public health needs to seize the opportunity and be at the table to offer strategic direction, facilitation, vision for prevention, advanced analytics, best practice knowledge on community health interventions, and (where relevant) services. Public health needs to share its experiences to ensure that new initiatives can build on learnings and successes. Public health also needs to share in the savings realized when prevention and health promotion bend the health cost curve downward.

Recommendation 2 Action Steps:

At the national and state levels

- Identify specific models and best practices of effective public health collaborations with health care systems (focus on efforts that address community conditions affecting health, see resources below). Such models and best practices are likely to represent synergies of interventions that leverage complementary contributions of public health and health care, including:
 - Data integration that uses clinical and community data to understand priority health conditions, and develop strategies to analyze the impact of interventions, and to institute quality improvement principles;
 - Emerging financial models that move beyond fee-for-service to incentivize activity that improves the health and safety of populations; and
 - Professional capacities and positions necessary to engage effectively in collaboration (e.g., integrators, epidemiologists, informaticians, and community health workers).
- Develop tools and venues for educating health care professionals and the broader health leadership community on the importance of taking a community-oriented approach and on the models and best practices identified in the resources below.
- State and local governmental public health agencies (PHAs) should build both the evidence- and practice-base for public health in collaboration with community partners. The federal government should support these efforts by funding this research and practice, including by encouraging public health partnerships with health care in federal research grants such as those from CMMI, PCORI, and NIH and in federal programmatic partnerships such as those from CDC, HRSA, and AHRQ. The results of this work should be published in peer-reviewed journals and disseminated to the practice community to improve service delivery.

At the local level

- State and local public health agencies (PHAs) should determine how they can best contribute to enhanced health provider efforts to improve population health (e.g. provide analysis and strategic guidance, facilitation, or services). This includes:
 - Ensuring that PHAs have the data and analytic capacity to provide strategic insights, and
 - Using public health data to identify areas of mutual concern and strengths with potential solutions.

- Local health departments should facilitate discussions with and learning by health care providers about innovations and new models for joint public health/health care service delivery that represent opportunities for enhanced community health.
- Identify health care leaders who are interested in and/or have a track record of addressing community needs. Approach these individuals as potential “early adopters” and ambassadors, promoting collaborative approaches across the health care community.
- Recognizing the growth of required Community Health Needs Assessments (CHNAs) by nonprofit hospitals, health plan service area assessments, PHAs, and other community health assessments, PHAs should work with clinical partners to encourage that these processes:
 - Collaborate with PHAs on comprehensive CHNAs.
 - Include robust analysis of community conditions and root causes of health inequities.
 - Deploy big data analytics that uses public health and health care data.
 - Work with communities to identify the community’s concerns and priorities and build on these concerns to develop and implement plans to address community needs.
 - Align with the voluntary Public Health Accreditation Board (PHAB) standards.

Resources for evidence based practices, experiences and recommendations for community health promoting activities:

When choosing community health promoting activities, consider evidence-based practices, experience, and recommendations from sources such as these:

- The Guide to Community Preventive Services (www.thecommunityguide.org/index.html), developed by the Community Preventive Services Task Force, CDC, and other partners;
- Healthy People 2020 (www.healthypeople.gov/2020/topicsobjectives2020/ibr.aspx?topicId=24), the program of nationwide health-promotion and disease-prevention goals set by the United States Department of Health and Human Services;
- The Practical Playbook (www.practicalplaybook.org), developed by the de Beaumont Foundation, Duke Community and Family Medicine, and the Centers for Disease Control and Prevention;
- “A Practitioner’s Guide for Advancing Health Equity: Community Strategies for Preventing Chronic Disease” (www.cdc.gov/NCCDPHP/dch/health-equity-guide/index.htm), developed by the Centers for Disease Control and Prevention;
- County Health Rankings & Roadmaps (www.countyhealthrankings.org/roadmaps/what-works-for-health/our-sources), a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute;
- The THRIVE tool that allows you to understand and prioritize the factors within your own community that can help improve health and safety (<http://thrive.preventioninstitute.org/thrive/index.php>), developed by the Prevention Institute;

- “Community-Centered Health Homes: Bridging the gap between health services and community prevention” (www.preventioninstitute.org/component/jlibrary/article/id-298/127.html), in which the Prevention Institute outlines an approach that community health centers can take to promote community health even as they deliver high quality medical services to individuals;
- “Community Health Centers Leveraging the Social Determinants of Health” (www.altfutures.org/pubs/leveragingSDH/IAF-CHCsLeveragingSDH.pdf), a first-of-its-kind study of efforts by community health centers to leverage the social determinants of health, developed by the Institute for Alternative Futures (IAF);
- The work of the Vitality Institute’s Commission on Health Promotion and the Prevention of Chronic Disease in Working-Age Americans (<http://thevitalityinstitute.org>), which presents five actionable recommendations that place the power of evidence-based prevention at the center of health care policies and actions in the U.S.;
- The work of the Association for Community Health Improvement in identifying its member hospitals’ population health activities (www.hpoe.org/Reports-HPOE/ACHI_Survey_Report_December2013.pdf), the experiences of hospitals that have conducted PPACA-required community health needs assessments, the approaches used by hospitals winning the AHA Foreman Award for community health improvement efforts, and related hospital funding of population health activity (www.healthycommunities.org);
- For tools on community engagement, refer to the Harwood Institute for Public Innovation (<http://www.theharwoodinstitute.org/how-to-turn-outward/resources>) and the Tamarack Institute for Community Engagement (http://tamarackcommunity.ca/g3_documents.html); and
- Community Commons’ CHNA toolkit (www.CHNA.org), a free public utility to support communities on data and mapping for needs assessments and conversations across sectors

Recommendation 3:

Build the Capacity for Dialogue about Inclusion, Opportunity, and Equity

There are important value changes that public health agencies need to reinforce. The ability to frame a dialogue, both internal to the agency and external in the community, about the historical legacy and present day practices of racism and other “isms” is fundamental to understanding and addressing the root causes of health inequity and advancing community vitality. Dialogue goes beyond conversations to develop understanding and catalyze action. There are examples of these dialogues around the country that provide lessons. These dialogues must go beyond simple orchestration of a series of events. They must be designed and sustained to explain and acknowledge the legacy of these longstanding forms of discrimination and inequities as well as to construct a new future-focused and inclusive narrative about health. Public health should support and where relevant lead and facilitate these dialogues.

Recommendation 3 Action Steps:

- Use dialogues to identify and promote fundamental aspirations of communities and residents, and use them to inform the work of public health agencies, including community health improvement plans and internal agency strategic plans. Integrate opportunities for dialogue on legacy and future-focused narratives into routine public health practice. This includes:
 - Defining and acquire the skills needed for effective dialogue,
 - Institutionalizing measures for effective dialogue,
 - Assuring that every public health worker has the competencies needed to address structural and institutionalized racism and health equity,

Elevating the issues of racism and its impact on health within your organization and within the methods employed by your organization for community engagement,

Conducting dialogues and building relationships with stakeholders and sectors outside of public health (“Talk to somebody different”),

Partnering with community organizers,

Conducting one-on-one meetings with strategic stakeholders, and

Utilizing best practices in reaching across political and ideological divides.

- Identify opportunities to dialogue with executive and legislative policymakers. In these dialogues, for example, encourage policymakers to integrate goodness (appropriateness and effectiveness) and fairness (equity) requirements into their selection process and evaluation plans for all grants.
- Identify existing good examples of dialogues, disseminate them (describing processes, actions, and outcomes to demonstrate the potential impact of dialogues), and replicate them.

Recommendation 4:

Dialogue with Other Sectors to Support Innovation

Public health often has urgent priorities. However, community partners may have different, and (from their perspective) more immediate problems. Therefore, public health should facilitate mutual understanding of needs and perspectives, and tailor messages accordingly to reflect what the external stakeholders can hear and absorb. Public health also needs to seek lessons in innovation through these dialogues with other stakeholders and sectors. For example, the commercial sector is good at achieving efficiencies with limited resources and in adjusting its messages to its audiences. Conversely, it is imperative that all stakeholders understand how public health is an asset and can help them improve their bottom line, job satisfaction, and learning outcomes of students.

Recommendation 4 Action Steps:

- Define and acquire the skills needed for effective dialogue with other stakeholders and sectors.
- Institutionalize measures for effective dialogue.
- Adjust public health messages to reflect what community stakeholders can hear and absorb.
- Conduct dialogues with stakeholders and sectors outside of public health (“Talk to somebody different”).
- Conduct one-on-one meetings with strategic stakeholders.
- Identify and pursue opportunities for dialogue with executive and legislative policymakers, as well as with the media.
- Identify innovative options that meet the needs and perspectives of multiple, diverse stakeholders and sectors.
- Catalyze Health Collaboratives comprised of influential champions who work to educate decision makers and the public about the critical importance of health development agencies’ work in ensuring the economic future of our country.
- Market health development agencies by providing a clear and compelling case for and image of them. This should encourage stakeholders to come to health development agencies for consultation regarding prevention, health promotion, and disease management strategies, and to trust their evaluation processes related to the measurement of national, state, and local health outcomes.

Conclusion

These scenarios of public health in the U.S. in the year 2030 describe a range of plausible futures worthy of consideration as relevant organizations conduct their own planning. The scenarios highlight both challenges that might otherwise surprise and opportunities that might otherwise be missed. The recommendations presented in this report, represent steps toward better public health futures, and deserve support to promote and develop more effective public health. We encourage organizations and individuals to support these recommendations, to be aware of their own preferred future for public health, and to move forward to effectively create that future.

Scenarios can become a living tool for strategy formulation by allowing organizations to see if current strategies will be effective in the different scenarios. Using scenarios can thus help leaders and their organizations more effectively adapt to the changing environment. These Public Health 2030 scenarios can also help agencies, communities, associations or organizations assure that their plans address the larger picture and longer-term preferred futures for public health. To conduct your own scenario workshop, visit www.altfutures.org/publichealth2030 for an electronic copy of this report and a “toolkit” that includes a workshop agenda, instructions, worksheets, videos, and presentation materials. You’ll also find alternative forecasts for six drivers or key forces shaping public health, and scenarios for three local health departments and one state health department, that can also be used in discussions and workshops.

Glossary

Accountable care organization (ACO) – A health care organization characterized by a payment and care delivery model that seeks to tie provider reimbursements to quality metrics and reductions in the total cost of care for an assigned population of patients.

Citizen science – Scientific research conducted, in whole or in part, by amateur or nonprofessional scientists, often by crowdsourcing and crowdfunding.

Collaborative consumption – The shared creation, production, distribution, trade and consumption of goods and services by different people and organizations. This may include renting or sharing cars and bikes; and community gardening and home food production (including 3D-printed food).

Community-centered health home (CCHH) – An organizations that provides high quality health care services while also applying diagnostic and critical thinking skills to the underlying factors that shape patterns of injury and illness. By strategically engaging in efforts to improve community environments, CCHHs improve the health and safety of their patient population, improve health equity, and reduce the need for medical treatment. The concept was developed by the Prevention Institute.

Community co-production – Delivering services in an equal and reciprocal relationship between professionals, people using services, their families and their neighbors.

Crowdfunding – The collection of money to sustain an initiative from a large pool of backers—the “crowd”; these contributions are usually made online by means of a web platform.

Crowdsourcing – The practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, and especially from an online community, rather than from traditional employees or suppliers.

Groupnets – circles of around 10 people who interact intensively with one another through real time video and audio interaction.

Internet of Things (IoT) – Objects, animals or people are provided with unique identifiers and the ability to automatically transfer data over a network without requiring human-to-human or human-to-computer interaction.

Patient-centered medical home (PCMH) – A team-based health care delivery model led by a physician, physician assistant, or nurse practitioner that provides comprehensive and continuous medical care to patients with the goal of obtaining maximized health outcomes.

Public health agencies (PHAs) – Include local and state government agencies responsible for public health.

Time Banks – Participants exchange their labor with their neighbors on an hour-for-hour basis.

Appendix

Project Advisory Committee

We thank the Public Health 2030 advisory committee for repeatedly providing invaluable input and feedback on the design and details of project activities and deliverables. The committee included the following individuals:

Georges C. Benjamin, MD, FACP, FNAPA, FACEP (E), Hon FRSPH
Executive Director
American Public Health Association

Jo Ivey Boufford, MD
President
New York Academy of Medicine

Renee Branch Canady, PhD, MPA
CEO
Michigan Public Health Institute

Larry Cohen
Founder and Executive Director
Prevention Institute

Joyce D. K. Essien, MD, MBA
Retired Captain, U.S. Public Health Service
Centers for Disease Control and Prevention
Retired Director, Center for Public Health Practice,
Rollins School of Public Health, Emory University

Jonathan E. Fielding, MD, MPH
Director and Health Officer
Los Angeles County Public Health

David Fleming, MD
Director and Health Officer
Public Health—Seattle & King County

Denise Holmes, MS
Former Director of the Institute for Health Care Studies
Michigan State University

Anthony Iton, MD, JD, MPH
Senior Vice President of Healthy Communities
The California Endowment

Paul E. Jarris, MD, MBA
Executive Director
Association of State and Territorial Health Officials

Jeffrey Levi, PhD
Executive Director
Trust for America's Health

Mary Mincer Hansen, RN, PhD
Chair and Associate Professor, MPH Program
Adjunct Associate Professor, Global Health Department
Des Moines University

Robert M. Pestronk, MPH
Executive Director
National Association of County and City Health Officials

Interviewed Experts

We also appreciate the thoughtful input of the following experts who participated in interviews that helped IAF understand the forces shaping public health, and responded to specific forecasts proposed by IAF:

Dora Barilla, DrPH, MPH, CHES
Loma Linda University Health

Marie Barni, MPA
Ohio State University Extension, Cuyahoga County

Kaye Bender, PhD, RN, FAAN
Public Health Accreditation Board

Meryl Chertoff, JD
The Aspen Institute

Timothy Ferris, MD, MPH
Partners Health care

Trevor Hancock, MD
University of Victoria

Karen Hein, MD
Vermont Green Mountain Care Board

Oliver Henkel
The Cleveland Clinic

Peggy A. Honoré, DHA
U.S. Department of Health and Human Services

Richard Hofrichter, PhD
National Association of County & City Health Officials

David J. Kaufman
Federal Emergency Management Agency

Maureen Kersmarki
Adventist Health System

Denise Koo, MD, MPH
Centers for Disease Control and Prevention

Paul Kuehnert, DNP, RN
Robert Wood Johnson Foundation

James Krieger, MD, MPH
Public Health – Seattle & King County

Ann Malmberg, MSN, BSN
Essentia Health

James S. Marks, MD, MPH
Robert Wood Johnson Foundation

Brian J. Masterson, MD, MPH, FAPM Col, USAF, MC, CFS
National Defense University

John Mattison, MD
Kaiser Permanente

Glen Mays, PhD, MPH
The University of Kentucky

Carrie McLeod, MBA, MS, RD, LRD, CDE
Sanford Health

John R. Miller
MidAtlantic Business Group on Health

Tyler Norris, MDiv
Kaiser Permanente

Alexandra (Lexi) Bambas Nolen, PhD, MPH
University of Texas Medical Branch
Galveston, Texas

Patricia Patron
Family Health Care

Michael O. Royster, MD, MPH, FACPM
Institute for Public Health Innovation

Martin-J. Sepulveda, MD, FACP
IBM Corporation

Edward J. Sondik, PhD
National Center for Health Statistics, CDC (Retired)

Mindy Stadlander, MPH
CareOregon

Collective interviews with public health practitioners and experts at:

Public Health Institute, Oakland, CA

Seattle & King County Public Health, WA

Prevention Institute, Oakland, CA

Extensive interviews and discussions in developing the state and local public health scenarios, and the public health informatics scenarios:

Fargo Cass Public Health

Boston Public Health Commission

Cuyahoga County Board of Health

Virginia Department of Health

Public Health Informatics Institute

National Workshop Participants

On March 6–7, 2014, leaders and experts in public health participated in a national workshop convened by IAF in Alexandria, Virginia. IAF is grateful for their time, enthusiasm, and contributions. Participants include:

Terry Allan, RS, MPH

Health Commissioner
Cuyahoga County Board of Health

Niiobli Armah IV, MA

Manager, Childhood Obesity and
Health & Wellness Programs
National Association for the Advancement
of Colored People

John Baird, MD, MPH

Health Officer
Fargo Cass Public Health

**Georges Benjamin, MD, FACP, FNAPA,
FACEP (E), Hon FRSPH**

Executive Director
American Public Health Association

Renee Branch Canady, PhD, MPA

CEO
Michigan Public Health Institute

Gillian Christie, MPhil

Health Innovation Analyst
The Vitality Institute

Larry Cohen

Founder and Executive Director
Prevention Institute

Abby P. Dilley

Vice President of Program Development
RESOLVE

Joyce D.K. Essien, MD, MBA

Retired Captain, U.S. Public Health Service
Centers for Disease Control and Prevention
Retired Director, Center for Public Health Practice,
Rollins School of Public Health, Emory University

Jonathan E. Fielding, MD, MPH

Director and Health Officer
Los Angeles County Public Health

David Fleming, MD

Director and Health Officer
Public Health - Seattle & King County

Sallie George, MPH, CHES

Program Officer
Robert Wood Johnson Foundation

Denise Holmes, MS

Former Director of the Institute for Health Care Studies
Michigan State University

Kitty Hsu Dana, MBA

Vice President of Health
United Way Worldwide

Anthony Iton, MD, JD, MPH

Senior Vice President, Healthy Communities
The California Endowment

Paul E. Jarris, MD, MBA

Executive Director
Association of State and Territorial Health Officials

Pamela Jones

Director, Policy and Planning
Boston Public Health Commission

Paul Kuehnert, DNP, RN

Team Director and Senior Program Officer,
Public Health Team
Robert Wood Johnson Foundation

Jeffrey Levi, PhD

Executive Director
Trust for America's Health

Marissa Levine, MD, MPH

State Health Commissioner
Virginia Department of Health

Phyllis Meadows, PhD, MSN, RN

Senior Fellow, Health Team
Kresge Foundation

John R. Miller

Executive Director
MidAtlantic Business Group on Health

Mary Mincer Hansen, RN, PhD

Chair and Associate Professor, MPH Program
Adjunct Associate Professor, Global Health Department
Des Moines University

Robert M. Pestronk, MPH

Executive Director
National Association of County and City Health Officials

Martín-J. Sepúlveda, MD, MPH, FACP

IBM Fellow & Vice President, Health Systems
and Policy Research
IBM Corporation

Brian Smedley, PhD

Vice President and Director, Health Policy Institute
Joint Center for Political and Economic Studies

National Workshop Technical Advisors

The IAF project team also would like to thank the following individuals in their role as technical advisors to the workshop:

Ana Penman-Aguilar, PhD, MPH

Associate Director for Science
Office of Minority Health & Health Equity
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

Denise Koo, MD, MPH

Senior Advisor for Health Systems
Office of Public Health Scientific Services
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

Peggy A. Honoré, DHA

Director of the Public Health System, Finance, and
Quality Program
Office of the Assistant Secretary for Health
U.S. Department of Health and Human Services

Sarah Linde, MD

Chief Public Health Officer
Health Resources and Services Administration
U.S. Department of Health and Human Services

IAF Staff

The following IAF Staff contributed to this project:

Clement Bezold, Chairman and Senior Futurist

Yasemin Arikan, Futurist

Trevor Thompson, Futurist

Mary Presswood, Executive Assistant

Jonathan Peck, President and Senior Futurist

Eric Meade, Vice President and Senior Futurist



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