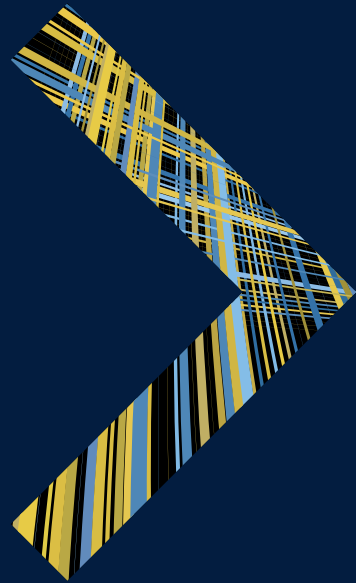


→ Breaking Silos, Creating Pathways



A technology-forward approach for integrated
public health transformation in America



The onset of the COVID-19 pandemic laid bare the cracks that have existed in the American public health system. As the country has emerged from the pandemic's early phases, those challenges have remained frustratingly persistent. There is still a need to establish consistent standards for the collection, storage, and sharing of data at the federal, state, and local levels. There is still a need to hire, retain, and upskill a public health workforce that can use new digital tools and platforms effectively. And there is still a need to speed up communication and collaboration with the frontline organizations who deliver public health services to all populations. Without addressing these areas, the country will be less capable of managing common and chronic public health issues like diabetes, cancer, and heart disease, and less prepared to respond to another pandemic-scale emergency.

For the United States to continue to address its complex public health challenges and deeply embedded inequities, agencies at all levels must be guided by state-of-the-art data, science, and evidence. That effort requires adequate and sustainable funding at all levels, a focus on equity, and a stronger public health infrastructure. We must create pathways between the different levels where the public health system functions (federal, state, local, tribal, and territorial). We must address the different health issues and conditions that threaten the public (infectious, chronic, behavioral, and environmental). And we must re-examine and re-imagine the social determinants of health (SDOH) and well-being of all (housing, transportation, education, and food).

To achieve this vital goal, federal agencies and their external partners should focus in three areas:

- 1. Accessible and optimal use of data.**
- 2. Engagement and preparation of the workforce.**
- 3. Interagency collaboration and communication.**

For the United States to continue to address its complex public health challenges and deeply embedded inequities, agencies at all levels must be guided by state-of-the-art data, science, and evidence.

1. Creating pathways for accessible and optimized data

Even before the pandemic, data access and security were priorities for the federal government. The Foundations for Evidence-Based Policymaking Act of 2018 sought to encourage agencies to develop public data inventories, create common portals to provide researchers access to restricted data, and establish an entity to oversee data coordination. The Act created a body to develop a Federal Data Strategy, or a “common set of data principles and best practices in implementing data innovations that drive more value for the public.”

Achieving those goals in practice has proven difficult. Some public health agencies have so much data that they struggle to manage and secure it. Other organizations are not able to collect enough data—particularly data representative of minority populations—to produce the insights necessary to guide effective policies or interventions. In both cases, agencies do not have sufficient reliable, shareable data sets that can be analyzed and manipulated to inform policies and actions. To remove this obstacle, **agencies must create better pathways** for accessible and optimized data.

In building these pathways, agencies and their partners should start in the obvious place—the data. The steps they can take may include:

- **Building quality control and security into their processes for data receipt.**

- **Harmonizing, or combining, data sets from different sources in a way that allows users to effectively compare and draw conclusions from them.**
- **Establishing standards for collecting, sharing, and integrating data within and outside of the agency.**
- **Factoring data privacy into the solution design.**
- **Engaging stakeholders in and outside of the agency in the standards development process.**

When addressing data sets, agencies should explore technology that can efficiently manage them by:

- **Engaging private sector technology partners who can bring data collection and subject matter experts together and help identify and analyze the data.**
- **Catalog and inventory all assets through a data management system that can bring models and data from diverse source systems into one integrated platform.**
- **Use tools to find relationships within large volumes of data.**

Finally, agencies and their partners need to focus attention on meeting the practical and concrete needs of the people who use these tools and technologies to make critical decisions about public health policy and interventions.

Modernizing the NSSP's BioSense platform

The data and analysis tools available through the National Syndromic Surveillance Program's (NSSP) cloud-based BioSense platform support the monitoring and early detection of potentially significant risks to the health and well-being of the public. Recent public health emergencies, such as the COVID-19 pandemic and the opioid crisis, demonstrated the need to modernize BioSense's IT infrastructure, analytics, and visualization tools to better serve those dependent on the BioSense data.

Learn more about ICF's BioSense digital modernization work in this client story.



2. Creating pathways for workforce training and optimization

Data and technology can't deliver critical insights without people. Building a stronger, more resilient public health workforce will require federal agencies to attract top candidates and give them the tools and environments they need to thrive.

Data analytics can help agencies hire the right people in the right place to do the right work. [In a recent partnership with the U.S. Department of Health and Human Services \(HHS\)](#), ICF helped to develop a comprehensive workforce plan that blended the agency's current workforce statistics and strategic goals with external data such as labor market trends. The project's analysis helped the agency evaluate the degree to which its current workforce could meet future talent demands by program, area, position, and geographic location.

In the near future, [artificial intelligence \(AI\) could help with this process](#). Leaders across agencies could use generative AI to answer questions such as "Are engagement levels falling with cyber specialists on my team?" and provide ideas on how to address those challenges. Further down the line, as AI tools ingest more data and better understand workforce trends, they can be deployed proactively. Returning to the previous example, an AI tool could predict when

engagement levels might fall among the agency's cyber specialists and give a proactive "nudge" to the right team leader to take preventative steps.

Ensuring an agency's workforce continues to align with its mission inevitably requires change—and change requires upskilling and retraining. But change management often proves challenging. According to [ICF's latest digital modernization report](#), federal IT workers cited workplace cultures that are resistant to change as a key reason transformation efforts fail. To realize the benefits that change can bring, agency leaders must help employees clearly understand how new technology and processes can positively impact the agency's overall mission and their individual roles.

Other important steps for building federal workforce technology skills include:

- Ensuring that the learning strategy aligns with organizational mission and goals.
- Creating solutions that meet learners at their technology expertise level.
- Accommodating employees' time constraints and learning preferences.

Enhancing access to vital cancer research data

The National Cancer Institute's (NCI) Data Coordinating Center and Proteomic Data Commons serve as a repository for cancer proteomics data—information about the proteins in cancer cells. NCI needed a solution to store and make accessible the large volumes of mass spectrometry data it receives from researchers in the Clinical Proteomic Tumor Analysis Consortium (CPTAC). It also needed a way to move data storage sites previously used by the research community without losing content in the process.

[Learn more about ICF's partnership with the NCI's Data Coordinating Center and Proteomic Data Commons in this client story.](#)



Finally, federal agencies that wish to increase retention of their talent must place a [greater emphasis on employee well-being](#). There are practical steps that agencies can take to improve employee well-being, including:

- **Developing a cohesive narrative about well-being that can be tailored for different employee audiences and delivered through multiple channels.**
- **Creating employee groups that can facilitate a culture of well-being, from welcoming new hires to supporting longtime employees through various personal situations and life events.**
- **Ensuring vertical managers understand the agency's well-being strategy, tools, and resources, and can have effective well-being conversations with direct reports.**

Internal employees are the beating heart of mission delivery, and a focus on the “human factor” is essential. With strong training and upskilling programs in place, agencies can create new pathways for our national public health system.

Designing workforce training programs that work for all employees

When approaching enterprise-wide digital modernization, agencies need to ensure that all staff—not just IT—have opportunities to update and improve their technology skills. In creating upskilling programs, agencies should consider (a) an employee's current level of technology expertise and (b) the type of technological fluency an employee needs for their role (or a role to which they hope to advance). Engineers, for example, may have high technology expertise and need deep technological fluency in a specific area, but not breadth. A manager may have limited tech expertise and need broad technological fluency to communicate to their direct reports, but not great depth on a specific topic.

It's also important to remember that workforce training and development are not “one and done” endeavors, and skill development takes time to bear fruit. Agencies must continuously assess the effectiveness of their programs and monitor changes in the greater digital landscape to ensure that training resources meet employee needs and keep the agency's workforce current.

Creating a scalable and accessible upskilling strategy

ICF has worked with several federal agencies to develop upskilling programs that suit a broad range of technological abilities and needs. Recently, ICF partnered with the Department of Veterans Affairs to create a scalable upskilling strategy that allows employees to train toward new roles, such as program manager, business analyst, or site reliability engineer. The resulting training program offers progressive courses based on employees' comfort level with technology. These self-paced courses are complemented by live presentations and individual coaching sessions to enhance employees' learning.

[Learn more about strategies for increasing digital literacy across the federal workforce in this Insights article.](#)



3. Creating pathways for interagency collaboration and communication

The work of large government programs, such as [Head Start](#) and [HUD Exchange](#), is delivered by state and local agencies, community-based organizations, and home-based care facilities. For these programs to succeed, “[on-the-ground workers must have the information and resources they need](#)” to deliver services that help achieve the federal agencies’ goals. Yet many of those agencies are relying on outdated and underused technology and systems to equip these organizations with adequate data or training/technical assistance programs. This contributes to a public health system that’s cumbersome and slow to react to emerging threats when time is of the essence to respond.

Federal agencies need to create pathways for better sharing of critical information, allowing for quicker communication and collaboration from the federal to the front lines. New tech-powered pathways can be introduced to state- and local-level organizations in the context of an IT modernization initiative that’s deeply rooted in federal agencies’ and front-line organizations’ missions. [The results can be transformative:](#)

- Public health researchers and practitioners across the country need clearer pathways to connect with one another across regions and disciplines. They also need a deep and diverse national pool of data to draw from.

Mental and behavioral health, in particular, requires more predictive, interventional, and fast protocols to influence policy and facilitate better outcomes. ICF recently worked with Amazon Web Services to develop a cloud-based data environment that allows subject matter experts (SMEs) from any discipline to explore, analyze, and present the data without the need for advanced data science expertise. This capability incentivizes interdisciplinary collaboration to answer questions such as: “How can we most effectively and equitably allocate agency funding for school psychologists?”

- Three federal programs—the Child Welfare Information Gateway, HUD Exchange, and the DOJ’s Office for Victims of Crime—have partnered with ICF to streamline their approach to answering state and local organizations’ requests. The resulting solution uses chatbot technology to instantaneously answer many questions for front-line workers, sparing them wasted time calling a hotline and waiting on hold or submitting a form and waiting for a response.

These pathways are opened through the fusion of technology, subject-matter expertise, and workforce development.

Delivering training and support for localities’ unique needs

CDC’s Division of Overdose Prevention (DOP) is charged with supporting more than 60 state and local health departments across the country. Each health department, however, faces a different combination of overdose issues and needs. CDC DOP needed a solution that could help determine how to deliver support to these distinct communities as quickly as possible while accounting for their limited resources.

ICF has supported CDC DOP since 2019 through our proprietary, evidence-based technical assistance framework.

[Learn more about ICF’s collaboration with CDC DOP in this client story.](#)



Adapting surveillance tools across time and territory

The Behavioral Risk Factor Surveillance System is the largest health risk behavior database in the world and the only one in the United States. For more than 30 years, ICF has partnered with more than half of U.S. states and territories to support the BRFSS, ensuring that the data produced are relevant to the complex planning needs of each locality that participates in the program.

Over its three decades, the BRFSS has evolved dynamically, adapting and expanding with ICF's expertise in data collection and sampling protocols. This evolution is further enhanced by ICF's profound understanding of state-level demographics, regional dynamics, and health priorities.

Each year, ICF pilots new technologies and techniques alongside BRFSS' standardized data collection, allowing for the optimization of the system's research processes while continuing the parts of the system that work well. The result is a sustainable, flexible surveillance program that can be tailored to the unique needs of one location or to respond to emerging or urgent public health issues.

[Learn more about ICF's three decades of support for the BRFSS in this client story.](#)



Creating pathways for a healthier future

Through the tireless work of civil servants, researchers, doctors and health workers, and technology and industry partners, agencies at the federal level and beyond are making important, foundational strides to strengthen the American public health system's capacity. Yet there is still work that must be done to ensure that collaborations across agencies and organizations can both protect and improve health and quality of life for all.

Continuing to invest in public health technology, workforce development, and interagency collaboration has both micro and macro benefits. In the micro, continued investment can create better products that accelerate mission impact for agencies and strengthen the impact that "on-the-ground" programs can have in addressing and alleviating public health issues. In the macro, governments that are faster and more effective in responding to the public's needs and expectations have the chance to foster greater trust.



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ICF is a global consulting services company, but we are not your typical consultants. We help clients navigate change and better prepare for the future.

We've played a central role in advancing public health around the world for nearly 50 years. As close collaborators and seasoned experts, we bring both leading-edge skills and a powerful drive to improve public health outcomes for all populations. We provide advisory services and project implementation to government agencies and top science organizations. From conducting surveys and managing sensitive data to motivating behavior change and assessing program performance, we combine our domain expertise with cutting edge technology solutions to maximize the impact of our clients' programs.