NACCHO Exchange

Promoting Effective Local Public Health Practice

Volume 24, Issue 3
Summer 2025
Data Communication

What's Inside...

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NACCHO
National Association of County & City Health Officials
The National Connection for Local Public Health

From Data to Decision: How Visualization Drives Public Health Action

By Gwen Davis MPS, MS; Chloe Garofalini, MPH; Kellie Perkins, MS; Victoria Van de Vate, MPP, NACCHO; and Jonathan Schwabish, PhD, MA, American University and Georgetown University Adjunct Faculty

This issue of *NACCHO Exchange* explores the many facets of data communication – the strategic presentation of data to drive understanding, insight, and action. Thought leaders in the industry share their perspectives on topics ranging from the policy impact of visual storytelling to strategies for leveraging information design to debunk health-related rumors and practical examples of community engagement for data interpretation.

Imagine encountering an impenetrable wall of numbers – whether numbers in endless rows and columns or paragraphs of text without context or clarity. For many, this experience leads to disengagement and maybe even a pounding headache. Now, instead picture a thoughtfully designed data visualization or well-structured data story. Patterns are easier to grasp, and key points stand out – perhaps through a simple bar chart, a more advanced interactive display, or a compelling story rooted in a local context.

The difference between these two experiences is not just aesthetic – it's functional. This shift can determine whether data are understood or misinterpreted, ignored or inform action. This juxtaposition illustrates the essence of effective data communication. While data visualization helps simplify complex ideas at a high level, data storytelling adds essential depth to bring in the voices and circumstances that ground the aggregated numbers.

Together, they move data beyond abstraction, connecting technical analyses to lived realities and practical decisions.

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Data Communications as a Key Player in Local Public Health

Data communication in public health had long been an afterthought – an ad hoc skillset and just one duty of someone's entire job – until the COVID-19 crisis forced a shift. The pandemic brought into focus the importance of bridging the gap between data analysis and compelling storytelling. Masses of information are generated daily: infectious disease case counts; vaccines distributed; hospital capacity; and more. But it isn't the raw numbers that change behavior or save lives; it is how these data are disseminated. Infographics, social media, and localized messaging empower community members with actionable guidance, data dashboards foster effective collaboration among partners, and visualized data narratives inform policymakers on local contexts to drive equitable, sufficient resource allocation.

In 2024, NACCHO leveraged lessons from the pandemic to establish a Data Communications Team with dedicated skills at the intersection of data analysis, translation, and dissemination.

Providing evidence-based information design leadership, the team transforms complex research and evaluation findings into clear, compelling insights for local public health. This work is essential to advancing the organization's mission to strengthen local health departments – getting the right data to the right people in the right way is what facilitates informed improvements in policy and practice. At the same time, it is important to acknowledge that the definition of what's "right" is shaped by the data communicators. With that influence comes the responsibility to communicate with clarity, context, and care for the people and places behind the data.

Data Communications as a Powerful Decision-Making Tool

This responsibility means being intentional about what data is communicated, how, and for whom. Only by meeting people where they are can data truly inform and inspire action. So, perhaps the most important strategy to being a good data communicator is to understand the audience – who they are, what they know, and what platform(s) they use.

For example, the words written and the graph type employed in an academic publication might be very different than those used in a presentation to a city council or policymaker.

While thinking about the intended audience, it is also worth considering the type of visualization that will best help communicate the message.

One schematic guideline for this work is depicted below. Along the horizontal "function" axis are graphics that are explanatory or exploratory. Explanatory visualizations are those that tell a story or make a point or argument.

Exploratory visualizations are those in which the user is encouraged to explore the data at their own pace and time. Along the vertical "form" axis are visualizations that run from static to interactive Static visualizations are those that are not active or moving, while in interactive visualizations, there is an exchange of information between the user and interface; as the user clicks or swipes, for example, the visualization provides more or different information.

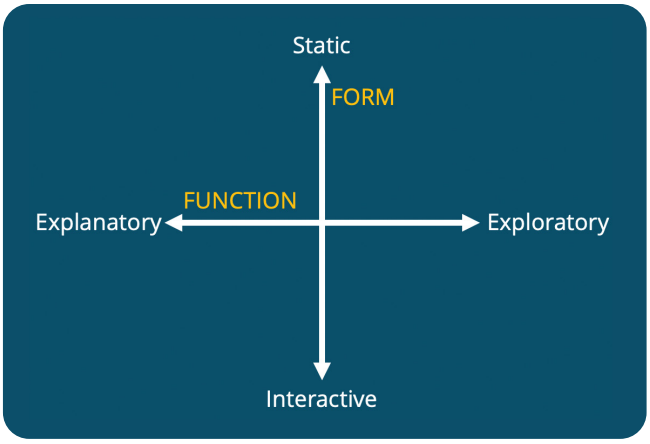

Image Source: Schwabish (2018, 2021), used with permission.

Different audiences will need different kinds of visualizations to best meet their needs. Policymakers, for example, are often best served by static-explanatory visualizations that make a straightforward point with concise numbers, statistics, and facts. Data analysts may be best served by interactive visualizations in which they can explore the data on their own, sometimes to conduct their own further analyses.

The Urban Institute's *Are Federal Infrastructure Dollars Meeting Your Community's Needs?* project provides a good example of how to utilize multiple visualization types and publication mediums to meet the needs of different stakeholders. The project consists of three main components: an interactive data tool that enables users to explore the data through maps, graphs, and dropdown menus, geared towards an audience interested in learning more about the data; an in-depth 129-page research report (Freemark et al, 2023, *"Are Federal Infrastructure Dollars*

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Meeting Your Community's Needs?", Urban Institute, https://apps.urban.org/features/infrastructure-spending-states-counties/) for the researcher audience; and several blog posts for the media and a more general audience. The project also includes links to the full data set and the underlying analysis on a publicly available Github repository. Each aspect of the project – which included the work of several teams – was specifically created to meet the needs of its target audience.

This kind of large, multifaceted project is most successful when people with different skillsets come together and work as a team: Researchers; data visualization developers; designers; strategic planners; media, social media, and outreach team members; and project managers are all integral parts of a successful data communication project. How each component of the work can come together to build a successful final product should not be ignored or downplayed. In a world in which the technology and media landscape changes so quickly, no single person can be expected to be an expert in all these facets of data communication.

Data Communications as a Driver of Policy Change

When researchers, outreach teams, and advocates work together to craft and share information effectively, they're laying the groundwork for action. This is especially true in advocacy, where the strategic communication of data is critical to a successful campaign. Data helps defend the programs that are improving communities, demonstrate the effectiveness of existing resources, and advocate for the development of new programs and funding. Policymakers at all levels of government often face competing priorities, from balancing budgets to responding to emergencies – their attention is divided among many issues. While the legislative process can be complex, effective advocacy does not have to be.

Every policy issue requires education, activation, and implementation. Educating policymakers is essential to ensure they understand public health issues and are motivated to engage. A critical part of education is using compelling storytelling that integrates statistics to inform and narratives that inspire solutions and motivate action. Using rigorous data helps decision makers understand the scope and scale of public health challenges their communities face, providing a foundation for evidence-based policy. At the same time, narratives illustrate how policies affect real people in their communities, activating policymakers' attention and demonstrating what types of policy changes would positively affect their communities if implemented.

Using rigorous data and scientific evidence help ensure that legislation will have the greatest positive impact and offer an approach to using limited resources efficiently and effectively.

NACCHO's Government Affairs Team has used research and data to educate Members of Congress and advocate for federal policies that would support the work of local health departments. For example, the team used data to help policymakers understand the public health workforce landscape and to advocate for the successful authorization of the Public Health Workforce Loan Repayment Program. Like many sectors, public health departments were hit hard by the 2008 recession, and NACCHO research demonstrated that the local public health field lost 21% of its capacity.

There were many nationwide challenges brought on by the recession, so this data was essential to demonstrate to policymakers that there was significant need for investments in the public health workforce and the justification needed to create a unique recruitment and retention tool for the public health workforce.

This data point was essential and was used in educating Congress on the challenges facing the workforce and what types of programs and services are lost to communities when local public health is understaffed and under resourced.

This work ultimately led to building bipartisan support for this program. Throughout these efforts, the team relied on data from NACCHO's National Profile Study and Forces of Change Survey to enhance the conversations with decision makers and demonstrate the need for additional investment, while NACCHO members educated members of Congress on the life-saving programs and services that would be provided with more public health professionals employed at local health departments and the positive impact on population health.

Pathways to meaningful policy change require a multi-pronged approach—education, grassroots advocacy, and momentum. Data-informed policy recommendations and accessible data visualizations are essential to educating policymakers, activating local public health action, and implementing policy changes that strengthen local health departments and ultimately, improve the health of communities nationwide.

The Right Time and the Right Tool: Setting Up for Dashboard Success

By Amanda Makulec, MPH, Adjunct Faculty, Maryland Institute College of Art

The best data visualizations give information in a format that clearly and quickly answers questions. There's an understandable fervor for data storytelling, and genAI tools are making headlines with big promises. But interactive data visualizations designed by or with the teams that will use them are still one of the best ways to make data available on demand.

Interactivity Can Come in Different Forms:

Add Filters or Personalization to an Individual Chart

The New York Times often lets readers put themselves into the story by inputting a zip code or state and seeing a chart customized for their area.

'Scrollytelling' Articles

Animate and allow readers to interact as they move down the page. Popular in journalism and annual reports, like the Gates Foundation's annual note, this format is fantastic for data storytelling but typically has a clear 'ah-ha' moment and is designed to explain data, rather than explore.

Dashboards

Analytical products are the heavy hitters in the world of interactivity for exploring data. Rather than sharing one key takeaway, dashboards allow users to see one big number and click to answer follow up questions like 'so what?' and 'why?'

For local health departments, dashboards can play a key role in streamlining the use of data for operations, quality improvement, human resources, and more. In public health more broadly, dashboards have played a huge role in data transparency to the public: The Johns Hopkins Coronavirus Resource Center dashboard may be the most viewed dashboard of all time, with over 2.5 billion views.

Well-designed dashboards make data on demand for users, rather than having to ask an analyst to pull some numbers and filter to segments meaningful to them. These tools can also create efficiencies in workflows by automating parts of the data refresh process, addressing the constraints around time and resources often faced by health centers.

Well-designed is key though. In a poll for the new book *Dashboards that Deliver*, 70% of dashboard creators said they thought that most dashboards fail (Cotgreave et al., 2025). Failure can take a lot of forms: Including low usage, not being maintained, or having no clear value connected to the organizational goals.

To build dashboards that deliver on the promise of more evidence-based decision making, make sure to build the right analytical tool at the right time.

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Build at the Right Time

Curious about using a new dashboard? Are there specific pain points a dashboard can address?

Consider three practical reasons for local health departments to build out a new dashboard:

1

Using Data is Necessary For Teams

For a dashboard to be effective, a team needs to be motivated to use it. Imagine managing a complex schedule of health outreach events from local health departments.

As new events are planned, data about the volume of patients and health service needs can help to make a staffing plan - a clear use of some kind of data to inform a decision that goes beyond reporting.

Even better are use cases where there is a need to look at patterns in multiple data points in order to evaluate quality improvement metrics, where one measure can help explain patterns in another, where there is a need to segment outcomes by demographic groups to identify equity issues.

2

Repeating Analytical Needs

Creating a dashboard for a one-off analysis question is often a fool's errand. Instead, craft a few impactful charts with data visualization tools of choice without the more labor-intensive considerations of data modeling and designing for interactivity.

This approach frees up more space for data storytelling with clear headlines and takeaways, which don't work as well in dashboards where the message may change each time the data is refreshed. For repeat analytics tasks that take hours (or days) on a regular basis, investing time in a dashboard can *save* time in the long run.

Take the outreach events, perhaps happening monthly with data logged in a shared spreadsheet. If a team member spends a day each month putting together a report on the outcomes of each event that could be automated into a 1-hour refresh and review task, saving more than 10 days of time each year.

3

Possessing Data or Having a Plan to Collect Data

Dashboards rely on access to quality sources, structured in formats that are tidy rather than being easy to read for the human eye.

Designing dashboards can be a motivator for improving how data is managed, but a dashboard cannot be developed without access to accurate, complete, and timely information.

Before going deep down the path of planning for new dashboards, review existing data systems and data governance policies.

These are particularly important when there is a need to set analytical tools up for automation and scalability while working with often sensitive health information.

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Great dashboards can be built in many different platforms. For public facing dashboards, leverage public versions of products, like Tableau Public, to design, publish, and embed dashboards. For internal dashboards, dedicated dashboard software may ease challenges around data modeling and secure sharing but aren't the key to a dashboard's success.

There may be long arcs of time where all three of those conditions are met, and it's just not the right time to build a dashboard.

How Do These Three Conditions Set the Scene For Public Dashboards?

During the COVID-19 pandemic, teams were motivated to build data tools for different reasons. Some wanted to inform the public of infection risk, which often included translating numbers into words (like low, medium, and high risk), while others were designing with local public health departments or epidemiologists in mind.

Across groups, people needed access to updated data routinely, which is why dashboards were so necessary alongside other data communication products. Finally, the labor done by Johns Hopkins, the Tableau COVID-19 Resource Hub, and *The New York Times* to curate centralized, well documented data sources enabled many dashboards to launch quickly with trusted information.

Build the Right Analytical Tool

So, the conditions are right and there is a clear spark for building a dashboard. What next? Design and develop thoughtfully to build the right analytical tool.

Clarify Why and For Whom the New Dashboard is Being Built

Any good data visualization training will start with the question: Who is the audience? The interactive nature of dashboards makes it even more critical to understand who the end users are, what questions they need to answer, and how they use data in their work. Dedicating time to a discovery phase to define those needs and requirements sets up the dashboard for success later.

Be Purposeful With Information Architecture

Think of information architecture both on the back end and front end of the dashboard. How the data is structured in tables and a scalable model that integrates with the preferred dashboarding tool will depend on the specific requirements. These requirements will help determine what data is necessary.

On the front end, think of information architecture as visual hierarchy in the design. Ben Shneiderman (B. Shneiderman et al., 2017, *Designing the User Interface: Strategies for Effective Human-Computer Interaction*, Pearson), coined a common dashboard design mantra –big picture first, then zoom and filter, then details on demand. To put that into practice, map out the components of the dashboard in words and boxes first - even framing each component as a question the dashboard needs to answer. Then, think through how the charts need to interact with each other or with interactive components like filters and navigation menus.

Start with a simple wireframe with boxes representing components. Then, create mockups with static representations of charts. Both are low-stake ways to test ideas and get feedback, especially on a small team. Early feedback can save time around expensive change requests further into the development process.

Prioritize Chart Design Best Practices But Also Consider the Wisdom From UX Design

Choose appropriate chart types for dashboards, with some visual variety to keep the audience engaged. But also consider: What is the minimum viable group of charts to answer the biggest, highest priority questions?

Then, how can users explore data with clicks and filters rather than more charts or pages in the dashboard? Thinking of a dashboard like an analytical application, rather than a static slide that must show everything at once, will leverage the power of interactivity through good UX design, not just good data visualization design.

Measure Success and Learn From Failure

While there are ways a dashboard can fail, there are also many ways to measure the success of a dashboard. At the start of the design process, identify not just why a dashboard is being built but how to measure its success.

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Health departments often operate with limited time and resources; they need any new analytical tool to deliver. Identify little 's' measures that are countable indicators dashboards are being used, like page views, unique visitors, and other outputs. Then, consider big 'S' measures, like how often a dashboard is used to inform a decision or how many hours of analysis time the dashboard saves the team each month, freeing up bandwidth for other priorities.

Measuring success can also consider the scalability and sustainability of what gets built. Define ways to capture data around these measures and how to use that data to inform future design decisions.

Remember, beauty isn't often the primary goal for interactive, exploratory analysis tools, though dashboards should be well designed. The goal is to reshape how a team engages with and uses data.

Years ago, a public health initiative in West Africa involved developing a mobile application for community health workers. When the project's funder requested a dashboard to visualize usage data, the development team collaborated to identify key metrics—such as unique users, page views, and other indicators (T. Nutley, A. Makulec, C. McLaughlin (2016), *Are dashboards the magic bullet for quicker, more inclusive, data-informed decisionmaking?*, [Conference presentation], MERL Tech Conference, October 3, 2016).

Using Tableau, the team created a dashboard grounded in effective data visualization principles: consistent styling, uncluttered charts, a coherent color palette, and intuitive navigation. The dashboard met the funder's expectations by offering quick, accessible insights into app performance.

This project highlighted the importance of structuring data in scalable formats and aligning dashboard tools with clearly defined analytical goals. However, despite its polished design, the dashboard ultimately failed to influence decision-making. The selected metrics served more as vanity indicators and did not capture meaningful engagement. A critical data gap existed: much of the community-building among nurses occurred in a separate WhatsApp group, which was not reflected in the app's usage data.

Additionally, the dashboard was unsustainable for the local team, who lacked the capacity to maintain a Tableau-based system.

In contrast, a later project in Zimbabwe demonstrated the value of simplicity and local ownership. A community advocacy group co-developed an Excel-based dashboard using line charts and pivot tables to analyze quarterly scorecard data across districts.

Though visually modest, the dashboard was designed to answer specific questions—such as where scores were declining or improving, and what advocacy actions influenced those changes (A. Makulec (2015), *Designing Usage Dashboards for mHealth Program Monitoring*, [Conference presentation], MERL Tech Conference, October 16, 2015).

Because it was built with tools familiar to the local team and aligned with their capacity, the dashboard became a sustainable resource. It was actively used in meetings with district health executives, leading to tangible improvements in care, including resolving supply chain issues for essential drugs and supplies.

These experiences underscore a key lesson: dashboards must be designed not only for functionality and scalability but also for local relevance and sustainability. Public health departments can apply these insights by prioritizing co-design, selecting tools that match local capacity, and focusing on metrics that drive actionable decisions—ultimately improving service delivery and health outcomes in their communities.

Guiding Principles for Effective Data Visualization

By Gwen Davis MPS, MS; Chloe Garofalini, MPH; and Kellie Perkins, MS, NACCHO

The beauty of data visualization is that there are seemingly endless ways to visually represent data. Despite this flexibility, there are some universal best practices that maximize the impact of visuals and improve understandability and accessibility. NACCHO's Data Communications Team recommends following the guidelines below to make the most of collected data.

Make Numbers More Friendly

For most people, numbers can be hard to interpret on their own. A few small adjustments can make data more approachable, even before building a chart. First, remove additional decimals; they often add clutter without adding meaning. Sorting the data is also helpful, making trends and patterns easier to spot from the outset.

Choose the Appropriate Chart

Certain charts work best with certain messages. Line charts are great for showing trends over time, while bar charts are ideal for comparing categories. While it's important to choose the right chart for the data, it's also important to choose the right chart for the audience. Some viewers may have lower data literacy and benefit from simpler visuals. Others may benefit from more complex formats, like a scatterplot, that allow for more detail without sacrificing clarity.

Aim for Profound Simplicity

Visualizations should be kept as simple as possible while still meeting the needs of the data and audience. "Chart junk" refers to unnecessary elements, like 3D effects, background images, excessive gridlines, or decorative icons that distract from the data. A few clean-up steps go a long way: use direct labeling instead of legends, remove chart borders and axis lines, and avoid redundant tables under graphics.

Use Titles as Headlines

Titles should do more than name what the chart is. They should tell readers what the data says. Turning a basic title into a short summary or key message helps readers immediately understand the takeaway. For example, rather than "Engagement over time in assuring access to health care services", a headline-style title like "More local health departments are ensuring medical and behavioral health access over time, while dental care efforts decline" is clearer and more actionable.

Use Color With Intention

Color is a powerful tool to draw attention and communicate meaning. Use cohesive, appealing color palettes, and apply them consistently across elements like labels or titles. Color can also help differentiate categories, as long as it's accessible. For instance, using a red and green color palette may affect accessibility of a chart to certain viewers.

Ensure Accessibility Needs Are Met

Equity should be built into every data visualization. Use accessible colors and fonts that can be interpreted by all viewers, including those with color blindness or other sight-based disabilities. It's also important to represent the people behind the data respectfully and acknowledge who is included, who is missing, and what the data does or doesn't say. Finally, it's key to be transparent about the goals, methods, and limitations of the data: For example, if there are excluded data that could potentially change the messaging, be clear about this and any potential implications.

Data visualization is a broad and evolving field. While these principles are just the beginning, they offer a helpful framework for approaching visual storytelling in ways that are clear, accessible, and impactful.

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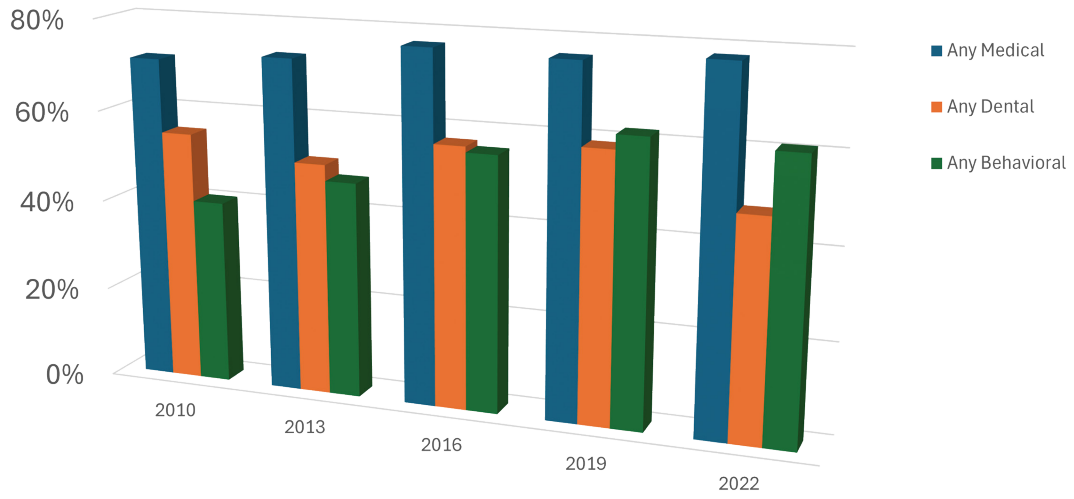
Before:

Engagement Over Time in Assuring Access to Health Care Services in the Past Year, % of Local Health Departments

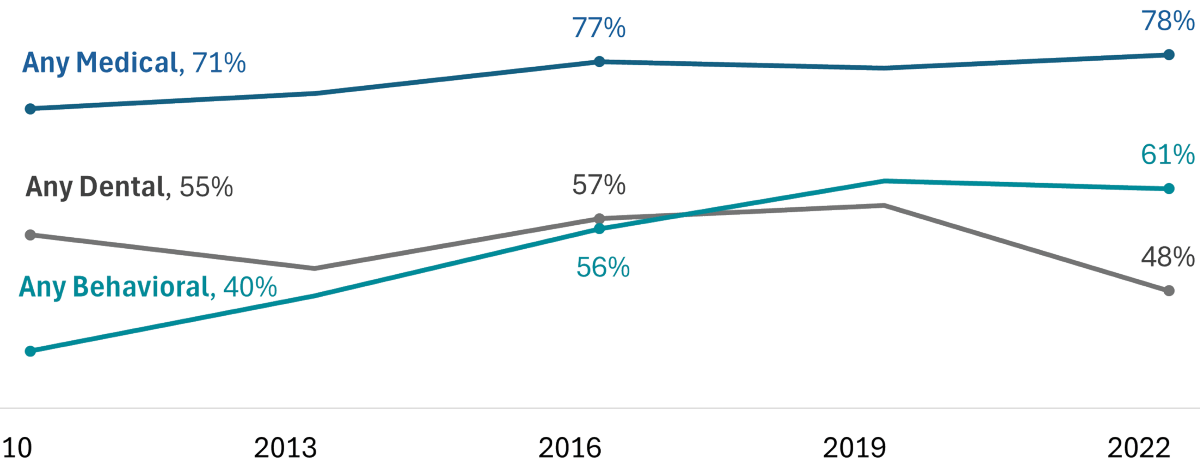


Engagement over time in assuring access to health care services in the past year Percent of LHDs					
Health Care service	**2010**	**2013**	**2016**	**2019**	**2022**
Any Medical	71%	73%	77%	76%	78%
Any Dental	55%	51%	57%	59%	48%
Any Behavioral	40%	47%	56%	62%	61%

After:

More LHDs Ensuring Medical and Behavioral Health Access Over Time, While Dental Care Efforts Decline

Percent of LHDs, 2010-2022



The Practical Playbook For Addressing Health Rumors

By Tara Kirk Sell, PhD, MA, Senior Scholar, Johns Hopkins Center for Health Security; Associate Professor, Bloomberg School of Public Health, Johns Hopkins University; Aishwarya Nagar, MPH, Senior Analyst, Johns Hopkins Center for Health Security; and Vanessa Grégoire, MSc, Analyst, Johns Hopkins Center for Health Security

Today, the public health world faces unprecedented challenges. The spread of harmful and misleading health rumors that encourage dangerous behaviors and lack of trust in public health is one challenge that is particularly difficult to manage. Rumors are a normal part of human life and have been used to make sense of new information; however, during high-anxiety situations like crises or public health emergencies, rumors perpetuating misleading, false, or unverified claims can cause harm.

It may be daunting to think about tackling rumors as public health officials manage day-to-day operations, but this work is critical to nearly every aspect of public health. This article describes a new resource for public health communicators and leaders to improve communication around these rumors: *The Practical Playbook for Addressing Health Rumors.*

The Practical Playbook for Addressing Health Rumors provides guidance on ways public health practitioners – including those who work in health departments – can set themselves up for success, make decisions on when they need to act to address health-related rumors, choose which actions and approaches might be useful to their audiences and information needs, and evaluate how their efforts are working. It also provides tools, templates, and examples to help inspire health officials to use this guidance in flexible ways that fit their own needs. The playbook pulls from many reputable and remarkable resources, prioritizing guidance that is practical for practitioners with many demands on their time and resources.

Although there is no "silver bullet" that completely solves the issues that create and emerge from health rumors, this playbook can help public health officials organize their approach and make progress on this complex problem, one step at a time.

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Setting Up For Success

Rumors are inevitable. They are guaranteed to arise during escalating public health events, often in predictable ways. To set themselves up for success when health rumors come up, public health officials can do a range of things. First, there's some "pre-work," such as thinking through repeated rumors and identifying things that have or have not worked in the past.

Second, it's important to assemble a team with the right roles, responsibilities, knowledge, skills, and abilities to call upon to address health rumors, especially during emergencies. During "blue sky" times, practitioners can get to know the audiences present in their communities; being aware of the rumors they are likely to confront, their values, and the community partners they trust is vital information to leverage when hard times come up.

Another valuable step is to set up social listening mechanisms. Public health officials can set up systems before rumors start spreading to ensure that they are able to identify circulating rumors and questions before they become problematic and entrenched. It's easier to tackle people's questions and concerns before false, misleading, and/or manipulated information takes root. Moreover, they can build public resilience to misleading health rumors and build trust in public health ahead of time. This can include connecting the health department with their communities, building partnerships, and helping people understand what public health is and what it does with the community.

Deciding Whether to Act

Once a rumor has been identified, health officials must decide whether to address the health rumor. Not every rumor needs to be addressed! First, health officials should identify their goals for responding to an identified rumor. Is there something meaningful to be gained? What specific outcome would a response generate? Health officials should also identify and consider the most important factors that may influence their decision to respond. How serious is the rumor? Do they have the capacity to act? Which potential negative consequences might emerge from their response? By understanding goals and areas of priority, health officials can better marshal their resources towards the most impactful or tractable rumors. If they decide to counter or address a rumor, they can move on to the next step: taking action.

Taking Action

When taking action, it is helpful to first identify the type of health rumor that is circulating. Although many health rumors seem, at first, to be unique to their time and specific public health event, they follow predictable patterns. For instance, do rumors focus on the safety or efficacy of public health measures? Are they about severity, risk, or cause of an event or health condition? Do they blame, stigmatize, or undermine certain populations or public health officials/institutions? Once health officials have identified the type of rumor, it is easier to deconstruct the rumor, understand what effect it has, and what might resolve it.

Next, health officials need to identify their communication goal and intended audience for actions to address health rumors. Without this step, rumor management efforts may end up targeting people who are not affected by the rumor or those who already believe the rumor is false. If a rumor disproportionately impacts certain populations, then these populations should be the focus of rumor management efforts.

It can be valuable to focus on general audiences, especially if they represent a "moveable middle" who may be unsure about what the facts are. Centering partner organizations is also helpful; they often represent critical connections to whatever intended audience health officials identify, especially since many key audiences may not trust public health officials easily. Health officials should then match their goals to their intended audiences to make sure that these foundational components make sense together.

Health officials must then choose an action approach that will work to achieve their goals and resonate with their target audiences. This can be as simple as amplifying accurate information and filling information voids. Health officials may choose to focus on leveraging trusted messengers and engaging with communities or on debunking false information in some cases. There are some more resource-intense actions with the potential for longer term increases in people's capacity to detect false claims: prebunking and inoculating people by preemptively refuting false information and improving health and science literacy.

These are some of many actions practitioners can pursue, particularly to guide any messages they develop and distribute to counter health rumors. Many health departments may choose to do a combination of these action approaches or weave this work into already existing programs.

Health officials must also select communication channels for their rumor management messages and messengers who can effectively counter misleading rumors. The best communications channels to prioritize are those where the rumor is already

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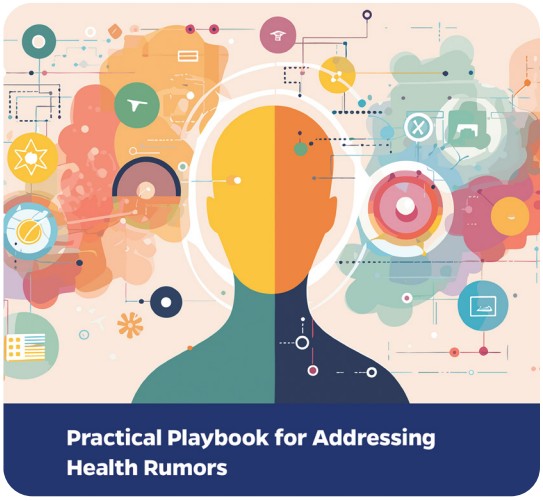
spreading and those that are most accessible to the selected target population. Other channels or messengers may be added to the list based on pre-existing work or relationships, high rates of use or access, and trustworthiness.

Although relationships with communication partners and trusted messengers are best formed ahead of time, new relationships may be needed. Health officials should use each rumor response effort to identify new and important partners to connect with and work to maintain these relationships going forward.

When developing their messages, health officials should consider strategic use of message framing. Often, audiences have access to the information that health officials want to share, but it is not provided in a way that resonates with them, which inhibits uptake of messages. Officials should match messages to the motivations, values, and core beliefs of audiences.



Aligning with moral values is much more likely to encourage engagement than trying to change foundational perspectives of audiences.

Health officials can try to focus on what people gain from following public health guidance, focusing on individual benefits, or preventing health consequences.

Regardless of the approach, health officials should acknowledge potential areas of uncertainty and prepare audiences for changes in guidance, especially during a crisis when the facts are often unclear.

Finally, after thinking through what the rumor describes, who it affects, how to act on it, where to communicate about it, and how to frame a message that responds to the rumor, the last step is to create and disseminate messages using good practices. Extensive guidance is available to health communicators from organizations such as the CDC, Frameworks, Public Health Communications Collaborative, and others. Central considerations include using plain language, a focus on key messages, empathy, action-oriented language, and thoughtful graphic design. In some cases, health officials pressed for time may decide to turn to large language models to assist in message development.

This can be a useful first step, especially in resource limited settings. However, communicators should be sure to adapt the provided language to fit their communities and ensure that outputs match the specific needs identified in the playbook.

After working to counter rumors, evaluation is an important step to identify if messages need to be adjusted or to improve processes for future work to address rumors.

While evaluating the impact of communication efforts is often difficult, there are different ways to potentially understand their effect. Officials can test readability and accessibility of messages, track distribution through partners and data analytics, and talk with their communities to understand impact. If more time or resources are available, officials can conduct more specific message testing through focus groups or track changes in target outcomes to understand messages impact.

Looking to the Future

As public health departments consider future public health campaigns and the importance of managing rumors, practitioners should think about developing an action plan (for themselves, their teams, and their organization) to address the most common types of rumors they face, or rumors around particular topics that they know emerge frequently in their communities. One useful approach is to create a general rumor response strategy that leverages strengths of the health department, including trusted partners, existing technology, and outreach approaches. Plans should identify areas where the health department can better address anticipated rumors, which could prepare them to mobilize and respond quickly.

Ultimately, buy-in from leadership and incorporating this plan of action into organizational operations/ plans may allow public health practitioners to communicate more quickly, specifically, and effectively in the future. Health rumors are here to stay, especially as processing a greater onslaught of information and struggling to differentiate between truth, partial truth, and fiction.

Thus, moving towards a “new normal” that prepares the US public health system to proactively and reactively counter health rumors is a must. And this is one practical place to start.

Public Health Data Lessons Learned From COVID-19

By Matthew Montesano, MPH, Senior Director of Data Communication, Environment and Health Data Portal
Division of Environmental Health, NYC Department of Health and Mental Hygiene — City of New York

In March 2020, as part of its emergency response to COVID-19, the NYC Department of Health and Mental Hygiene convened a data communications team to lead work publishing data on the pandemic. This interdisciplinary team included epidemiologists, communications experts, and data visualization specialists. Over two and a half years of intense emergency response work, they produced work that underscored the value of data and what health departments can do to make the most of it and benefit the public.

In March 2020, though, the team didn't know everything that was to come. But it knew that the pandemic was a unique situation: The scale was unprecedented, and it already seemed to be a universal experience.

As government and public health leaders issued recommendations and as the recommendations turned into orders, the team knew that if it wanted people to stay safe and take action to protect their health, they would need to be motivated. They would need to be aware of the seriousness of the situation — the rising case counts and the threat that COVID-19 posed to the city. They'd have questions. If they came to the health department for answers, would it do a good job of providing them? The data communications team knew that data would need to reach everybody. So, as it spun up infrastructure for publishing and communicating data, it focused on making information as clear and easy-to-use as possible. It wanted data to be useful to more than the usual consumers of public health data – the academics, researchers, policy people and journalists. The team wanted it to be useful to everyday New Yorkers too.

Presenting COVID-19 Data Communication

In a few short weeks, the data communications team built and launched the health department's COVID-19 data webpage. At first, it featured a few basic charts of the only data that was reliable at the time. But the team had already started work on the next iteration of the webpage, as data by subgroup and by zip code became reliable. And over the coming years, the webpage went through several major changes, evolving as the health department tried to keep up with the virus. Through its evolution, the core fundamentals stayed consistent—being clear, simple, and user-friendly through some key techniques.

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Offering Clear Data Visualizations

Data visualization is half art, but half science too. There are evidence-based methods to designing data visualizations that can increase readers' ability to interpret and retain the information being communicated. (Stephanie Evergreen and Ann K. Emery's Visualization Checklist provides an excellent run-down of these techniques.) The data comms team designed simple and clear charts with useful labels and tooltips, uncluttered by extra material and information, to make it easier for people to quickly understand the data.

Encouraging Simple Interactivity

Most New Yorkers don't usually look up public health data. To reach them, the data communications team had to avoid building a system that felt like a technical dashboard or online data query system. It had to look and work simply. This meant limiting interactivity to strategic uses: providing overviews before offering more in-depth data details through "progressive disclosure" of complexity (Jakob Nielsen, (2006, December, 3). *Progressive Disclosure*. www.nngroup.com. https://www.nngroup.com/articles/progressive-disclosure/). For the interaction, the page grouped information in intuitive clusters, with simple controls and labels. This resulted in a system that could accommodate a great volume of information, in the form of simple charts and data breakdowns – that could foster understanding through engagement as users clicked around and explored.

The data communications team built this within the health department's existing website. Since time was a factor, the team couldn't involve outside designers or developers to build and launch a new website. The team had to work with what the department already had: free tools and simple technologies.

Using Github to Host Data

The data communications team stored data files and technical notes in a publicly accessible Github repository, so technically savvy users could download data and access documentation. This helped avoid overwhelming casual users with footnotes on the webpages.

Additionally, using Github allowed health department analysts to easily upload data files daily, letting external users submit questions directly to the data communications team and letting power users track changes in data files.

Evolving in Tandem With the Pandemic

The work was not a one-and-done job. Instead, the health department data communications team updated the COVID-19 data webpages as the pandemic and the department's surveillance evolved.

Updates Included -

Adding new data as it became available and removing data that became irrelevant.

Changing highlighted data as different datasets became more useful to explain the course of the pandemic over time.

Reconfiguring displays to create new at-a-glance overviews.

Adding data reports that compared individual neighborhoods to their borough and the city overall – giving people an easier way to understand how the pandemic affected their neighborhood.

An in-depth description of this work was published in the *American Journal of Public Health*.

Evaluating the Effect

Early in the pandemic, the health department's website was receiving 10 times the web traffic of pre-pandemic norms. Once launched in April 2020, the COVID-19 data webpages accounted for nearly half of the health department's web traffic.

High web traffic continued throughout the pandemic, often mirroring case counts – when cases surged, so did page views, as New Yorkers sought up-to-date information. The COVID-19 data pages became the health department's most high-profile and successful digital product ever.

Health departments often compete against myriad other sources (reliable or not) for people's attention. The success of the COVID-19 data website demonstrated that giving people information in a clear and easy-to-use format could earn the health department a role as a trusted resource for the public.

Taking the Lessons Back to Everyday Public Health Practice

When the COVID emergency activation ended, members of the data communication teams returned to their "day jobs" in the health department – but the emphasis on creating user-friendly ways to access data continued throughout the agency.

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After all, the need for accessible data wasn't restricted to public health messaging about the pandemic – the opioid crisis, the climate crisis, the fight against chronic disease – each public health issue could benefit.

Swiftly the pay-off of applying practices forged during the emergency response in day-to-day operations was illustrated in the major redesign process of the Environment and Health Data Portal - one of the health department's marquee data communications platforms.

This redesign focused on usability, with a consistent look and responsive design for mobile compatibility, more intuitive navigation, and better visualizations. The data portal team built a platform that could manage a significant increase in content and began developing data stories and interactive products to not only help people explore the data but also explain it to them. (More about redesigning the platform and evaluating the redesign was published in the *Journal of Public Health Management and Practice*.)

As with the COVID-19 data pages, web traffic to the Environment and Health Data Portal steadily increased as the health department published data in flexible and innovative ways. The portal was primed to be a primary source of information in the face of a new emergency. A few years prior, the data portal team launched an interactive page to report hourly fine particulate pollution (PM2.5) values from the health department's real-time air quality monitors around the city.

When smoke from Canadian wildfires blanketed the city in June 2023, with PM2.5 levels at unprecedented levels, web traffic increased by several orders of magnitude as the public turned to the real-time air quality page as an essential resource. In addition, the page's data and visualizations were borrowed by major news outlets like the *New York Times* to explain the situation.

To better communicate and capture attention, two strategies have been vital to both the redesign and ongoing work. First, the team centers user research – testing changes and ideas with users to understand their needs, preferences, and pain points. Findings inform strategy, point to new approaches that may serve users better, and illuminate functionality that users struggle to use. More on findings from user research was published in the *Journal of Communication in Healthcare*.

Second, another vital tool is the team's workflow. In a traditional publication process, almost all the work is done prior to publication. But for digital products, it's important to quickly and flexibly publish prototypes – and then to continue to develop them. This lets teams move faster, experiment, incorporate findings from user research, and continue to improve products to better work for users – without the expectation that it will be perfect the first time.

Contemporary design and development practices like Civic Service Design are uncommon in government agencies but are critical to doing this work well.

Making Data Easier to Access, Understand, and Use

Health departments cannot just provide numbers: They must also provide insight that people can use to understand and act on public health issues. Many people find data challenging, and experts often overestimate non-experts' data literacy. Publishing data for applications to improve health means focusing on web usability, to ensure that users can easily explore data systems and find what they're looking for.

This requires attention to how content is organized, how to navigate throughout a system, how to provide good search, and how to connect related content.

Making data easier also means providing explanations that accompany data, instead of assuming that people can analyze datasets and draw the same conclusions as experts. Individual visualizations can have comparisons to contextualize and make sense of data, and evidence-based visualization techniques can ensure that readers understand primary messages.

Techniques like data stories and neighborhood reports use data to explain important topics and shine a light on findings, nuance, and important perspectives.

Public health work doesn't just happen at health departments; frequently the changes needed to improve public health happen in other city agencies, in housing policy, in schools, parks, libraries, hospitals, community-based organizations, and more.During the COVID-19 pandemic, public health had to mobilize huge parts of society to action, turning lots of people into public health advocates and actors.

Better access to health department data arms this ad-hoc workforce with the most powerful tools – findings and insights on critical public health issues. Health departments can increase their influence and become a trusted source of information. That's good for them – but it's even better for the public's health.

Emphasizing Community and Approachability in Data Storytelling

By Hannah Shupert, Public Health Program Representative, MPA; Lauren Stockam, Public Health Information Specialist, MPS; and Anna Kremer, Public Information Officer and the Coordinator of the Office of Communications and Outreach, MPH, Springfield-Greene County Health Department

The Springfield-Greene County Health Department (SGCHD), located in Missouri's third-largest city, serves a population of over 300,000. The Springfield metropolitan area is a medical hub in the southwest Missouri region, containing two large hospital systems and many community health care partners.

SGCHD is positioned as an informal leader for many local public health agencies in surrounding counties. At the heart of SGCHD's mission to protect and improve community health is a commitment to continuous improvement, which drives the work of the department's various programs and partnerships.

In recent years, the department's Office of Communications and Outreach (OCO) and Office of Community Health Strategy (OCHS) have coordinated their efforts to enhance communication and bring data storytelling to the forefront of SGCHD's internal and external programming. With their unique skillsets and perspectives, the OCO and OCHS teams work together to make public health data approachable, accessible and actionable for the department and the broader community.

An example of this cross-team collaboration is the creation of the 2025 Community Health Needs Assessment (CHNA).

Introducing the CHNA Process

Since 2016, local public health agencies, hospital systems, and other partners in the greater Ozarks region have worked together under the umbrella of the Ozarks Health Commission (OHC) to produce assessments every three years. The scope of the OHC region includes 33 counties across three states—Missouri, Kansas, and Oklahoma. These counties make up seven different communities, who each develop reports based on their community-level data.

SGCHD serves as the convener of the OHC, leading a steering committee, data collection, analysis and report writing for the CHNA. SGCHD also acts as the lead for the Springfield Community, which includes Greene, Christian and Webster counties in Missouri.

Considering the Audience

During the 2025 CHNA process, OCO and OCHS were dedicated to creating a concise, non-technical report written with the general community audience in mind. In contrast to previous iterations written for technical public health and health care audiences, the 2025 Springfield Community CHNA report interweaves high-impact data points with a community-driven narrative.

Listening to the Community

Community voices guided the 2025 CHNA process from start to finish. Early on, the team drafted a questionnaire to survey community partners about overall impressions of health in their communities.

Developed using resources like NACCHO MAPP 2.0, the questions included on the survey were wide-ranging. They asked community partners about specific populations served, availability of resources and health care. The responses were categorized as broad benefits and barriers of living in the OHC region, as well as in each individual community.

The team used partner perspectives to design a brief, web-based survey about general health and resources for all community members. Several communities within the OHC region also developed supplementary questions specific to their residents.

Taken together, these community insights guided the collection and analysis of secondary public health and hospital system data and further quantified local issues. The responses provided valuable context into community members' experiences with—and perceptions of—health.

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Forgoing Use of Generative AI Writing Tools

To further emphasize the importance of the community audience, the team made an intentional decision to forgo the use of generative AI writing tools, such as ChatGPT, to assist with the report narrative.

The team believed it was crucial that the report was written by members of the community for members of the community. This decision also allowed the team to craft a narrative that aligns with—and sometimes challenges—the area's culture, perceptions and hyper-local community context.

For transparency, ChatGPT was used to assist with formatting portions of anonymized data prior to the writing of the report. No protected health information was included in this process, and ChatGPT's output was thoroughly reviewed and edited by the team.

Creating an Approachable Document

During the writing process, SGCHD officials felt it was important for the report to be easily approached and understood by a general audience. The team drew inspiration from newswriting and used many of its tactics to improve the readability of the report.

Updating the Document Structure

Research reports are often marked by large blocks of text, long sentences, complex data tables and a lack of engaging visual elements. The team was intentional in the CHNA report to section paragraphs by topic, minimize complex sentences and include engaging visuals, like photos and relevant data visualization. These seemingly small changes made the document more appealing to the reader.

The team also made the raw data accessible but wanted to change the structure from past reports. Previously, multiple appendices were added to the end of the report, significantly increasing the page count. To offset this in the 2025 report, raw data files were incorporated on the OHC website, and a QR code and URL to the data webpage were included in the end notes of the written report.

These intentional decisions in the document structure also made the transition to web easier and encouraged accessible web design.

Using Plain Language

The team also worked to simplify the copy in the report. This meant adhering to a specific writing style (the team chose AP Style to align with newswriting standards), consistently checking reading ease scores with online tools and avoiding complex language when possible.

Framing data in ways that are less complex for the reader was another newswriting tactic the team adopted while writing. For example, numbers with decimal points were rounded.

Additionally, percentages and trends, when applicable, were generalized to improve reading ease. For example, the following phrase is included in the report:

"For adults, almost one in five in the Springfield Community are current smokers."

Noting the Revision Process

The Springfield Community CHNA report went through many rounds of revision before publication. The team consistently reviewed and revised along the way, then the document was reviewed by SGCHD administration and staff at partner organizations within the Springfield Community. These revisions allowed the team to identify gaps and areas of improvement in the document, and edits were made accordingly.

Framing the Narrative

The team at SGCHD felt it was most important to frame the CHNA report in a way that is relevant and engaging to the broader community, not just health care and public health stakeholders. The assessment, and the community health improvement plan that grows from it, have far-reaching implications for members of the Springfield Community, so the team worked hard to tell a compelling story. Framing this narrative was a prolonged, collaborative effort that included intentional data visualization, language choices and frequent conversations about community context.

Choosing Data to Visualize

The team collected and analyzed a rich set of data from community partner organizations, community members, public health entities, and hospitals, but elevated only a select few in the final report. Over the course of several months, the team carefully selected the most impactful data points to visualize.

Rather than including complex charts and data tables, the team chose to include no more than two data visualizations in each section of the report. In some cases, the team chose to highlight data using a callout box rather than a chart or table. Instead of visualizing counts of naloxone kits available in the community over time, a simple text box communicated:

"In 2023, there was 45 times more naloxone available in the Springfield Community than in 2018."

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Choices like these helped clearly emphasize indicators that best communicated the narrative.

Rephrasing Technical Terms

In the 2025 report, phrases from past reports were reworked to help with community understanding. First, "priority health issues" changed to "areas of focus." This change was made to indicate that all health issues and outcomes matter in health care and public health, but it is necessary to focus on the issues that are currently affecting the region the most. In the 2025 assessment, the areas of focus are mental health and heart health.

Second, "social determinants of health" changed to "root causes." This change was made to simplify a technical phrase and to help the community better connect root causes, like access to care, to the health issues highlighted in the areas of focus section.

Connecting Root Causes to Health Issues

In the 2025 report, five root causes were selected within the scope of mental health and heart health. These root causes—access to care, non-health care costs, physical activity, nutrition and stigma—are positioned before the areas of focus in the report.

This is a change from past versions of the report, which historically placed social determinants of health after identified priority health issues. This repositioning was intentional, as the team wanted to give the reader the ability to better connect the root causes to their health outcomes. Placing them before helps prime the reader to think about how, for example, not being able to afford childcare may negatively affect a person's mental health.

In the report, a root cause is first defined, then put in context for its impact in the Springfield Community. For example, the access to care section reads:

> *"Definition: Access to care is the ability and ease for a person to receive timely, appropriate, local health services. It impacts nearly all health issues.*
>
> *Impact in Springfield Community: Community members most often cite scheduling difficulties, lack of awareness about available resources and finances as their largest barriers to accessing health care."*

The Springfield Community is a major health care hub in the region, especially in Greene County. This concentration of services is beneficial for access overall. However, it can lead to gaps in access for rural populations within their communities and an overwhelming demand within Greene County. This is especially true for mental health care.

Additionally, the three most impactful root causes for mental health and heart health are listed at the top of each area of focus section. This is to keep the root causes at the top of the reader's mind as they continue through the report.

Identifying Other Areas of Interest

Another significant change in the 2025 report from previous CHNA reports is the inclusion of an "other areas of interest" section. This section includes a list of six health issues that were notable in the data and in the community but were not elevated to an area of focus. These issues include: Cancer; diabetes; lung health; communicable diseases; sexually transmitted infections; and vector-borne illnesses.

Each area of interest section includes a brief data snapshot of how the issue affects the Springfield Community but does not dive as deeply as in mental health and heart health.

The inclusion of these issues was important to the team. It gives stakeholders the opportunity to include these issues in the creation of a community health improvement plan. It also gives the community a more well-rounded view of the issues health care and public health partners in the area are interacting with every day.

As the team at SGCHD created the 2025 CHNA report, intentional decisions and changes were made to language, structure and the overall narrative. This work was done with the goal of making a report that was approachable and relevant to the community it is for.

From this process grew collaboration between teams and partners and a consistent effort to position the report in context for the community.

As a result, the 2025 Springfield Community CHNA report is strong, approachable and relevant to the people who live, work and play in the community. Because of the 2025 process, the team will approach future CHNA work with new lessons, better systems and with community at the core.

About NACCHO Exchange

NACCHO Exchange, the quarterly magazine of the National Association of County and City Health Officials (NACCHO), reaches every local health department in the country. It presents successful and effective resources, tools, programs, and practices to help local public health professionals protect and improve the health of all people and all communities.

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Special Thanks

NACCHO thanks all the contributing authors for their involvement in this issue. Thanks also go to the NACCHO staff members responsible for making this issue a success: Gwen Davis, Chloe Garofalini, Kellie Perkins, Phyllis Johnson and Cory Stowers.

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