Awareness of and Confidence to Address Equity-Related Concepts Across the US Governmental Public Health Workforce

Jamila M. Porter, DrPH, MPH; Brittany Giles-Cantrell, MPH; Kay Schaffer, MPH; Elizabeth Arend Dutta, MPH; Brian C. Castrucci, DrPH

ABSTRACT

Objective: To assess the governmental public health (GPH) workforce’s awareness of and confidence to address health equity, social determinants of health (SDoH), and social determinants of equity (SDoE) in their work.

Design, Setting, and Participants: A nationally representative population of US local and state GPH employees (n = 41890) were surveyed through the 2021 Public Health Workforce Interests and Needs Survey (PH WINS 2021).

Main Outcome Measures: Self-reported awareness and confidence were explored by self-identified racial and ethnic group identity, public health degree attainment, and supervisory status.

Results: GPH employees reported higher levels of awareness across concepts (health equity—71%, 95% confidence interval [CI]: 70.5—71.6; SDoH—62%, 95% CI: 62.3-63.5; SDoE—48%, 95% CI: 47.2-48.4) than confidence (health equity—48%, 95% CI: 47.8-49.0; SDoH—46%, 95% CI: 45.4-46.7; SDoE—34%, 95% CI: 33.4-34.6). Self-identified Black or African American employees reported higher confidence across all concepts (health equity—56%, 95% CI: 54.3-57.6; SDoH—52%, 95% CI: 50.8-54.1; SDoE—43%, 95% CI: 41.3-44.6) compared to other self-identified racial groups. Employees with a PH degree reported higher confidence across all concepts (health equity—65%, 95% CI: 63.8-66.8; SDoH—73%, 95% CI: 71.3-74.1; SDoE—39%, 95% CI: 36.9-40.1) compared to employees without a PH degree (health equity—45%, 95% CI: 44.8-46.1; SDoH—41%, 95% CI: 40.6-41.9; SDoE—33%, 95% CI: 32.6-33.8). We found an inverse relationship between supervisory status and confidence to address SDoE: Nonsupervisors reported higher confidence (35%, 95% CI: 29.2-31.9) than supervisors (31%, 95% CI: 29.6-31.9), managers (31%, 95% CI: 28.8-32.6), and executives (32%, 95% CI: 27.5-34.4).

Conclusion: PH WINS 2021 reveals that GPH employees are aware of equity-related concepts but lack confidence to address them. Public health agencies should build employees’ confidence by prioritizing and operationalizing equity internally and externally in collaboration with communities and partners.

KEY WORDS: governmental public health workforce, health equity, Public Health Workforce Interests and Needs Survey (PH WINS), social determinants of equity, social determinants of health
Black, and Native/Indigenous people—have “been part of the American landscape for 400 years.”1 At the nation’s founding, the US Constitution established a “veritable ecology of inequality” through multiple clauses that explicitly codified chattel slavery—a practice that had been in place in North America for more than a century.2 Racially unjust policies and practices that were adopted and implemented at federal, state, and local levels—such as the Indian Removal Act, the Black Codes, the Homestead Act, Jim Crow laws, and redlining—further cemented racial inequities in life opportunities, access, and health outcomes that continue to ripple into the present. Ever-widening racial inequities in life expectancy,3 wealth,4 and other measures of health and well-being make it difficult to deny that there is ongoing “proof of . . . hierarchy” and “evidence of social injustice.”5

Equity is a principle that acknowledges that people and communities have been differentially impacted by a variety of circumstances, historical events, and contemporary contexts that have intentionally advantaged some, while unjustly and intentionally disadvantaging others. As a result, those who have been unjustly disadvantaged require a disproportionately greater allocation of resources and opportunities to help them achieve universal outcomes of optimal health and well-being. Equity ultimately requires that all individuals and populations are valued equally, resources are provided according to need.6 Three concepts that have been commonly used to connect equity to the discipline and practice of public health are health equity, the social determinants of health (SDoH), and the Social determinants of equity (SDoE):

- Health equity: A concept that builds on the principle of equity, health equity is aspirational. Defined by CityHealth (2022), health equity “is achieved when all people—regardless of who they are, where they come from, how they identify, where they live, or the color of their skin—have a fair and just opportunity to live the healthiest possible lives in body, mind, and community. Achieving health equity requires removing social, economic, contextual, and systemic barriers to health, and a continuous and explicit commitment to prioritize those affected by historical disadvantages.”7

- Social determinants of health (SDoH): The SDoH include many upstream and modifiable factors that serve as “the ‘terrain’ on which effects play out.”89 Addressing the SDoH is considered a primary approach to achieving health equity.9 Defined by the US Department of Health & Human Services, the SDoH are “the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. Domains of the social determinants of health can include economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context.”10

- Social determinants of equity (SDoE): A term coined by Jones,6 the SDoE serve as the “root causes of causes.” They are “systems of power that govern the distribution of resources and populations through decision-making structures, policies, practices, norms, and values” that “often operate as social determinants of inequity by differentially distributing resources and populations.” The SDoE include (but are not limited to) structural racism, sexism, nativism, and poverty.

Conceptual Framework: Connecting Health Equity, the SDoH, and the SDoE

To convey the connections that exist between health equity, the SDoH, and the SDoE, we utilize a conceptual framework (Figure) that is informed by Jones,6 Yearby,11 and ChangeLab Solutions.12

At the base of the framework are the root causes of health inequities: the SDoE, which fuel several fundamental drivers of health inequity. At the center sit structural tools—a variety of levers that, if deployed justly, can directly address the SDoE, dismantle fundamental drivers of health inequity, provide equitable access to the SDoH, and drive positive health and quality-of-life outcomes. Ultimately, when everyone has a fair and just opportunity to achieve positive health and quality-of-life outcomes, health equity can be achieved.

Awareness and Confidence: Necessary Prerequisites for the Governmental Public Health Workforce to Address Health Equity, the SDoH, and the SDoE

In the wake of a pandemic that has illuminated the breadth and depth of racial injustice—from medical racism to economic inequality to state-sanctioned violence—“the world is now in a moment that requires that it invest in a different way of doing things.”13 This apparent shift in perspective has clear public health implications: Public opinion data show that a large majority of Americans believe that health equity should be a priority and can be achieved.14 However, to capitalize on this moment—and to create
tangible, sustained, and equitable improvements in health—the governmental public health (GPH) workforce must be prepared to take action, and that starts with awareness and confidence to address health equity, the SDoH, and the SDoE in their daily work.

GPH practitioners cannot avoid confronting the “mechanisms and determinants of health inequity . . . if we are to ensure that all populations thrive.”

Centering equity in public health will require members of the GPH workforce to take action to build lasting cross-sector partnerships, influence policy processes, and ensure that other government agencies address the health equity implications of their policies and decisions. Both awareness and self-efficacy—the belief in one’s own capabilities to act to achieve a desired outcome—are directly related to action.
According to Albert Bandura’s social cognitive theory,19 perceived self-efficacy reflects the “confidence that one can employ the skills necessary...to meet the situational demands.” Although a high degree of perceived self-efficacy can enhance motivation to act, a low degree of perceived self-efficacy can undermine it.20

The Public Health Workforce Interests and Needs Survey

Despite its importance, knowledge of how and to what extent the GPH workforce centers equity in its work is limited. In 2017, Narain et al21 interviewed lead public health officials and their designees across 25 health departments: 22 local health departments (LHDs) and 3 state health departments. They found that 21 of the 25 health departments reported being actively engaged in activities to improve health equity.21 Furtado et al22 surveyed more than 500 chronic disease practitioners working in state health departments on health equity commitments, partnerships, and needed skills. They found that only 11% of state-level chronic disease practitioners agreed that health equity fell within their purview, only 9% included health equity as one of their multiple work areas, and fewer than 2% worked primarily on health equity.22

The Public Health Workforce Interests and Needs Survey (PH WINS) is the first and only nationally representative data source that describes the GPH workforce. Administered by the de Beaumont Foundation and the Association of State and Territorial Health Officials (ASTHO), PH WINS provides insights into GPH employees’ perspectives on their workplaces, mental health, training needs, and public health issues that are relevant to their work. In its third administration in 2021, PH WINS added a new module, “Addressing Issues in Public Health,” which focused on GPH employees’ awareness of and confidence to address a variety of concepts relevant to public health practice. This study examines the GPH workforce’s awareness of and confidence to address 3 concepts in their daily work: health equity, the SDoH, and the SDoE.

Methods

PH WINS 2021 was sent to 137,446 individuals in the GPH workforce employed by 47 state health agency central offices (SHA-CO), 29 health departments that are members of the Big Cities Health Coalition (Big Cities), and 262 LHDs. PH WINS 2021 received 44,732 responses—more than a third (35%) of eligible respondents. Agencies and departments across the United States were invited to participate using a mix of certainty sampling and stratified probability-based sampling. All participating agencies were surveyed using a census approach. Balanced repeated replication weights were constructed and applied to analyses to account for the complex sampling design and to adjust for nonresponse.

PH WINS 2021 collected demographic information on individuals within the GPH workforce. Although they are social constructs with no biological meaning, race and ethnicity may be useful in efforts to study and understand racism and related health inequities.23 To that end, compiling information about the racial and ethnic demographics of the GPH workforce can help government agencies better understand the extent to which the GPH workforce reflects the communities it serves. Furthermore, understanding the many identities and experiences that employees bring to their work is necessary due to the US legacy of structural racism, an entrenched and multifaceted system in which public and organizational policies, institutional practices, cultural representations, and other structures collectively maintain a racial hierarchy that allows the privileges associated with “whiteness” and the disadvantages associated with “color” to endure and adapt over time.24,25 Given the connections between structural racism and the well-established inequities experienced by individuals who are not socially assigned “white,”25 respondents to PH WINS 2021 were asked to voluntarily self-identify their race and ethnic identities from a list of options, which were defined by the US Census Bureau.27

Respondents were provided with definitions of each concept in the survey and asked to rate their level of awareness* and their level of confidence to address each concept in their work† using 4-point Likert scales. Participants who responded “Not at all” on the awareness scale for any concept were not provided with the confidence scale for that concept. Prior to survey administration, cognitive interviews were conducted with 12 individuals representing 4 SHA-COs, 6 LHDs, and 2 external stakeholders to test perceptions of specific questions.

Descriptive statistics were calculated for the entire survey sample (Table 1) and for each concept by awareness and confidence levels (Table 2). Descriptive statistics were then calculated for all demographic variables of interest, which were racial and ethnic group identity, post-secondary public health degree

---

*Awareness Likert scale options included: “Not at all,” “Not much,” “A little,” and “A lot.”

†Confidence Likert scale options included: “I do not know this concept,” “Not confident,” “A little confident,” and “Very confident.”
TABLE 1
Demographics and Workforce Characteristics of Governmental Public Health Workers, PH WINS 2021 (N = 189,326)\(^a\)

|                          | SHA-CO  | Big Cities | LHDs  | National |
|--------------------------|---------|------------|-------|----------|
|                          | Percentage (95% CI) | Percentage (95% CI) | Percentage (95% CI) | Percentage (95% CI) |
| **Gender identity**      |         |            |       |          |
| Man                      | 22.2    | 21.5-23.0  | 22.3  | 21.2-23.4| 16.6  | 15.9-17.3| 19.7  | 19.2-20.1|
| Woman                    | 75.7    | 74.9-76.5  | 75.8  | 74.7-76.9| 81.8  | 81.1-82.5| 78.6  | 78.1-79.0|
| Some other way           | 2.0     | 1.8-2.3    | 1.9   | 1.6-2.3  | 1.5   | 1.3-1.8  | 1.8   | 1.6-1.9  |
| **Racial and ethnic group identity** |         |            |       |          |
| American Indian or Alaska Native | 1.2     | 1.0-1.4    | 0.6   | 0.5-0.9  | 1.0   | 0.8-1.2  | 0.9   | 0.8-1.1  |
| Asian                    | 6.9     | 6.5-7.4    | 14.8  | 13.9-15.7| 3.8   | 3.4-4.2  | 7.4   | 7.1-7.7  |
| Black or African American | 10.9    | 10.4-11.5  | 23.3  | 22.2-24.5| 14.0  | 13.4-14.7| 15.3  | 14.9-15.8|
| Hispanic or Latino       | 11.1    | 10.5-11.7  | 23.5  | 22.4-24.6| 19.6  | 18.8-20.3| 18.0  | 17.5-18.5|
| Native Hawaiian or other Pacific Islander | 0.4     | 0.3-0.6    | 0.5   | 0.4-0.7  | 0.3   | 0.2-0.4  | 0.4   | 0.3-0.4  |
| White                    | 65.4    | 64.5-66.3  | 32.2  | 31.0-33.4| 57.3  | 56.4-58.2| 53.7  | 53.7-54.3|
| 2 or more races          | 4.0     | 3.7-4.4    | 5.1   | 4.5-5.7  | 4.1   | 3.8-4.4  | 4.3   | 4.1-4.5  |
| **Age, y**               |         |            |       |          |
| <21                      | 0.1     | 0.1-0.2    | 0.1   | 0.1-0.3  | 0.3   | 0.2-0.4  | 0.2   | 0.2-0.3  |
| 21-30                    | 10.9    | 10.4-11.5  | 13.1  | 12.2-14.0| 14.4  | 13.8-15.2| 13.1  | 12.6-13.5|
| 31-40                    | 23.5    | 22.7-24.3  | 27.3  | 26.1-28.5| 22.6  | 21.8-23.4| 24.0  | 23.5-24.5|
| 41-50                    | 25.0    | 24.2-25.8  | 25.5  | 24.3-26.6| 25.0  | 24.1-25.9| 25.1  | 24.6-25.7|
| 51-60                    | 26.7    | 25.9-27.5  | 22.9  | 21.8-24.1| 25.0  | 24.2-25.9| 25.0  | 24.5-25.6|
| 61+                      | 13.7    | 13.0-14.4  | 11.1  | 10.3-12.0| 12.6  | 12.0-13.3| 12.6  | 12.2-13.0|
| **Tenure in public health practice, y** |         |            |       |          |
| 0-5                      | 33.4    | 32.5-34.3  | 35.3  | 34.1-36.6| 38.3  | 37.4-39.2| 36.1  | 35.5-36.7|
| 6-10                     | 19.9    | 19.1-20.6  | 19.2  | 18.2-20.3| 17.5  | 16.8-18.2| 18.6  | 18.2-19.1|
| 11-15                    | 14.1    | 13.5-14.7  | 14.0  | 13.1-14.9| 13.3  | 12.7-14.0| 13.7  | 13.3-14.1|
| 16-20                    | 11.6    | 11.0-12.2  | 11.1  | 10.4-12.0| 11.4  | 10.8-12.0| 11.4  | 11.0-11.8|
| ≥21                      | 21.1    | 20.3-21.8  | 20.3  | 19.2-21.3| 19.5  | 18.8-20.2| 20.1  | 19.7-20.6|
| **Public health degree (bachelor’s/master’s/doctoral degree)** |         |            |       |          |
| No                       | 82.6    | 82.0-83.3  | 80.6  | 79.5-81.6| 90.7  | 90.2-91.3| 85.9  | 85.5-86.3|
| Yes                      | 17.4    | 16.7-18.0  | 19.4  | 18.4-20.5| 9.3   | 8.7-9.8  | 14.1  | 13.7-14.5|
| **Supervisory status**   |         |            |       |          |
| Nonsupervisor            | 70.3    | 69.5-71.1  | 71.0  | 69.8-72.1| 75.8  | 75.0-76.5| 73.0  | 72.5-73.5|
| Supervisor                | 17.5    | 16.8-18.2  | 17.9  | 16.9-18.9| 15.3  | 14.7-16.0| 16.6  | 16.2-17.0|
| Manager                   | 10.2    | 9.7-10.8   | 9.1   | 8.4-9.9  | 6.3   | 5.9-6.8  | 8.2   | 7.9-8.5  |
| Executive                 | 2.0     | 1.7-2.2    | 2.0   | 1.7-2.4  | 2.6   | 2.3-2.9  | 2.3   | 2.1-2.5  |

\(^a\)Weighted counts by setting: state health agency central offices (SHA-CO) = 56,932; Big Cities = 45,325; local health departments = 87,089.

Overall awareness and confidence to apply concepts by select demographic variables were made using a Rao Scott–adjusted chi-square.

Estimates of proportions of awareness and confidence levels over all variables of interest for each concept were also calculated. The variable of awareness for each concept was dichotomized as “Low Awareness” and “High Awareness”; respondents who selected “Not at all,” “Not much,” and “A little” were collapsed into the category “Low Awareness” and

---

\(^1\)Participants self-selected their supervisory status from a list with the following options: (1) nonsupervisor: you do not supervise other employees; (2) supervisor: you are responsible for employees’ performance appraisals and approval of their leave, but you do not supervise other supervisors; (3) manager: you are in a management position and supervise 1 or more supervisors; and (4) executive: member of senior executive service or equivalent.

---

**Abbreviation:** CI, confidence interval.
TABLE 2
Overall Awareness of Public Health Concepts and Confidence in Application Among Governmental Public Health Employees, PH WINS 2021 (N = 189,326)

| Awareness of Concept | Confidence in Application |
|----------------------|--------------------------|
| **Health equity**    |                          |
| Not at all/l do not know this concept | 3.6 | 3.4-3.9 |
| Not much/not confident | 5.8 | 5.5-6.1 |
| A little/a little confident | 19.6 | 19.1-20.0 |
| A lot/very confident | 71.0 | 70.5-71.6 |
| **Social determinants of health** |                          |
| Not at all/l do not know this concept | 5.7 | 5.4-6.0 |
| Not much/not confident | 9.0 | 8.7-9.3 |
| A little/a little confident | 22.4 | 21.9-22.9 |
| A lot/very confident | 62.3 | 62.3-63.5 |
| **Social determinants of equity** |                          |
| Not at all/l do not know this concept | 8.0 | 7.7-8.3 |
| Not much/not confident | 14.3 | 13.9-14.7 |
| A little/a little confident | 29.9 | 29.3-30.4 |
| A lot/very confident | 47.8 | 47.2-48.4 |

| Health equity | Confidence in Application |
|---------------|---------------------------|
| Not at all/l do not know this concept | 2.3 | 2.1-2.5 |
| Not much/not confident | 10.8 | 10.4-11.1 |
| A little/a little confident | 38.6 | 38.0-39.1 |
| A lot/very confident | 48.4 | 47.8-49.0 |
| Social determinants of health |                          |
| Not at all/l do not know this concept | 2.9 | 2.7-3.2 |
| Not much/not confident | 14.0 | 13.6-14.4 |
| A little/a little confident | 37.0 | 36.4-37.6 |
| A lot/very confident | 46.0 | 45.4-46.7 |
| Social determinants of equity |                          |
| Not at all/l do not know this concept | 3.9 | 3.7-4.2 |
| Not much/not confident | 20.1 | 19.7-20.6 |
| A little/a little confident | 42.0 | 41.4-42.6 |
| A lot/very confident | 34.0 | 33.4-34.6 |

Abbreviation: CI, confidence interval.

respondents who selected “Very aware” were renamed “High Awareness” (Table 3). The variable of confidence for each concept was dichotomized as “Low Confidence” and “High Confidence”; respondents who selected “I do not know this concept,” “Not confident,” and “A little confident” were collapsed into the category “Low Confidence” and respondents who selected “Very confident” were renamed “High Confidence” (Table 4). Data were cleaned, managed, and analyzed in Stata 17 (StataCorp LLC, College Station, Texas).

**Results**

Nationally, the state and local GPH workforce predominantly self-identifies as non-Hispanic white (54%, 95% confidence interval [CI]: 53.7-54.3); women (79%, 95% CI: 78.1-79.0); those older than 40 years (63%, 95% CI: 62.1-63.3); lacking a post–secondary degree in public health (86%, 95% CI: 85.5-86.3); and nonsupervisors (73%, 95% CI: 72.5%-73.5%).

Descriptive statistics were calculated on the entire survey sample to explore overall awareness of and confidence to address the concepts of health equity, the SDoH, and the SDoE (Table 2). Governmental public health employees were generally aware of all 3 concepts but lacked confidence in their ability to address these concepts in their work. Nearly three-quarters of GPH employees had heard “A lot” about health equity (71%, 95% CI: 70.5-71.6), and 62% had heard “A lot” about the SDoH (95% CI: 62.3-63.5). However, awareness of the SDoE among GPH employees was substantially lower. Fewer than half of GPH employees had heard “A lot” about the SDoE (48%, 95% CI: 47.2-48.4).

Compared with awareness, GPH employees’ confidence to address these concepts in their work was far lower. Fewer than half of all GPH employees were “Very confident” in their ability to address health equity in their work (48%, 95% CI: 47.8-49.0). Governmental public health employees expressed a similar level of confidence in addressing the SDoH in their work (46%, 95% CI: 45.4-46.7). Only a third of GPH employees were “Very confident” in their ability to address the SDoE in their work (34%, 95% CI: 33.4-34.6).

**Awareness of and confidence to address concepts by demographic category**

**Racial and ethnic group identity**

Estimates of proportions were calculated for awareness and confidence across all variables of interest (Tables 3 and 4). Governmental public health employees who self-identified as white reported the highest level of awareness of health equity and the SDoH compared with their colleagues who self-identified as members of other racial and ethnic groups (health equity—73%, 95% CI: 72.1-73.5; SDoH—66%,
|                              | Health Equity: Low Awareness | Health Equity: High Awareness | SDoH: Low Awareness | SDoH: High Awareness | SDoE: Low Awareness | SDoE: High Awareness |
|------------------------------|------------------------------|------------------------------|--------------------|---------------------|--------------------|---------------------|
|                              | Percentage (95% CI) | Percentage (95% CI) | Percentage (95% CI) | Percentage (95% CI) | Percentage (95% CI) | Percentage (95% CI) |
| Racial and ethnic group identity |                             |                             |                     |                     |                    |                    |
| American Indian or Alaska Native | 33.5 (27.9-39.6) | 66.5 (60.4-72.2) | 40.4 (34.6-46.6) | 59.6 (53.4-65.4) | 51.5 (45.3-57.6) | 48.5 (42.4-54.7) |
| Asian                        | 29.1 (27.1-31.2) | 70.9 (68.8-73.0) | 39.0 (36.8-41.2) | 61.0 (58.8-63.2) | 53.8 (51.5-56.1) | 46.2 (43.9-48.5) |
| Black or African American    | 29.1 (27.8-30.6) | 70.9 (69.5-72.3) | 39.0 (37.5-40.6) | 61.0 (59.4-62.5) | 50.8 (49.2-52.4) | 49.2 (47.6-50.8) |
| Hispanic or Latino           | 32.8 (31.4-34.2) | 67.2 (65.8-68.6) | 41.6 (40.2-43.1) | 58.4 (56.9-59.8) | 52.5 (51.0-53.9) | 47.5 (46.1-49.0) |
| Native Hawaiian other Pacific Islander | 38.9 (30.4-48.1) | 61.1 (51.9-69.6) | 40.8 (32.3-50.0) | 59.2 (50.0-67.7) | 49.0 (40.1-58.0) | 51.0 (42.0-59.9) |
| White                        | 27.2 (26.5-27.9) | 72.8 (72.1-73.5) | 34.5 (33.7-35.2) | 65.5 (64.8-66.3) | 52.7 (51.9-53.5) | 47.3 (46.5-48.1) |
| 2 or more races              | 31.6 (29.0-34.3) | 68.4 (65.7-71.0) | 39.1 (36.4-41.9) | 60.9 (58.1-63.7) | 48.1 (45.3-51.0) | 51.9 (49.0-54.7) |
| PH degree (bachelor’s/master’s/doctoral degree) | | | | | | |
| No                           | 32.9 (32.3-33.5) | 67.1 (66.5-67.7) | 42.3 (41.6-42.9) | 57.7 (57.1-58.4) | 53.5 (52.9-54.2) | 46.5 (45.9-47.1) |
| Yes                          | 5.3 (4.7-6.0)  | 94.7 (94.0-95.3) | 6.0 (5.3-6.7)  | 94.1 (93.3-94.8) | 44.1 (42.5-45.7) | 55.9 (54.4-57.5) |
| Supervisory status           |                             |                             |                     |                     |                    |                    |
| Non-supervisor               | 32.1 (31.4-32.7) | 67.9 (67.3-68.6) | 40.3 (39.6-41.0) | 59.7 (59.0-60.4) | 52.5 (51.8-53.2) | 47.5 (46.7-48.2) |
| Supervisor                   | 24.6 (23.4-25.9) | 75.4 (74.1-76.6) | 33.5 (32.1-34.8) | 66.6 (65.2-67.9) | 52.2 (50.7-53.6) | 47.8 (46.4-49.3) |
| Manager                      | 16.5 (15.0-18.1) | 83.5 (81.9-85.0) | 22.9 (21.3-24.7) | 77.1 (75.3-78.8) | 50.6 (48.8-52.6) | 49.5 (47.5-51.5) |
| Executive                    | 7.8 (5.6-10.8)  | 92.2 (89.3-94.4) | 12.8 (10.1-16.0) | 87.3 (84.0-89.9) | 46.8 (42.8-50.7) | 53.3 (49.3-57.2) |

Table 3: Awareness of Public Health Concepts by Demographic Characteristics Among the Governmental Public Health Workforce, PH WINS 2021 (N = 189,326)

Abbreviations: CI, confidence interval; SDoE, social determinants of equity; SDoH, social determinants of health.
| Racial and ethnic group identity          | Health Equity: Low Confidence | Health Equity: High Confidence | SDoH: Low Confidence | SDoH: High Confidence | SDoE: Low Confidence | SDoE: High Confidence |
|------------------------------------------|-------------------------------|-------------------------------|---------------------|----------------------|---------------------|----------------------|
| American Indian or Alaska Native         | 46.6 (40.3-53.0)              | 53.4 (47.0-59.7)              | 53.0 (46.5-59.2)    | 47.1 (40.8-53.5)     | 62.4 (55.9-68.4)    | 37.6 (31.6-44.1)     |
| Asian                                    | 54.0 (51.6-56.3)              | 46.0 (43.7-48.4)              | 55.8 (53.5-58.2)    | 44.2 (41.9-46.5)     | 68.3 (66.1-70.5)    | 31.7 (29.5-33.9)     |
| Black or African American                | 44.1 (42.5-45.7)              | 55.9 (54.3-57.6)              | 47.6 (45.9-49.2)    | 52.4 (50.8-54.1)     | 57.0 (55.4-58.7)    | 43.0 (41.3-44.6)     |
| Hispanic or Latino                       | 52.1 (50.6-53.6)              | 47.9 (46.4-49.4)              | 55.4 (53.9-56.9)    | 44.6 (43.1-46.1)     | 64.4 (63.0-65.9)    | 35.6 (34.2-37.1)     |
| Native Hawaiian or other Pacific Islander| 60.8 (51.3-69.5)              | 39.3 (30.5-48.7)              | 66.6 (57.4-74.7)    | 33.4 (25.3-42.6)     | 72.0 (62.9-79.5)    | 28.0 (20.5-37.1)     |
| White                                    | 53.4 (52.6-54.2)              | 46.6 (45.8-47.4)              | 55.0 (54.2-55.8)    | 45.0 (44.2-45.8)     | 69.3 (68.5-70.1)    | 30.7 (30.0-31.5)     |
| 2 or more races                          | 49.7 (46.8-52.7)              | 50.3 (47.3-53.3)              | 53.3 (50.3-56.3)    | 46.7 (43.7-49.7)     | 60.1 (57.0-63.0)    | 40.0 (37.0-43.0)     |
| PH degree (bachelor's/master's/doctoral degree) |                               |                               |                     |                      |                     |                      |
| No                                       | 54.6 (53.9-55.2)              | 45.4 (44.8-46.1)              | 58.7 (58.1-59.4)    | 41.3 (40.4-41.9)     | 66.8 (66.2-67.4)    | 33.2 (32.6-33.8)     |
| Yes                                      | 34.7 (33.2-36.2)              | 65.3 (63.8-66.8)              | 27.3 (25.9-28.7)    | 72.7 (71.3-74.1)     | 61.5 (59.9-63.1)    | 38.5 (36.9-40.1)     |
| Supervisory status                       |                               |                               |                     |                      |                     |                      |
| Nonsupervisor                            | 55.1 (54.4-55.8)              | 44.9 (44.2-45.6)              | 64.7 (52.8-54.2)    | 46.5 (45.8-47.2)     | 64.7 (64.0-65.4)    | 35.3 (29.2-31.9)     |
| Supervisor                               | 55.0 (53.5-56.5)              | 45.0 (43.5-46.5)              | 53.6 (52.1-55.1)    | 46.4 (44.9-47.9)     | 69.5 (68.1-70.8)    | 30.5 (29.2-31.9)     |
| Manager                                  | 47.5 (45.4-49.5)              | 52.5 (50.5-54.6)              | 46.5 (44.4-48.6)    | 53.5 (51.4-55.6)     | 69.3 (67.4-71.2)    | 30.7 (28.8-32.6)     |
| Executive                                | 36.1 (32.3-40.2)              | 63.9 (59.8-67.7)              | 35.4 (31.5-39.5)    | 64.6 (60.6-68.5)     | 69.2 (65.6-72.5)    | 31.9 (27.5-34.4)     |

Abbreviations: CI, confidence interval; SDoE, social determinants of equity; SDoH, social determinants of health.
95% CI: 64.8-66.3). However, GPH employees who self-identified as Black or African American reported the highest levels of confidence to address health equity, the SDoH, and the SDoE in their work compared with their colleagues who self-identified as members of other racial and ethnic groups (health equity—56%, 95% CI: 54.3-57.6; SDoH—52%, 95% CI: 50.8-54.1; SDoE—43%, 95% CI: 41.3-44.6).

**Post–secondary public health degree attainment**

Governmental public health employees with a bachelor’s, master’s, or doctoral degree in public health reported higher levels of awareness and confidence in their ability to address each concept in their work compared with GPH employees who lacked post-secondary public health degrees. Ninety-five percent of GPH employees with public health degrees were highly aware of health equity (95% CI: 94.0-95.3), compared with 67% of GPH employees who lacked a public health degree (95% CI: 66.5-67.7). Sixty-five percent of GPH employees with a public health degree were highly confident in their ability to address health equity in their work (95% CI: 63.8-66.8), compared with 45% of their colleagues who lacked a public health degree (95% CI: 44.8%-46.1%). Similarly, 73% of GPH employees with public health degrees were highly confident in their ability to address the SDoH in their work (95% CI: 71.3-74.1) compared with 41% of employees without a public health degree (95% CI: 40.6-41.9). However, when surveyed about their confidence to address the SDoE, the divergence between the 2 groups narrowed: Only 39% of GPH employees with a public health degree were highly confident in their ability to address the SDoE in their work (95% CI: 36.9-40.1)—just slightly more than the 33% of employees who lacked a public health degree (95% CI: 32.6-33.8).

**Supervisory status**

As supervisory status increased, the number of GPH employees who were highly aware of health equity, SDoH, and SDoE increased. Among executives, 92% (95% CI: 89.3-94.4) were highly aware of health equity compared with 68% of nonsupervisors (95% CI: 67.3-68.6). Furthermore, 64% of executives were highly confident in their ability to address health equity (95% CI: 59.8-67.7) compared with 45% of nonsupervisors (95% CI: 44.2-45.6).

However, we found an inverse relationship between supervisory status and confidence to address the SDoE. As supervisory status increased, self-reported confidence to address the SDoE decreased. Nonsupervisors reported higher levels of confidence in their ability to address the SDoE in their work (35%, 95% CI: 29.2-31.9) compared with supervisors (31%, 95% CI: 29.2-31.9), managers (31%, 95% CI: 28.8-32.6), and executives; (32%, 95% CI: 27.5-34.4).

**Discussion and Conclusion**

As a survey of more than 41,000 state and local GPH agency staff, PH WINS 2021 offers first-of-a-kind insights into GPH employees’ awareness of and confidence to address health equity, the SDoH, and the SDoE in their work. The GPH workforce was generally aware of all 3 concepts, particularly health equity and the SDoH. However, overall, GPH employees were comparatively less confident in their ability to address all 3 concepts in their work, particularly the SDoE.

The public health field faces significant challenges in attempting to translate equity-related knowledge and values into real-world changes in public health policy and practice that are necessary to advance health equity.28 Most public health agencies and professionals tend to focus interventions mainly on behavioral risks.29 This focus on “lifestyle drift”—the “tendency in public health to focus on individual behaviors, such as smoking, diet, alcohol, and drugs” and “to ignore the drivers of these behaviors”—has been cited as a key barrier that prevents public health as a field from moving forward to address the SDoH, the SDoE, and health equity.30 As PH WINS 2017 revealed, GPH employees have avoided addressing the SDoH: Although 57% of GPH agency staff believed that their agencies should be “very involved” in addressing health equity, far fewer believed that they should be involved in addressing specific SDoH, such as transportation, housing, K-12 education, or the built environment.31 Further research has found that GPH employees are reticent to identify specific actions to address health inequities and the SDoH.28

Our study provides new insights into the relationship between supervisory status and confidence to address the SDoE. Although awareness of all 3 concepts increased as supervisory status increased, an inverse relationship existed between supervisory status and confidence to address the SDoE. This indicates that public health agency leaders’ confidence to take on complex and entrenched systems embodied by the SDoE wanes as they climb the ranks. This finding is a cause for deep concern, given that GPH agency leaders are well positioned to implement actions that address the SDoE. More research is needed to fully understand this phenomenon. As the nation continues to navigate the COVID-19 pandemic, continued political challenges to GPH authority may limit their ability to demonstratively address the SDoE. These limitations in authority may not only hamstring public
health agencies but may also erode the willingness of public health leaders to make politically unpopular decisions that are necessary to address the SDoE.

Our study also conveys the value—and limitations—of having post–secondary public health education within the GPH workforce. PH WINS 2021 revealed that nearly 90% of the GPH workforce lacks a post–secondary public health degree at the undergraduate level or above.33 Given that most of the GPH workforce lacks post–secondary public health education, the need for high-quality, on-the-job training is an imperative. Moreover, our study revealed that GPH employees with public health degrees reported substantially greater levels of awareness and confidence to address all 3 concepts in their work compared to employees who lacked public health degrees. However, when surveyed about the SDoE, the differences between the groups narrowed substantially, indicating that academic programs may be falling short when it comes to inculcating public health students with knowledge about the systems of power that ultimately drive health inequities. As a result, public health agency investments in equity-focused workforce training will be essential to increase employees’ awareness of and confidence to address the SDoE.

Although PH WINS 2021 had a modest response rate of 35%, balanced repeated replication weights were applied to account for nonresponse and complex sampling. In addition, the survey was fielded during the COVID-19 pandemic from September 2021 to January 2022, and the GPH workforce was deeply involved in the emergency response. The substantial burden and time constraints inflicted by the response may have limited the extent to which GPH employees could participate in the survey. In addition, PH WINS 2021 measured GPH employees’ self-perception of their awareness and confidence to address concepts related to equity, and responses to these questions were not required for survey completion; thus, the potential for social desirability and response bias must be considered when interpreting results. To mitigate confusion in interpreting survey questions, definitions of each concept were provided to all survey respondents. Finally, cognitive interviews were conducted with key stakeholders to test the clarity of questions prior to survey administration.

State and local GPH agencies are critical to the delivery of essential services that support population health34; as such, they must be actively engaged in dismantling systemic and structural barriers to health. Public health agencies can help build confidence across the GPH workforce to address health equity, the SDoH, and the SDoE by prioritizing these concepts publicly, operationalizing them internally, partnering to address them multisectorally, and investing resources in marginalized communities consistently. By making these concepts a central and sustained focus of their work, public health agencies—and the workforce that powers them—can make progress toward advancing health equity for all.

**Implications for Policy & Practice**

- This study provides initial data and highlights opportunities for health department leaders and decision makers to increase the governmental public health (GPH) workforce’s awareness of and confidence to address health equity, the social determinants of health (SDoH), and the social determinants of equity (SDoE).

- Given that health equity cannot be achieved without addressing the SDoE, GPH agencies will need to build employees’ confidence by prioritizing and operationalizing equity internally (by transforming policies, operations, and trainings) and externally in their interactions and engagement with partners and marginalized communities.

- Confidence to address the SDoE was relatively low among GPH employees, even among those with post–secondary public health education. Schools and programs of public health will need to intensify their focus on the SDoE and their impact on health outcomes in their academic curricula to ensure that public health students are confident and prepared to take on these complex issues.

- Public health agencies—and state, city, and county governments more broadly—will need to contend with the continued legislative threats to GPH governance, policy, and legal authority, as these threats have the potential to adversely impact public health agency leaders’ ability, and by extension confidence, to address the SDoE.

---

**References**

1. Hammonds EM, Reverby SM. Toward a historically informed analysis of racial health disparities since 1619. *Am J Public Health*. 2019; 109(10):1348-1349.

2. LaVeist TA, Fullilove M, Fullilove R. 400 years of inequality since Jamestown of 1619. *Am J Public Health*. 2019;109(1):83-84.

3. Andrasfal T, Goldman N. Reductions in 2020 US life expectancy due to COVID-19 and the disproportionate impact on the Black and Latino populations. *Proc Natl Acad Sci USA*. 2021;118(5):e2014746118.

4. Long H, Van Dam A. The black-white economic divide is as wide as it was in 1968. The Washington Post. https://www.washingtonpost.com/business/2020/06/04/economic-divide-black-households/. Published June 4, 2020. Accessed August 7, 2022.

5. Jones DS. Rationalizing Epidemics: Meanings and Uses of American Indian Mortality Since 1600. Cambridge, MA: Harvard University Press; 2004. https://canvas.harvard.edu/courses/56887/files/868863/download?verifier=AvaKT4pWR9cYyX3Hscrb5iFugog3mqKFUD1pUSNx. Accessed August 7, 2022.
6. Jones CP. Systems of power, axes of inequity: parallels, intersections, braiding the strands [published correction appears in Med Care. 2014;52(12):1068]. Med Care. 2014;52(10 suppl 3):S71-S75.
7. CityHealth. About us—equity. CityHealth. https://www.cityhealth.org/aboutus/equity-statement/#:~:text=Health%20equity%20means%20all%20people%2C%20mind%2C%20and%20community. Published 2022. Accessed August 7, 2022.
8. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Baciu A, Negussie Y, Geller A, et al., eds. Communities in Action: Pathways to Health Equity. Washington, DC: The National Academies Press; 2017:822.
9. Centers for Disease Control and Prevention. NCHHSTP social determinants of health: frequently asked questions. National Center for HIV, Viral Hepatitis, STD, and TB Prevention. https://www.cdc.gov/nchhstp/socialdeterminants/faq.html#:~:text=Addressing%20social%20determinants%20of%20health%20means%20all%20people%2C%20body%2C%20mind%2C%20and%20community. Published 2022. Accessed June 30, 2022.
10. Yearby R. Structural racism and health disparities: reconfiguring the social determinants of health framework to include the root cause. J Law Med Ethics. 2020;48(3):518-526.
11. ChangeLab Solutions. A blueprint for change makers: achieving health equity through law & policy. https://www.changellab solutions.org/product/blueprint-change-makers. Published March 27, 2019. Accessed June 16, 2022.
12. Hardeman RR, Homan PA, Chantarat T, Davis BA, Brown TH. “Achieving the measurement of structural racism to achieve antiracist health policy: study examines measurement of structural racism to achieve antiracist health policy.” Health Aff. 2022;41(2):179-186.
13. Public Opinion Strategies. Attitudes on health equity and the social determinants of health. Public Opinion Strategies. https://pos.org/attitudes-on-health-equity-and-the-social-determinants-of-health/. Published June 14, 2022. Accessed June 30, 2022.
14. Liburd LC, Hall JE, Mpofu JJ, Williams SM, Bouye K, Penman-Aguilar A. Addressing health equity in public health practice: frameworks, promising strategies, and measurement considerations. Annu Rev Public Health. 2020;41:417-432.
15. American Public Health Association and Public Health Institute. Health in all policies: a guide for state and local governments. https://www.apha.org/-/media/files/PDF/factsheets/Health_inAll_Policies_Guide_169pages.aspx. Published 2013. Accessed March 5, 2022.
16. Funke J. How much knowledge is necessary for action?. In: Meusburger P, Werlen B, Suarsana L, eds. Knowledge and Action. Knowledge and Space. Vol 9. Cham, Switzerland: Springer International Publishing; 2017: 99-111.
17. Rogers EM. Diffusion of Innovations. 4th ed. New York, NY: Free Press; 2003.
18. Bandura A. Social Foundations of Thought and Action: A Social Cognitive Theory. Ann Arbor, MI: Prentice Hall; 1986.
19. Rogers EM. Diffusion of Innovations. 4th ed. New York, NY: Free Press; 2003.
20. Luszczynska A, Schwarzer R. The role of self-efficacy in health self-regulation. In: Greve W, Rothermund K, Wenta D, eds. The Adaptive Self: Personal Continuity and Intentional Self-Development. Newburyport, MA: Hogrefe & Huber Publishers; 2005:137-152. https://www.hogrefe.com/us/shop/the-adaptive-self-67296.html. Accessed August 7, 2022.
21. Narain KDC, Zimmerman FJ, Richards J, et al. Making strides toward health equity: the experiences of public health departments. J Public Health Manag Pract. 2019;25(4):342-347.
22. Furtado KS, Brownson C, Fershteyn Z, et al. Health departments with a commitment to health equity: a more skilled workforce and higher-quality collaborations. Health Aff. 2018;37(1):38-46.
23. Narain KDC, Frey T, Christiansen SL; AMA Manual of Style Committee. Updated guidance on the reporting of race and ethnicity in medical and science journals. JAMA. 2021;326(7):621-627.
24. The Aspen Institute. 11 Terms You Should Know to Better Understand Structural Racism. Washington, DC: The Aspen Institute. https://www.aspeninstitute.org/blog-posts/structural-racism-definition/. Published July 11, 2016. Accessed August 7, 2022.
25. Lawrence K, Sutton S, Kubisch A, Suji G, Fulbright-Anderson K. The Aspen Institute Roundtable on Community Change. Structural Racism and Community Building. Washington, DC: The Aspen Institute. https://www.aspeninstitute.org/wp-content/uploads/files/content/docs/rcc/aspen_structural_racism2.pdf. Published June 2004. Accessed June 29, 2022.
26. Jones CP, Truman BI, Elam-Evans LD, et al. Using “socially assigned race” to probe white advantages in health status. Ethn Dis. 2008;18(4):496-504.
27. US Census Bureau. Decennial Census of Population and Housing Questionnaires & Instructions. Sutlief-Silver Hill, MD: US Census Bureau. https://www.census.gov/programs-surveys/decennial-census/technical-documentation/questionnaires.2020_Census. html. Published 2021. Accessed June 5, 2022.
28. Knight EK. Shifting public health practice to advance health equity: recommendations from experts and community leaders. J Public Health Manag Pract. 2014;20(2):188-196.
29. Feudenberg N, Franzosa E, Chisholm J, Libman K. New approaches for moving upstream: how state and local health departments can transform practice to reduce health inequalities. Health Educ Behav. 2015;42(1 suppl):46S-56S.
30. Marmot M, Allen JJ. Social determinants of health equity. Am J Public Health. 2014;104(6):S517-S519.
31. Shah GH, Yin J, Young JL, Waterfield K. Employee perceptions about public health agencies’ desired involvement in impacting health equity and other social determinants of health. J Public Health Manag Pract. 2019;25(suppl 2), Public Health Workforce Interests and Needs Survey 2017/12 suppl:S124-S133.
32. Local Solutions Support Center. “Preemption of public health authority.” https://www.supportdemocracy.org/issuespecific-preemption-guides/preemption-of-public-health-authority. Published March 28, 2022. Accessed August 4, 2022.
33. de Beaumont Foundation and Association of State and Territorial Health Officials. Public Health Workforce Interests and Needs Survey: 2021 dashboard. https://debeaumont.org/phwms/2021-findings/. Published August 3, 2022. Accessed August 7, 2022.
34. Centers for Disease Control and Prevention. Public Health Professionals Gateway: 10 Essential Public Health Services. Atlanta, GA: Center for State, Tribal, Local, and Territorial Support. https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html. Published 2021. Accessed, June 16, 2022.