

# Surveying the State and Local Government Public Health Workforce: The Design and Evolution of PH WINS 2024

Moriah Robins, MPH; Madyson Popalis, MPH; Lindsey Burton-Anderson, MPH, CHES; Maya Najjar, BS; Jonathon P. Leider, PhD; Rachel Hare Bork, PhD; Brian C. Castrucci, DrPH, MA

## ABSTRACT

**Context:** The Public Health Workforce Interests and Needs Survey (PH WINS) was fielded in 2014, 2017, and 2021. In the last 10 years, it has provided participating health departments and the field with data to improve recruitment and retention, strengthen workforce development efforts, guide strategic planning, and raise critical funds to improve public health infrastructure. It captures individual perspectives on engagement and satisfaction, intention to leave, training needs, and workplace infrastructure. This article describes the methods used for the 2024 administration of PH WINS.

**PH WINS 2024:** PH WINS 2024 was fielded to a nationally representative sample of staff in State Health Agency Central Offices (SHA-CO) and local health departments (LHDs) from September 9, 2024, to January 17, 2025. The instrument was revised to improve the actionability of the results, reduce respondents' cognitive burden, and align with existing standards or survey questions. PH WINS 2024 had 12 sampling frames, compared with the 3 in previous years: SHAs, members of the Big Cities Health Coalition (BCHC), and LHDs in each of the 10 Health and Human Services (HHS) Regions. All participating agencies were surveyed using a census approach.

**Participation:** Overall, staff lists for 48 SHAs, 1,178 LHDs were collected, and the survey was sent to 159 627 individuals. PH WINS received a total of 56 595 responses, a 37% of eligible respondents. The SHA frame received responses from 29% of eligible respondents, BCHC members received 33%, and all other LHDs received 51%. The nationally representative SHA-CO frame included a total of 18 110 individuals, and the nationally representative LHD frame included 38 485 individuals from all 1178 LHDs. For the first time, the national sample of LHDs included small LHDs.

**Reflections:** With the 2024 administration of PH WINS, all state and local public health departments in the United States had the opportunity to participate, yielding a nationally representative sample of small LHDs for the first time. State and local health department leaders should be empowered to use the results for workforce development and other planning. Questions were modified to become more action-oriented, rigorous, and stable over time to maximize the utility of PH WINS for years to come. Given the changing public health landscape associated with new outbreaks, disasters, and the political environment, these changes are critical.

**KEY WORDS:** governmental public health practice, methodology report, Public Health Workforce Interests and Needs Survey (PH WINS), survey research methods, workforce research

**Author Affiliations:** *de Beaumont Foundation, Bethesda, Maryland (Miss Robins, Popalis, Burton-Anderson, and Najjar, Drs Castrucci, and Hare Bork); and Region V Public Health Training Center and Center for Public Health Systems, University of Minnesota School of Public Health, Minneapolis, Minnesota (Dr Leider).*

*This work is supported by funds made available from the Centers for Disease Control and Prevention (CDC) of the US Department of Health and Human Services (HHS), National Center for STLT Public Health Infrastructure and Workforce, through OE22-2203: Strengthening US Public Health Infrastructure, Workforce, and Data Systems grant. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the US Government.*

*The authors have indicated that they have no financial relationships to disclose.*

*The authors have indicated that they have no potential conflicts of interest to disclose.*

**Human Participant Compliance Statement:** *The requirement of ethical approval for PH WINS 2024 was waived by the WCG Institutional Review Board (Western-Copernicus Group IRB) for studies involving humans.*

*This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.*

**Correspondence:** *Moriah Robins, MPH, de Beaumont Foundation, 7501 Wisconsin Avenue, Suite 1310E, Bethesda, MD 20814 (robins@debeaumont.org).*

*Copyright © 2025 The Authors. Published by Wolters Kluwer Health, Inc.*

*DOI: 10.1097/PHH.0000000000002248*

## Context

The Public Health Workforce Interests and Needs Survey (PH WINS) serves a foundational role in public health systems and services research (PHSSR) by providing nationally representative information on the state and local public health workforce in the United States. In the last 10 years, PH WINS has provided participating state and local health departments and the field with invaluable information that has been used to improve recruitment and retention, strengthen workforce development efforts, guide strategic planning, and raise critical funding to improve public health infrastructure. Most notably, the results of PH WINS are a critical component of the performance measurement and evaluation of the Public Health Infrastructure Grant, a historic \$4 billion investment supporting the public health infrastructure needs of health departments across the US.<sup>1</sup> First fielded in 2014, then again in 2017, 2021, and 2024, PH WINS is the largest survey of the government public health workforce, with data spanning the COVID-19 pandemic, multiple natural disasters, and other public health emergencies that have devastated communities across the US.

Since 2008, the state and local governmental public health workforce in the United States has struggled with large staffing losses and budget cuts, yet there has been no indication that there was a decreased need for public health services.<sup>2</sup> In fact, there may be greater demand given the increased frequency of natural disasters and other public health emergencies. More recently, the field of public health has been thrust into a period of uncertainty with federal budget cuts and layoffs, leaving state and local public health departments with more questions than answers.<sup>3,4</sup> PH WINS is one of the only surveys in the field providing nationally comparative information of this depth and breadth to state and local public health departments about their employees' perspectives, motivations, and intentions. This survey has the potential to empower leaders to answer the large questions many organizations are grappling with.

PH WINS was designed to be distinct yet complementary to other major national studies, such as the Association of State and Territorial Health Officials (ASTHO) and National Association of County and City Health Officials (NACCHO) Profiles,<sup>5,6</sup> which are completed by department leadership as a means of understanding the activities, staffing, funding, and structure of state and local government public health departments, and studies that focus on specific subgroups within the workforce, such as the Council of State and Territorial Epidemiologists (CSTE) Epidemiology Capacity Assessment.<sup>7</sup> Compared to these studies, PH WINS is unique in that participating departments are

surveyed using a census approach, inviting all individuals within the department to complete the survey.

This article outlines the preparation and administration of PH WINS 2024, including instrument revisions, recruitment and sampling approaches, and fielding strategy, as well as considerations for analyses, especially for those who may want to conduct multi-year analyses of PH WINS data.

## Previous Iterations of PH WINS

PH WINS was first fielded in the fall of 2014 after a convening hosted by the de Beaumont Foundation and ASTHO in 2013, which established the need for staff-level perspectives on training and other workforce development issues.<sup>8</sup> Prior to 2014, workforce development and strategic planning efforts were largely siloed within individual health departments and mainly included leadership perspectives. The instrument in 2014 included 4 major domains: workplace environment, training needs, emerging concepts in public health, and demographics. Participation in PH WINS 2014 included a nationally representative sample of State Health Agency-Central Office (SHA-CO) staff in 37 state health agencies (SHAs) and a local pilot consisting of 64 local health departments (LHDs) of varying sizes. Small LHDs, defined as having a staff size of less than 25 or serving a population of less than 25 000, were excluded from the local pilot. PH WINS 2014 was completed by 23 299 employees (SHAs  $n = 19\ 171$ ; 48% response rate; LHDs  $n = 3995$ ; 29% response rate). In 2014, participating agencies either opted for a census approach, inviting all staff to participate, or chose to take a sample of staff from the agency. This is a critical difference between PH WINS 2014 and subsequent administrations of the survey. PH WINS in 2014 marked the first opportunity for staff to weigh in on their needs and desires, and proved to be a viable method of study for state and local government public health agencies across the United States.

PH WINS was fielded again in 2017 and 2021. Between 2014 and 2017, due to feedback from participating agencies and other key stakeholders, the training needs section was redesigned to include a more robust selection of skills specifically written for different supervisory levels. While these are the most prominent revisions, additional changes to the instrument were made and are well documented in early articles in this journal.<sup>9–11</sup> The instrument, overall, focused on the same 4 major domains as PH WINS 2014. The most significant change occurred in the sampling strategy for PH WINS 2017, where all SHAs, all LHDs that were members of the Big Cities Health Coalition (BCHC), and

a nationally representative sample of other LHDs were recruited to participate. Small LHDs were excluded from the nationally representative sample. Additionally, unlike in 2014, all staff in participating agencies were invited to participate. PH WINS 2017 was completed by 47 604 employees, representing 47 SHAs ( $n = 35\ 909$ ; 46% response rate) and 96 LHDs ( $n = 11\ 695$ ; 49% response rate).

PH WINS was initially designed to be administered every 3 years, off-cycle with other previously mentioned national studies. However, the onset of the COVID-19 pandemic shifted the planned 2020 administration to 2021, as the state and local government public health workforce was focused on COVID-19 response during that time. The PH WINS 2021 instrument was heavily revised to assess the pandemic's toll on the workforce, emotional, mental, and physical, as well as the workforce's ability to rise to the country's renewed focus on "Racism as a Public Health Crisis." Information on the extent of these revisions is available in early articles in this journal.<sup>11</sup> Additionally, the sampling strategy for PH WINS was, yet again, expanded to include more LHDs, including small LHDs that were previously excluded. Through a pilot with the Region V Public Health Training Center (serving Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) and the Northwest Center for Public Health Practice (serving Alaska, Idaho, Oregon, and Washington) all local health departments in these states were invited to participate in PH WINS.<sup>12</sup> This led to a nearly 200% increase in LHD participation.<sup>12</sup> PH WINS 2021 was completed by 44 732 employees, 35% of eligible respondents, representing 47 SHAs ( $n = 27\ 346$ ; 34% response rate) and 288 LHDs ( $n = 17\ 386$ ; 36% response rate).

The full history of PH WINS, including sample strategies, instrument revisions, and participation rates, is documented in earlier articles in this journal.<sup>9-11</sup>

## PH WINS 2024

PH WINS 2024 opened on September 9, 2024, and closed on January 17, 2025. It was originally planned to close on January 10; however, it remained open for one more week to accommodate several agencies that started later in the fielding process. Approximately 77% of responses were received by the end of October (approximately the first 8 weeks), an additional 6% completed the survey by the end of November, 12% by the end of December, and the remainder by the time the survey closed. The following section will details changes to the survey instrument, the recruitment and sampling strategy, participation, and the fielding preparation and strategy.

## Instrument revisions

The major priority for PH WINS 2024 was to learn from previous PH WINS administrations and feedback from the field to make the data as actionable as possible. The following 3 questions were used to guide the instrument revision process:

1. How can existing items be modified to be more actionable?
2. Are there new topics that would be interesting to pursue?
3. How can modules be used to ask additional questions without fatiguing respondents?

## Process

The instrument revision process lasted from September to November 2023 and included gathering feedback from stakeholders, partners, and past participants, and conducting a psychometric assessment. Feedback was gathered both actively—through conversations, meetings, or workshops—and passively—through electronically submitted comments and suggestions. Seventy individuals spanning 30 organizations were asked to provide passive feedback. Most individuals included in the active feedback process chose to take a more passive approach, except for a meeting hosted by the ASTHO, where human resources and workforce development directors participated in conversations and activities aimed at obtaining their feedback. Universally, feedback uncovered a need to align PH WINS with existing standards, particularly topics such as engagement, satisfaction, well-being, gender, race, and job classification. Various new topics were suggested as well, such as pathways into one's current role or agency, and public health infrastructure and workforce. The topic proposed for a modular approach included questions specific to executives or agency directors and those 35 and under.

A psychometric assessment analysed the performance of the survey, such as the time it took to complete and the validity of questions. This assessment revealed an opportunity to modify the format of the training needs assessment, remove items from matrices that overlapped, and refine rating scale options to be consistent across the entire instrument. Each of these revisions aimed to reduce the cognitive burden on respondents and, hopefully, increase participation.

## Revisions

These 2 processes, plus hours of research and additional conversations with experts in survey design, led to

### Box 1. Summary of Instrument Revisions

- Refined rating scales to remove neutral options.
- Restructured the survey so that workforce characteristics, a question set with lower cognitive demand, would appear first.
- Swapped the workplace engagement matrix with the Thriving from Work scale.
- Removed the satisfaction question around job security and added questions around work unit, supervisor, and benefits.
- Added questions around fairness in the workplace.
- Removed follow-up questions for participants who were intending to leave, given their utility and past use.
- Removed COVID-specific questions added to the 2021 instrument.
- Restructured the training needs assessment to capture the same data but reduce cognitive demand.
- Added 2 items to assess organizational support for training.
- Added questions related to remote work, non-traditional benefits, and organizational commitment to community engagement. These questions replaced previous questions dedicated to understanding the workforce's ability to address racism as a public health crisis.
- Aligned sex, gender, race, and ethnicity questions with OMB standards.
- Added question about veteran status.
- Added questions associated with student loan debt and the continued burden.
- Included 3 special question sets:
  - Recruitment of staff 35 years old and under
  - Supervisor skills and training
  - Epidemiology competency.

modest changes to the instrument. Overall, in addition to structural changes, the focus of the survey changed from COVID-19 utilization, harassment, trauma, and Racism as a Public Health Crisis, all emphasized in 2021, to employee well-being, organizational structure, and flexibility and benefits. Box 1 summarizes these changes. Some revisions were applied to the entire instrument or changed the structure of the survey, while others pertained to specific language in particular questions.

A major change to the survey design was the removal of the neutral response option (“neither agree nor disagree”) across relevant questions. This decision was guided by psychometric analysis, which indicated that

the neutral option reduced clarity and response utility. As a result, most items now use a 4-point agreement scale: *strongly disagree*, *disagree*, *agree*, *strongly agree*. This change was intended to encourage respondents to express clearer sentiment and enhance the analytical value of the data. Where appropriate, such as in the satisfaction items, the response format was standardized to align with the 4-point agree/disagree scale. This replaced the previous 5-point satisfaction scale (very dissatisfied to very satisfied), which included a neutral option. In addition, satisfaction items were reworded as statements rather than questions (eg, “I am satisfied with my job” instead of “How satisfied are you with your job?”), to improve consistency across the survey and align with best practices in survey design. It is important to note that this change affects multi-year analyses, which are described in further detail later in this paper. However, improving clarity and response utility of these questions now and for future administrations of PH WINS outweighed the impact on comparability.

Another change informed by the psychometric assessment was the revision of the importance scale in the training needs section. The original response options (not important, somewhat unimportant, somewhat important, very important) were replaced with not important, somewhat important, moderately important, very important. This adjustment was made after findings showed that the “*somewhat unimportant*” option was rarely selected, likely due to its inconsistent fit within a scale intended to measure degrees of importance. Additionally, in response to respondent feedback and findings from the psychometric assessment, the training needs section was redesigned to reduce respondent burden. Follow-up interviews showed that respondents found this section to be the most taxing, and the data showed elevated drop-off rates. Psychometric experts recommended transitioning from the previous matrix format to a paging layout with fewer items per screen, a format shown in prior research to improve participant engagement and completion rates.<sup>13-17</sup> To implement this change, the training needs section was restructured so that each of the 10 training domains was presented across 2 separate pages. On the first page, respondents rated the importance of each item to their job. If an item was rated as moderately important or very important, the respondent was then asked to assess their skill level for that item on the following page. Items deemed not important were skipped in the skill-level assessment to reduce respondent burden.

In response to feedback from agencies for more actionable data and to reduce cognitive burden for participants, the 2021 workplace engagement questions were replaced with the short-form Thriving

from Work Questionnaire.<sup>18</sup> The new scale is a validated measure of work-related well-being and consists of 8 items using a 6-point frequency scale.<sup>19</sup> Similarly, the rotating section in 2024 shifted focus from Racism as a Public Health Crisis to Public Health Infrastructure. This change was designed to better capture issues that are within an agency's control and centred on remote work policies, nontraditional benefits, and agency-level strategies for community engagement.

In alignment with revised Office of Management and Budget (OMB) standards, demographic questions were updated. Race and ethnicity were combined into a single multi-select item that includes a Middle Eastern or North African response option and integrates *Hispanic or Latino* within the single question. The prior "two or more races" option was eliminated in favor of allowing multiple selections. These updates intended to enhance inclusivity and data comparability with federal datasets.

All revisions were tested through extensive cognitive interviews and pre-testing. A total of 49 cognitive interviews were conducted by contracted psychometric experts following a sampling strategy aligned with the respondent distribution from the 2021 PH WINS administration. Participants were recruited across regions, job classifications, and supervisory statuses. Each 45 to 60 minute session followed a standardized protocol where participants completed a draft version of the survey. Interviews were recorded, transcribed, and analyzed using thematic analysis to identify key patterns related to item clarity, format, cognitive burden, and survey structure.

### **Recruitment**

Recruitment and sampling for PH WINS 2024 looked different from past cycles of PH WINS. Due to the successful collaboration with the Region V Public Health Training Center and Northwest Center for Public Health Practice in 2021, all local health departments contributed with certainty for the first time. This means that all state and local health departments across the nation were eligible to participate in PH WINS 2024.

There were 12 sampling frames, compared with the 3 in previous years: SHAs, members of BCHC, and LHDs in each of the 10 HHS Regions. ASTHO recruited SHAs, BCHC recruited its members, and each Regional Public Health Training Center (PHTC) recruited the LHDs in their region that were not part of the first 2 frames. In some states, other organizations—such as the State Association of County and City Health Officials (SACCHOs)—stepped in to support recruitment efforts. ASTHO and BCHC had similar approaches—contact leadership in all health departments, obtain permission

from health officials to participate in PH WINS, and designate a Workforce Champion to serve as a fielding partner (more below on the role of the Workforce Champion). While the final goal of obtaining permission and identifying a workforce champion was the same for the PHTCs, the strategy for reaching out to health departments differed by partner, and the number of health departments the partner needed to contact varied by state due to the state's governance structure.

A state's governance structure is tied to recruitment and participation. There are 4 types of governance: decentralized, mixed, shared, and centralized. For PH WINS, governance describes the relationship between the SHA and LHDs for staffing.

1. *Decentralized*: In decentralized states, LHDs are staffed independently of the state. For PH WINS, this means that all LHDs in decentralized states had to sign on individually to participate.
2. *Mixed or Shared*: In mixed or shared states, LHDs are either partially staffed independent of the state and partially by the state or some LHDs are fully staffed by the state while others are staffed independently of the state. Any LHD that is fully or partially staffed, independent of the state, needs to be recruited individually. However, the SHA staff list for that state could include LHD staff who would then contribute to the results of the appropriate LHD.
3. *Centralized*: In centralized states, LHDs are fully staffed by the SHA. This means that these LHDs do not need to be recruited independently to participate because their staff will receive the survey through the SHA.

The partnership between the de Beaumont Foundation and its partners began in February 2024. Partners were onboarded as health department recruiters, becoming with the overarching goal of recruitment and the anticipated recruitment and fielding timeline. They were provided with tools to aid in the process, including a template for tracking points of contact at health departments, as well as an implementation kit containing FAQs, talking points, and additional information. The initial health department recruitment timeline was expected to occur between February 1, 2024, and May 31, 2024. Partners were then tasked with gathering and standardizing the collected staff lists and uploading them to a secure, password-protected folder by July 31, 2024.

During the recruitment process, it became clear that no 2 regions were the same, and additional time was needed to strengthen relationships between PHTCs and health departments to secure participation in the survey. Consequently, the recruitment process was

extended to early November 2024. The recruitment strategies of each PHTC varied. Additionally, recruitment tactics and resources differed according to the size of the health department:

- For some regions, such as Regions 2, 3, and 7, an individualized approach was the best way to secure health department sign-on. This involved reaching out to health officials and directors and targeting email communication to the health agency. As this survey was the first opportunity for small health departments to participate, many felt sceptical about contributing their responses and perspectives. With the support of guidance, language, and relationship building, many small health departments were able to recognize how they could fill the critical gap by sharing their voices.
- Regions 1, 4, 5, 8, and 9 leveraged trusted voices in their communities to reach LHDs. This included collaborating with SACCHOs, community training partners, and SHAs.

### **Fielding preparation**

#### **Workforce champions**

Upon agreeing to participate in PH WINS 2024, department leadership designated a PH WINS workforce champion (WC), generally human resources or workforce development personnel, who works closely with the PH WINS team to prepare for fielding. The WC role included the following activities:

- Attending a Workforce Champion Introduction webinar and a Preparing for Fielding webinar. The Workforce Champion Introduction webinar, offered weekly in June and July 2024, provided an overview of PH WINS, the responsibilities of WCs, and guidance on staff list collection. The Preparing for Fielding webinar, offered weekly throughout August 2024, covered the fielding timeline, strategies for encouraging participation, and information on response rate requirements.
- Gathering the department's full staff list, including temporary and contractor staff, for survey administration. WCs were able to update their staff list at designated times during fielding to reflect staffing changes.
- Promoting PH WINS within their department using materials provided in the Workforce Champion Implementation Kit and monitoring their agency's progress via a Tableau-based response rate dashboard, which was updated by our team weekly throughout fielding. The dashboard displayed the

number of surveys distributed and completed, as well as the remaining number needed for agencies to reach their minimum number of responses required. The minimum number of responses required was calculated based on the size of the agency and a 5% margin of error.

To support implementation, WCs received weekly Workforce Champion Wednesday emails from the PH WINS team from June 2024 through the close of fielding. These emails included deadline reminders, response rate updates, and tips for encouraging participation. Weekly office hours were also offered during fielding as an optional resource for WCs seeking additional support or guidance.

#### **Staff list collection and cleaning**

Participants for PH WINS are identified through a staff list provided by each participating health department. WCs submitted staff lists using an Excel template provided by the PH WINS team, along with an organizational chart, to their designated recruitment partner. These staff lists included names, email addresses, and additional information such as division, bureau, or unit for larger agencies requesting divisional data.

PH WINS recruitment partners reviewed and standardized the submitted staff lists to ensure consistency with the required format. Standardization included verifying column names and appending key variables such as agency ID, sampling frame, region, state, and governance structure. The finalized staff lists were compiled and uploaded into Qualtrics, the web-based platform used to administer PH WINS. During fielding, WCs were able to provide updates to their staff lists so that employees who had left their organizations could be removed from the response rate calculation, and newly hired employees would have the opportunity to participate.

#### **Survey administration**

PH WINS 2024, as with previous years, was administered using Qualtrics, a Web-based survey platform. Recruitment for PH WINS extended past the survey start date on September 9, 2024. For this reason, there were a total of 3 start dates ("cohorts"), which were like the strategies for PH WINS 2017 and 2021. This allowed the PH WINS team and recruitment partners additional time to recruit hard-to-reach agencies and work with WCs to prepare for fielding.

Cohort 1 started PH WINS on September 9, 2024, and received a total of 6 reminder emails before the survey closing on January 17, 2025. Cohort 2 started

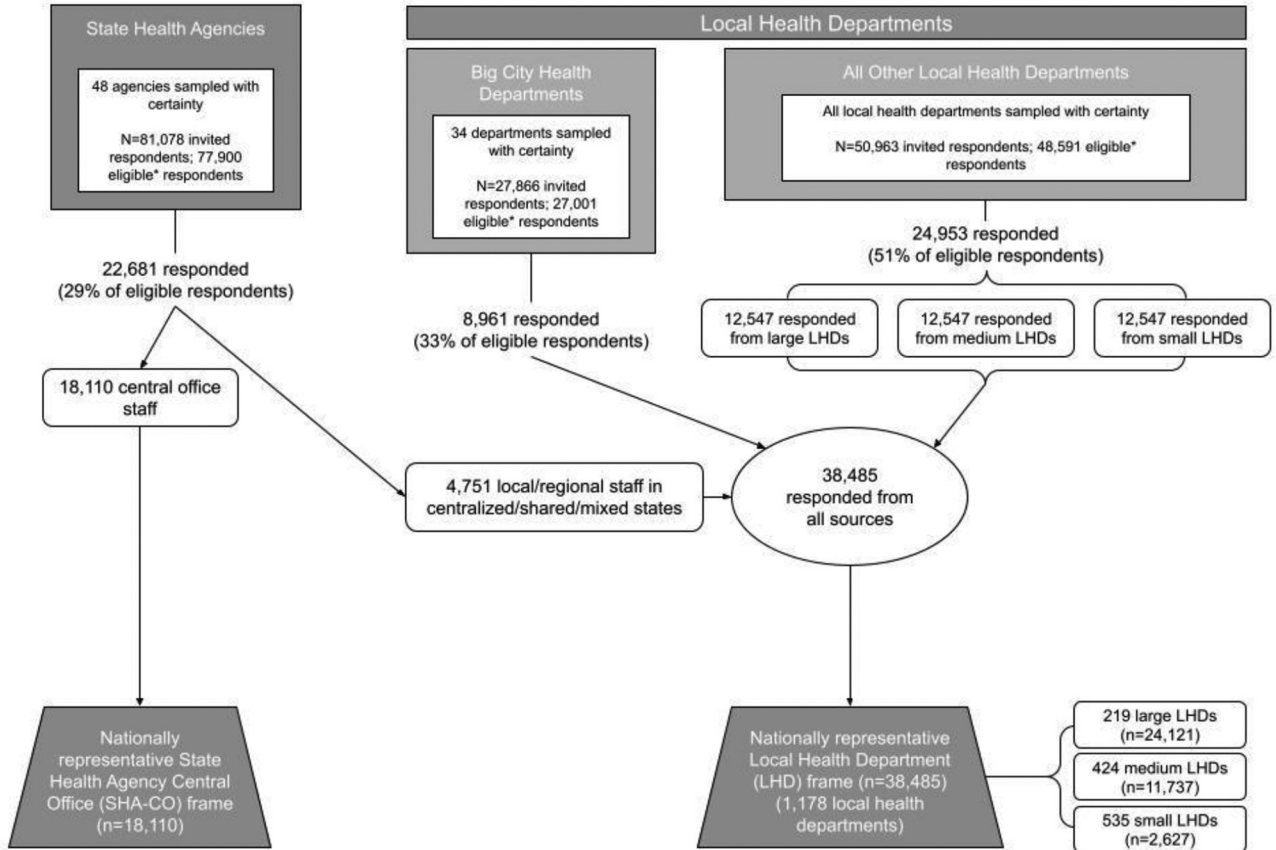
on October 14, 2024, and Cohort 3 started on December 2, 2024; both received a total of 5 reminder emails prior to the survey close date. The survey officially closed on January 17, 2025, to accommodate several agencies that had started later in the process or had IT issues. However, the end date publicized to most participants was January 10, 2025. Consistent with previous administrations of PH WINS, the end date publicized in each reminder email was a moving target to encourage participants to complete the survey in a timely manner. Respondents were not required to complete the survey in one sitting. Reminder emails were sent to all respondents who had not started or completed the survey. Appendix Table 1 describes the number of participants in each cohort, the cohort start date, the dates of reminder emails, and the end date publicized in each email sent to participants.

Staff lists for Cohort 2 and Cohort 3 were collected by September 20, 2024, and November 8, 2024, respectively. The process for which staff lists were collected, standardized, and compiled is the same as mentioned above. Cohort 1 agencies had the opportunity to submit staff list updates on the aforementioned 2 dates, and Cohort 2 agencies could submit

a new staff list on the November date. Cohort 3 did not have the opportunity to submit an updated staff list. These updates allowed agencies to identify individuals who had left the agency and offered new staff the ability to take the survey. Employees who had left and had not completed the survey were removed from the response rate calculation. If the departed employee had already completed the survey, their response was included.

**Participation**

PH WINS 2024 was completed by 48 SHAs and 1178 LHDs (Figure 1 and Appendix Figure 2). In total, 159 627 individuals were invited to participate in PH WINS 2024. After accounting for bounced or failed email addresses and those who had left their organization and not completed the survey, the number of eligible respondents was 153 492. PH WINS received 56 595 responses for a 37% response rate of eligible respondents. In the initial SHA frame, 81 078 respondents were invited to participate (77 900 were eligible), and 22 681 responded for a 29% response rate of eligible respondents. Due to the governance



\*Individuals whose emails bounced or failed or those left their organization before completing the survey were not considered eligible respondents

**FIGURE 1** Overview of Fielding Approach, Participation, and Final National Sample

structure, 4751 of these SHA respondents work in LHDs, leaving 18 110 respondents associated with the final SHA-CO frame. In the BCHC frame, 27 866 employees were invited to complete the survey (27 001 were eligible), and 8961 responded for a 33% response rate of eligible respondents. In the LHD frame, inclusive of all HHS Regions, 50 683 individuals were invited to participate (48 591 eligible respondents), and 24 953 responded for a 51% response rate of eligible respondents. Of these respondents, 50% (12 547) work in large LHDs, 42% (10 469) work in medium LHDs, and 8% (1937) work in small LHDs. When accounting for respondents in BCHC health departments and those in LHDs but contributed through the SHA frame, a total of 38 485 employees working in LHDs responded to PH WINS—63% (24 121) work in large LHDs, 30% (11 737) work in medium LHDs, and 7% (2627) work in small LHDs. This equates to 219 large LHDs, 424 medium LHDs, and 535 small LHDs.

In 2024, PH WINS included small LHDs in the nationally representative LHD frame. In prior years, employees in small LHDs were only invited to complete PH WINS if they were included on the SHA staff list, which was the case in many, but not all, non-decentralized states. Due to the partnership with the Regional PHTCs and their support in direct recruitment of LHDs in their respective regions, small LHDs were not excluded from participating as individual entities, and thus, there is enough participation to be considered representative of small LHDs nationally.

## **Analyzing PH WINS 2024**

### **Weighting**

The weighting programs developed for PH WINS 2021 were deployed again to create multiple sets of weights, both the sample design weights as well as Balanced Repeated Replication (BRR) for variance estimation. The programs were constructed to allow for necessary changes in response to the final set of completed surveys and any challenges that arose (eg, allowing for collapsing across regions to account for small sample sizes). Due to the flexible nature of the program, no major changes needed to be made to include small LHDs in the final nationally representative LHD frame. The final weights were created in Stata 17 (StataCorp LLC, College Station). The program requires 3 input files: a final list of all LHDs in the United States, regardless of whether they participated; a list of all SHAs, regardless of whether they

participated; and a list of all staff invited to complete the survey. The following details the creation of the final weights.

The SHA-CO national sample weight was constructed in a multi-step process: (1) A sample design weight was calculated at the state level for each participating SHA to account for any subsampling of staff; (2) A nonresponse adjustment was applied to the sample design weight to bring the total weighted count of central office completed surveys in alignment with the known staff totals of central office employees for each SHA; (3) a post-stratification adjustment was applied to the nonresponse adjusted weight to bring the total weighted count of staff in each of the HHS regions in alignment with region level staff totals providing the final sample weights. The weights summed across participating SHAs in an HHS region will equal the total population of SHA-CO employees in that region. Note that Regions 1 and 2 were collapsed due to sample size constraints at the local level.

The local national sample weights were calculated for the combined sample comprised of completed surveys from all LHDs—BCHC departments, LHDs in decentralized states that were invited as individual entities, and from the completed surveys of local employees contributed through SHA staff lists for non-decentralized states. Similar to the SHA weights, the multi-step weighting process to create the local sample weights was as follows: (1) A sample design weight was calculated for all LHD staff; (2) A nonresponse adjustment was applied to the sample design weight to bring the total weighted count of completed surveys in alignment with the known staff totals for each department; (3) a post-stratification adjustment was applied to the nonresponse adjusted weight to bring the total weighted count of staff in each of the 10 HHS regions by population served size strata in alignment with staff totals; (4) the post-stratified weights were trimmed to remove outliers, ie, weights that were 3 times the Inner Quartile Range (IQR) greater than the median were capped at 3 times the IQR plus the median. These final local national weights summed across participating LHDs in an HHS region will equal the total population of local employees in that region, as well as by population served size above 250 000 (A-250k), between 25 000 and 250 000 (B-250k), and below 25 000 (E-25k). Note that Regions 1 & 2 were collapsed due to sample size constraints among local health departments.

In PH WINS, Balanced Repeated Replication (BRR) weights are created, though Taylor-series linearization is sometimes used when computationally-intensive analyses are not possible. In BRR, multiple replicates (also called subsamples) are drawn from

a full sample according to a specific resampling scheme, and require 2 primary sampling units (PSU) per strata design. For the SHA sample, the state SHAs are collapsed into 39 pseudo strata, collapsing the smallest SHAs within the HHS region as needed, and then creating 2 pseudo PSUs per strata by randomly assigning completed cases equally to each of the 2 pseudo PSUs. For the local sample, pseudo-strata are created again at the state level, within the region, by collapsing departments together until less than 40 pseudo-strata are defined. The collapsing rules allow for approximately equal sizes for each pseudo-strata while ensuring that each pseudo-strata also crosses all 3 sized strata within each region (A-250k, B-250k, E-25k). This allows for homogeneous strata to be created. The resulting PSUs within strata are collapsed down to 2 by randomly assigning each case in the pseudo-stratum to PSU 1 or PSU 2. BRR and Taylor series weights will yield comparable point estimates, but slightly different variance estimators, with BRR being more precise.

### ***Considerations for 2024 analyses***

PH WINS 2024 is not without limitations that should be considered when using these data in analyses. PH WINS is unique in that there are 2 opportunities for non-response—at the agency level and at the individual level. Non-response assessment shows that the primary potential for bias lies at both levels. All agencies were sampled with certainty, yet the lowest response rates were among the larger agencies—SHAs and BCHC member LHDs. Perhaps the attention provided to other LHDs by the PHTCs and their chosen partners increased the chance of an individual responding to the survey, as those agencies could have been more involved. While launch and reminder emails are sent to all participants, the agencies with the greatest response rates are those that provide incentives and send their own reminders. The use of balanced repeated replication weights and the broader post-stratification account for this complex sampling design, as does the weight trimming, but this is a consideration for those planning to use the data for national analyses.

### ***Considerations for multi-year PH WINS analyses***

PH WINS 2024 is roughly comparable to PH WINS 2021 and 2017, with some exceptions. In 2021, the decision was made to include non-permanent staff in the SHA-CO frame to account for increased staffing in response to the COVID-19 pandemic. A similar decision was made for PH WINS 2024, meaning that to

make directly compatible estimates between PH WINS 2024 and 2021 with 2017 estimates, we will need to exclude non-permanent staff. Additionally, the 2024 national sample includes small LHDs, which was not the case in 2017 and 2021. For national or LHD comparisons across years that would include small LHDs, estimates would need to exclude small LHDs using a Setting variable to create directly compatible estimates. A more appropriate approach to conducting longitudinal comparisons would be to create cohorts of departments that participated across years. This would solve for the permanency status of employees and the inclusion of small LHDs because different agencies participated in each iteration of the survey, and there is a distinct set of agency-based weights included in the restricted data sets. While these data sets are not often available to researchers, this type of dataset can be prepared for researchers who are interested and obtain permission to conduct analyses that require this comparison. Analysis between 2014, 2017, and 2021 is only possible for the nationally representative SHA-CO frame, and possibly for big cities (contingent on the analysis in question), as the nationally representative local health department frame did not exist until 2017.

In addition to sampling changes that affect comparisons across years, there are 3 main instrument changes in PH WINS 2024 that also affect comparisons between 2024 and other years of the survey. First, an additional question was asked to discern whether an employee received an associate's, bachelor's, master's, or doctoral degree in public health. Through the inclusion of this question, an additional 7% of employees were identified as having a public health degree, as compared to doing a direct comparison from year to year. Additionally, in 2017 and 2021, questions about job, organization, and pay satisfaction were asked on a 5-point Likert scale ranging from very satisfied to very dissatisfied. In 2024, the scale was reduced to 4 points, removing the neutral option. This makes direct item comparisons (eg, for satisfaction) from 2024 technically incomparable to previous years, especially where analyses using dichotomized results are employed. Finally, the training needs questions were redesigned, adjusting the 4-point scale assessing the importance of the skill from very important, somewhat important, somewhat unimportant, and not important to very important, moderately important, somewhat important, and not important. Initial assessments show that the importance of skill has decreased among all respondents, indicating that the change in the scale also affected how important someone might rate the skill to their work. These initial analyses show that the top training needs are

## Implications for Policy & Practice

- PH WINS 2024 was revised to improve actionability of results, reduce respondents' cognitive burden, and align with existing standards and survey questions. The final instrument included a new section exploring flexibility in the workplace and non-traditional benefits, as well as three special topic modules on the motivations and pathways of the 35 and under workforce, competency of epidemiologists, and training and skills of supervisors.
- PH WINS 2024 can be compared to past PH WINS data to identify workforce trends over time. There are a few changes made to PH WINS 2024 that should be considered prior to conducting these types of analyses.
- For the first time, all state and local health departments were eligible to participate in PH WINS 2024. This led to the first nationally representative sample of small local health departments (staff <25, serving <25,000).
- Participating agencies, regional public health training centers, national membership organizations, and the federal government can use PH WINS to identify strengths and gaps of the workforce to develop supports that meet the unique needs of the government public health workforce, ultimately improving recruitment and retention."

still comparable year to year, though the percentage of need will have decreased, which is due to the change in the wording of the question.

## Reflections for the next PH WINS

In each fielding of the PH WINS, more staff have been included in the respondent pool, and more types of staff have been invited to participate. With the 2024 fielding, all state and local public health staff in the US were invited to participate. Fieldings of PH WINS to federal agencies is a logical next step, as it would be in Indian Country. Logistics abound when considering both new potential samples. Among states and locals, more can be done to engage local departments in participating in PH WINS and receiving agency- and state-specific reports that may be useful in workforce development and other planning. Given the changing public health landscape associated with new outbreaks, disasters, and the political environment, consistency is also critical. Questions have been modified in this fielding of PH WINS to become more action-oriented, rigorous, and stable over time. Fielding these questions reliably and consistently will maximize the utility of PH WINS for years to come.

## References

1. Centers for disease control and prevention. public health workforce development - PH infrastructure grant. Available at: <https://www.cdc.gov/infrastructure/phig/index.html>. Accessed June 16, 2025.
2. Leider JP, Mac McCullough J, Singh SR, et al. Staffing up and sustaining the public health workforce. *J Public Health ManagePract.* 2022;29(3):10.1097.
3. Unger L, Smith MR. Trump administration's deep cuts to public health leave system reeling. *PBS News.* 2025;48:101173.
4. Winnike AN. *Updates to HHS Restructuring and Funding Cuts: Impact on State and Local Public Health.* The Network for Public Health Law; 2025.
5. Association of State and Territorial Health Officials. *Profile of State and Territorial Public Health.* Available at: <https://www.astho.org/topic/public-health-infrastructure/profile/#workforce>. Accessed June 16, 2025
6. National Association of County & City Health Officials. National profile of local health departments. Available at: <https://www.naccho.org/resources/lhd-research/national-profile-of-local-health-departments>. Accessed June 16, 2025.
7. Council for State and territorial epidemiologists. workforce: capacity assessments. Available at: <https://www.cste.org/members/group.aspx?id=106076>. Accessed June 16, 2025.
8. Kaufman NJ, Castrucci BC, Pearsol J, et al. Thinking beyond the silos: emerging priorities in workforce development for state and local government public health agencies. *J Public Health Manag Pract.* 2014;20(6):557-565. doi:10.1097/PHH.000000000000076.
9. Leider JP, Bharthapudi K, Pineau V, Liu L, Harper E. The Methods Behind PH WINS. *J Public Health Manag Pract.* 2015;21(6):S28–35. doi:10.1097/PHH.0000000000000285.
10. Leider JP, Pineau V, Bogaert K, Ma Q, Sellers K. The methods of PH WINS 2017: approaches to refreshing nationally representative state level estimates and creating nationally representative local level estimates of public health workforce interests and needs. *J Public Health ManagePract.* 2019;25:S49–S57.
11. de Beaumont Foundation. *PH WINS 2021 Methods, Dashboard Notes, and Survey Instrument.* Bethesda, MD: de Beaumont Foundation;14-33. 2021.
12. Kulik PKG, Leider JP, Rogers M, et al. PH WINS for all: the critical role of partnerships for engaging all local health departments in the public health workforce interests and needs survey. *J Public Health ManagePract.* 2023;29(1):S48–S53. doi:10.1097/PHH.0000000000001635.
13. Couper MP, Traugott MW, Lamias MJ. Web Survey Design and Administration. *Public Opin Q.* 2001;65(2):230-253. doi:10.1086/322199.
14. Peytchev A, Couper MP, McCabe SE, Crawford SD. Web survey design: paging versus scrolling. *Public Opin Q.* 2006;70(4):596-607. doi:10.1093/poq/nfi028.
15. Couper MP, Tourangeau R, Conrad FG, Zhang C. The design of grids in web surveys. *Soc Sci Comput Rev.* 2013;31(3):322-34r5. doi:10.1177/0894439312469865.
16. Roßmann J, Gummer T, Silber H. Mitigating satisficing in cognitively demanding grid questions: evidence from two web based experiments. *J Surv Stat Methodol.* 2017;6(3):376-400. doi:10.1093/jssam/smx020.
17. Debell M, Wilson C, Jackman S, Figueroa L. Optimal response formats for online surveys: branch, grid, or single item? *J Surv Stat Methodol.* 2019;9(1):1-24. doi:10.1093/jssam/smz039.
18. Peters SE, Sorensen G, Katz JN, Gundersen DA, Wagner GR. Thriving from Work H, and Well-being. Thriving from Work Questionnaire *Harvard T.H. Chan School of Public Health.* Available at: <https://centerforworkhealth.sph.harvard.edu/resources/thriving-work-questionnaire>. Accessed June 16, 2025.
19. Peters SE, Sorensen G, Katz JN, Gundersen DA, Wagner GR. Thriving from work: conceptualization and measurement. *Int J Environ Res Public Health.* Jul 5 2021;1813:7196. 10.3390/ijerph18137196.

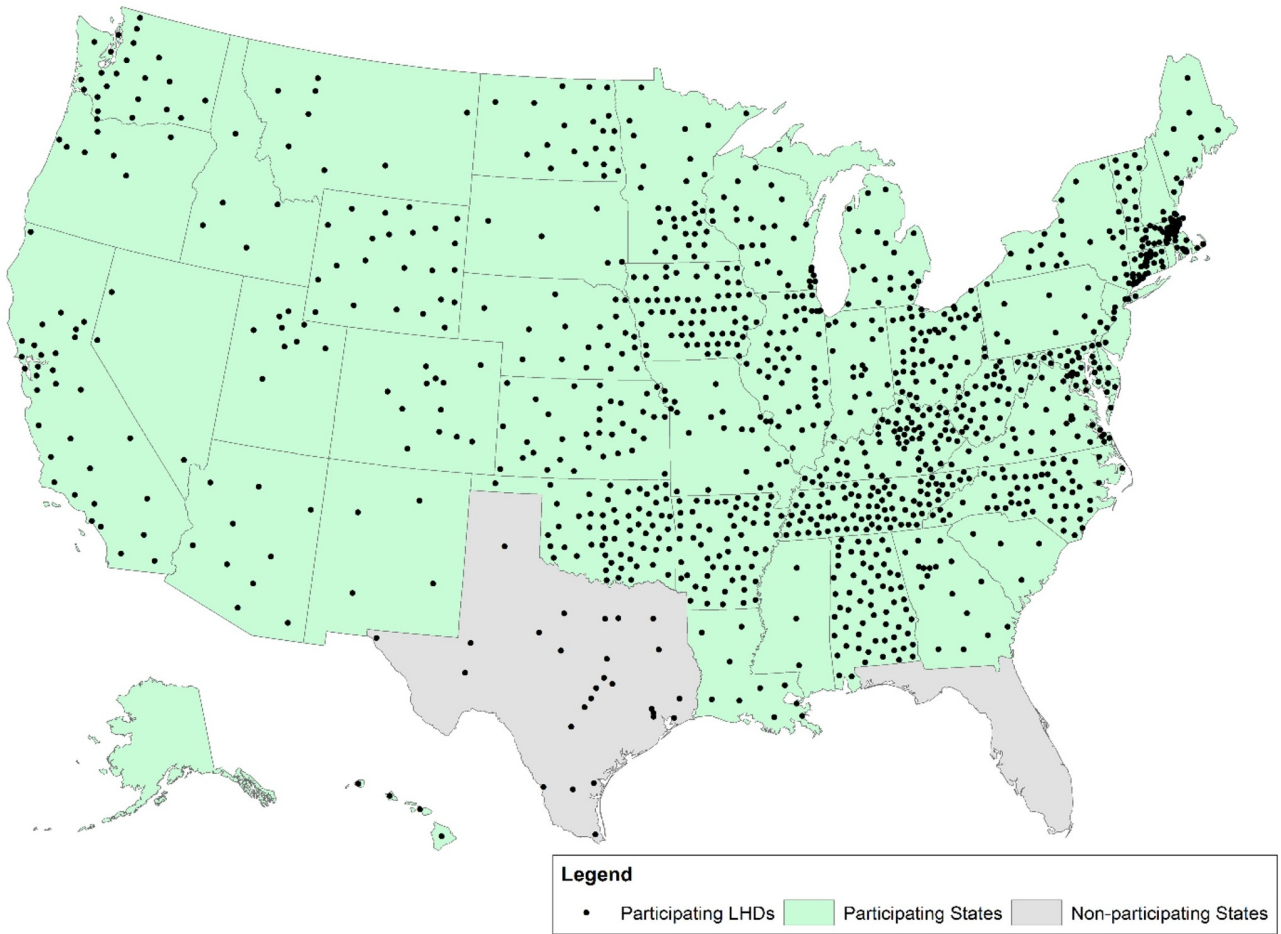
## APPENDIX.

<b>Table</b>						
<b>Cohort fielding strategy for PH WINS 2024</b>						
	<b>Cohort 1</b>		<b>Cohort 2</b>		<b>Cohort 3</b>	
<b>Employee Totals</b>						
Total invited	133,386		16,582		9,659	
Total eligible	128,072		16,092		9,388	
Total completed	47,643		6,064		2,888	
Response Rate	36%		37%		30%	
<b>Dates</b>	<b>Email Type</b>	<b>End Date<sup>a</sup></b>	<b>Email Type</b>	<b>End Date<sup>a</sup></b>	<b>Email Type</b>	<b>End Date<sup>a</sup></b>
Sep 9, 2024	L	9/27				
Sep 23, 2024	R	9/27				
Sep 30, 2024	R	10/18				
Oct 14, 2024			L	11/8		
Oct 21, 2024	R	11/8				
Nov 4, 2024			R	11/8		
Nov 12, 2024			R	11/22		
Dec 2, 2024	R	12/20	R	12/20	L	12/20
Dec 9, 2024					R	12/20
Dec 16, 2024	R	12/20	R	12/20	R	12/20
Dec 20, 2024			R	12/20	R	12/20
Jan 6, 2025	R	1/10	R	1/10	R	1/10
Jan 10, 2025					R	1/10
Jan 17, 2025 <sup>b</sup>						
<b>Total # of emails</b>	<b>7</b>		<b>7</b>		<b>6</b>	

Abbreviations: L indicates the cohort launch date and R indicates a reminder email

<sup>a</sup>The closing date for the survey was a moving target to encourage participation

<sup>b</sup>Participating agencies conducted their own outreach to staff during the final week.



**APPENDIX FIGURE 2.** Map indicating PH WINS 2024 participation