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The demographics, training, and job functions of the United States Public Health Service Commissioned Corps nursing workforce

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ABSTRACT

Background: There is a need for better public health nursing (PHN) workforce measurement approaches that focus on their functions and activities as well as a need for more data inclusive of PHNs at the federal level.
Purpose: For this cross-sectional study, we conducted an online survey with nurse officers in the U.S. Public Health Service to describe the demographics and experience of this workforce and to test job function and activity questions.
Methods: We conducted descriptive analyses to characterize the full sample (N = 565). We also stratified the sample into "primarily nonclinical" and "primarily clinical" nurses and compared their responses to function and activity questions.
Discussion: Our findings describe a highly educated and diverse UPSHS nursing workforce with wide-ranging responsibilities. Respondents indicated the function and activity questions that accurately described their work, with most reporting Health Promotion and Protection functions (48.7%). Compared with primarily clinical respondents, more primarily nonclinical respondents reported Policy and Advocacy (24.1% vs. 12.2%), Enforcing Laws and Regulations (22.5% vs. 11.2%), and Research (26.0% vs. 16.8%) functions.
Conclusion: Findings highlight potential opportunities to learn from the USPHS nursing workforce about ways to grow a more diverse nursing workforce and emphasize the utility of function and activity questions in nursing workforce assessments for gaining a deeper understanding of PHNs' roles.

Background

Estimations of the size of the public health nursing (PHN) workforce vary depending on the source of data and context for measurement. PHNs are consistently identified as the largest occupational group within the public health workforce when using governmental public health workforce surveys, despite a sharp decline of about 36% from 2008 to 2019 (NACCHO, 2019). In contrast, PHNs represent one of the smallest specialties within the nursing workforce when using national nursing workforce surveys (Bekemeier et al., 2024; HRSA, 2022; Smiley et al., 2023). However, both approaches to estimating the size of this workforce have significant limitations and do not offer a comprehensive understanding of the nature of the PHN workforce and, thus, a means to address shortages. Declining response rates to government public health surveys have led to increasingly smaller and potentially less accurate samples (NACCHO, 2022). Additionally, health department surveys do not account for PHNs working outside state and local government settings. Nursing workforce surveys, either mandated or voluntary, tend to categorize nurses as PHNs based on their work setting, which does not capture the full range of functions and activities that define a PHN (Kneipp et al., 2022).

PHNs are responsible for "promoting and protecting the health of populations by applying knowledge from nursing, social, and public health sciences" (Bekemeier et al., 2015). The 2021 Public Health Nursing Scope and Standards describes how this is operationalized in PHN practice, citing activities such as health communication, cross-sector collaboration, and policy advocacy (ANA, 2022). Recent measurements of the PHN workforce used a combination of primary

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settings and specialties reported in national nursing workforce survey data to more systematically identify and describe PHNs across a wider variety of settings than previous attempts and also examine the nature of their work (Bekemeier et al., 2024). The estimates revealed that PHNs operate in a wide variety of settings and specialties; however, the study relied on nursing sample survey data, which may not accurately reflect small nursing specialties like public health (Bekemeier et al., 2024; Kneipp et al., 2022). More robust methods of identifying PHNs are necessary to understand their distribution, identify areas in need of more PHNs, and guide academic efforts to strengthen educational pathways for nurses in public health (Kett et al., 2022, 2024; Kneipp et al., 2022).

The need for such methods is particularly true with respect to nurses working at the federal level. Existing research has highlighted the benefits of PHN contributions to the health of communities, showing that PHNs possess critical skills for emergency response and contribute to improved health outcomes (Kett et al., 2022, 2024; Martsolf et al., 2018). When a local health department's public health director is a nurse, the agency's entire staff appear more proficient in responding to public health crises and promoting community health (Kett et al., 2024). However, most prior research has been conducted among government agencies at the local and state levels, with a notable lack of studies focusing on or inclusive of PHNs at the federal level, such as those in the U.S. Public Health Service (USPHS) Commissioned Corps.

The history of the USPHS Commissioned Corps began in 1798 when marine hospitals were established to care for seamen and protect American citizens from infectious diseases (Antwi, 2018; Knoben & Lushniak, 2024; The United States Public Health Service Commissioned Corps, 2020). The Marine Hospital Corps was later renamed the Public Health Service in 1912 by an Act of Congress (War Risk Insurance Act, 1912). Nursing care was provided in the marine hospitals since 1798; however, trained nurses were not formally employed by the Public Health Service until 1913 (Antwi, 2018; NPAC, 2019). As the scope of public health initiatives broadened into research on human diseases and sanitation, nurses were particularly important in disease prevention around military camps during World War I and in local health departments during the 1918 influenza pandemic (Knoben & Lushniak, 2024). The 1943 Bolton Act created the Cadet Nurse Corps, through the Office of the Surgeon General (Petry, 1943), which was followed by the 1944 USPHS Act allowing nurses to be commissioned officers in the USPHS Commissioned Corps (NPAC, 2019). Nurses have since been helping lead national public health efforts, from research and education to emergency response (USPHS Commissioned Corps, 2021). The Nurse Category of Public Health Service (PHS) Officers includes registered nurses and advanced practice registered nurses, working in areas including clinical care, healthcare management, program administration, quality and safety, research, and health policy (A. K. Brooks, personal communication, 2023). In 2024, there were approximately 1,200 PHS nurse officers in the USPHS Commissioned Corps, out of a total of approximately 5,500 officers overall (J. R. Moon, personal communication, 2024).

Given the national decline in PHN numbers and key contributions they make to communities, there is an urgent need to gain a deeper understanding of where PHNs work, what they do, and how to address workforce development needs. As such, we need better PHN workforce measurement approaches that focus on their functions and activities rather than their work setting alone as well as need more data inclusive of PHNs at the federal level. With this study, we sought to (a) illuminate the nature of the federal PHN workforce in the USPHS Commissioned Corps ("PHS nurse officers"), in terms of their demographics, work settings, functions, and activities—and through this, (b) pilot test and assess the accuracy of job function and activity questions for effectively describing and measuring the PHN workforce more broadly. Such questions can then be used in future studies and through refined workforce surveys that can accurately identify and describe PHNs.

Methods

We conducted a cross-sectional study to better describe the PHS nurse officers and pilot test function and activity questions for measuring the PHN workforce. We collected data via a voluntary survey conducted from February to March 2024. The University of Washington Institutional Review Board determined the study qualified for exempt status (STUDY00019416).

Survey Development

The survey was developed by the authors—academic PHN researchers and past and current PHS Chief Nurse Officers. The survey consisted of four main sections: Nursing Education and Background, Position and Job Information, Job Roles and Functions, and Demographic information. Education and Background items were adapted from other national nursing workforce surveys and included questions about which nursing credential qualified them for their nursing license, highest level of nursing and non-nursing education (including public health), and certifications (HRSA, 2022; Smiley et al., 2023). Position and Job information contained questions pertaining to their job title, current assignment (e.g., hospital inpatient, Public Health, or Community Agency), current agency (e.g., Department of Justice – Board of Prisons [DOJ-BOP], Centers for Disease Control and Prevention [CDC]), position grade (e.g., lieutenant commander, captain), location (Health and Human Services Region, rural or urban), supervisory responsibilities, and tenure. PHS Chief Nurse Officers ensured the questions were relevant and accurate for PHS nurse officers.

The Job Roles and Functions section contained function and activity survey items being piloted to assess their utility for future PHN workforce measurement. We asked about program areas first (e.g., Chronic Disease and Prevention Services, Family Planning, and Refugee Health), followed by the specific functions and activities respondents perform. The list of functions and activities was guided by the PHN Scope and Standards (ANA, 2022) and the Public Health Workforce Taxonomy (Beck et al., 2018), with input from national PHN experts. We reviewed other additional sources for the function and activity questions, including the public health intervention wheel (Schaffer et al., 2022) and found that categories identified in these additional sources were already accounted for through our use of the PHN Scope and Standards. Functions were divided into 12 categories and activities were listed within each of these function categories. Respondents were only asked about activities within a function category if they indicated that the function was an area of responsibility in their job. For example, if a respondent stated that a function of their job was "Health Promotion and Protection," they were then asked if this included any of nine activities listed under that function, such as "Health communication." We included an "other" option for functions and for each list of activities to allow for write-in functions and/or activities that were not listed. The full survey instrument is available in Supplementary Information. The survey was tested with five PHNs who had experience working in local and federal government settings.

Data Collection

The survey was constructed and hosted on REDCap (Research and Electronic Data Capture). Prior to sending the survey link, the PHS Chief Nurse Officer sent an introductory email to all PHS nurse officers, with a link to a webinar with detailed study information recorded by the research team. The PHS Chief Nurse Officer then sent a recruitment email in February 2024 to all PHS nurse officers, with a survey link, language about their rights as participants, and a link to the introductory webinar. The online survey was open for 5 weeks, during which we sent three email reminders. Recruitment did not include civilian nurses.

Measures

As part of the data cleaning process, we reviewed "other" responses to the function and related activities items and, where appropriate, we recoded responses either to existing category options or used frequently provided "other" responses to create new categories. For Job Functions, 69 "other" open-text responses were reviewed and recoded. Similarly, the "other" responses for each set of activities listed within each Job Function category were reviewed and recoded.

We also created a variable representing PHS nurse officers working in either "primarily nonclinical" or "primarily clinical" settings. PHS nurse officers, in responding to population need and filling gaps in the health system, may more often work in clinical/healthcare delivery-focused settings than other groups of PHNs. Thus, creating this "primarily nonclinical" subset supported examining the accuracy of function and activity questions among PHS nurse officers in settings more like the generally "less clinical" PHN population outside of the USPHS Commissioned Corps. This measure was created using participants' responses to their regular duty assignment, with a "1" representing the "primarily nonclinical" group and including those in educational institutions (K-12 and college/university), outpatient and agency mental health services, local and/or state public health or community health agencies, childcare centers, case or disease management at insurance companies, occupational health/employee health services, and federal government agencies excluding clinic settings such as a rural health center or the Indian Health Service. Assignments coded as a "0" or "primarily clinical" for this measure were those who characterized their regular duty assignment as inpatient, call center/telenursing, rural health center, FQHC, Indian Health Service, and most ambulatory care settings (e.g., outpatient dialysis, private medical practice, and freestanding ambulatory surgery center). While some assignments in these settings could be nonclinical, the vast majority are primarily clinical in nature.

Analysis

We examined the data for outliers and used descriptive statistics to characterize the sample. We also compared function and activity responses for "primarily nonclinical" and "primarily clinical" nurses, using chi-square and t-tests. *p* values less than .05 were considered significant.

Results

Of the 1,203 nurses who were sent the survey, 565 completed it, yielding a 46.9% response rate. Participants primarily identified as female (69.7%) and were 41 to 50 years of age (40.4%) (Table 1). Most self-identified as White (45.5%) or Black/African American (28.5%). Most had either a Bachelor's (40.4%) or a Master's in Nursing (47.3%) degree as their highest level of nursing education. Of the 9.7% that had a Doctor of Nursing Practice (DNP) as their highest nursing degree, 60% (n = 33) had a DNP in Population Health or Executive Leadership. Sixty-four percent also had a non-nursing degree, with 17% of these non-nursing degrees in public health.

On average, respondents reported having worked as a nurse for 18.5 years and in the USPHS Commissioned Corps for 11.6 years (Table 2). Most worked in U.S. Department of Health and Human Service (HHS) regions 3, 4, and 6 and just under half of participants (49.2%) reported working in both rural and urban areas and 21.1% reported working only in rural areas. A large proportion of participants reported working with populations with substance use disorder (50.6%), with people with mental health diagnoses (53.3%), with people who identified as American Indian/Alaska Native (49.0%), or with older adults (49.9%). Those reporting working with "other" underserved populations mainly stated they worked with "all" population types.

Table 1
Characteristics of Sample of USPHS Nurses in 2024 (N = 565)*

	n	%
Gender		
Male	146	25.8
Female	394	69.7
Prefer not to answer	25	3.0
Age (in years)		
21–30	14	2.5
31–40	116	20.5
41–50	228	40.4
> 50	202	35.8
Racial identity†		
American Indian/Alaska Native	76	13.5
Asian	42	7.4
Black or African American	161	28.5
Native Hawaiian or Pacific Islander	§	0.4
White	257	45.5
Other	15	2.7
Prefer not to answer	45	8.0
Ethnic identity		
Hispanic/Latino	55	9.7
Entry degree into nursing		
Vocational/practical certificate	24	4.2
Diploma	16	2.8
Associate degree	92	16.3
Baccalaureate degree	361	63.9
Master's degree	61	10.8
PhD	§	0.5
Doctor of Nursing Practice	7	1.2
Highest level of nursing education		
Vocational/practical certificate	0	0.0
Diploma in nursing	0	0.0
Associate degree	0	0.0
Baccalaureate degree	229	40.5
Master's degree	267	47.3
PhD	12	2.1
Doctor of Nursing Practice	55	9.7
Population Health and/or Executive Leadership DNP‡	33	5.8

Note. USPHS, U.S. Public Health Service.
* Demographic questions were not required and as such, total "*N*" for different categories will not always add up to 565; however, total missing did not amount to greater than 10% for any category.
† Respondents could select all that apply in answering this question and as such, totals will be larger than the total sample *N*.
§ Refers to cell counts less than 5 to ensure identity protection of respondents.
‡ While this subgroup is 5.8% of the entire sample, they represent 60% of respondents who have a DNP.

Regular Assignment, Agency, and Program Area

Most participants reported their assignment as being in a federal HHS/Public Health Services agency (e.g., CDC, Food and Drug Administration [FDA]) (n = 161 or 43%). The most frequently identified HHS agencies were the Indian Health Service (IHS) (24%), Department of Homeland Security (DHS) (17%), and DOJ-BOP (16%) (Table 3). Only 4% reported working in a local or state public health agency. While 53 participants selected "other" as their regular duty assignment, 12 of these 53 respondents reported a program area or function as their "other" regular duty assignment and the remaining 41 reported assignments for which we had already provided categories, with the majority of these being inpatient.

Among the different program areas, most participants worked in correctional health (30.9%), ambulatory (25.4%), and administration (21.7%). Approximately one-third of participants reported supervising others (38%). Participants could select "other" as a program area as well—while most "other" selections could be coded to existing program areas, two areas were identified for addition to future survey iterations: informatics and occupational health.

Job Functions and Activities—Overall Sample Results

When examining the sample overall, most participants indicated that their Job Functions primarily fell into four of the 12 Job Function

Table 2
Years in Service, HHS Region, and Population Served (N = 565)

Years in Service	Mean (SD)	
Nursing	18.5 (6.4)	
Public Health	13.2 (7.4)	
US Public Health Service	11.6 (6.6)	
	N	%
HHS region		
1	7	1.2
2	10	1.8
3	165	29.2
4	88	15.6
5	17	3.0
6	118	20.9
7	14	2.5
8	28	5.0
9	59	10.4
10	53	9.4
Population served		
Rural	119	21.1
Urban	92	16.3
Rural and urban	278	49.2
Other	67	11.9
Underserved populations		
Limited English proficiency	227	40.2
Medicaid insured	215	38.1
Substance use disorder	286	50.6
Refugee	165	29.2
Hispanic/Latinx	224	39.6
Black/African American	227	40.2
American Indian/Alaska Native	277	49.0
Asian	165	29.2
Native Hawaiian/Pacific Islander	103	18.2
Population with disabilities	261	46.2
Population is incarcerated	229	40.5
Population is unhoused	187	33.1
Population has mental illness	301	53.3
Population is older adults	282	49.9
LGBTQ+	238	42.1
Other	53	9.4
None of the above	50	8.8

Note. HHS, U.S. Department of Health and Human Service.

Table 3
Regular Assignment, Agency, Program Area, and Supervisory Role (N = 565)

Regular Assignment	*N*	%
Inpatient	**53**	**9**
Inpatient Unit—Not Critical Access Hospital	10	19
Critical Access Hospital	8	15
Hospital Sponsored Ambulatory Care (outpatient, surgery, clinic, urgent care, etc.)	*	6
Emergency Department—Not Critical Access Hospital	*	2
Hospital Administration	4	8
Hospital Ancillary Unit	0	0
Hospital Nursing Home Unit	*	2
Other Hospital Setting	*	4
Rehabilitation Facility/Long-Term Care	0	0
Nursing Home Unit—Not in Hospital	*	2
Inpatient (mental health)	*	4
Correctional or Detention Facility	18	34
Other Inpatient Facility	*	6
Local or state health agency	**20**	**4**
Tribal clinic	6	30
State health department	5	25
Local health department (city, county, or multicounty)	0	0
State mental health agency	0	0
Community Mental Health Center	0	0
Home Health Agency or Service	0	0
Nursing Home/Assisted Living	*	5
Other local or state public health agency	5	25
Ambulatory care	**117**	**21**
Private Medical Practice	*	3
School Health Services/School-Based Health Center	0	0
Outpatient Mental Health/Substance Abuse	8	7
Ambulatory Surgery Center (Free Standing)	*	1
Nurse Managed Health Center	5	4
Outpatient Dialysis Center	0	0
Other clinic type	97	83
Child Care Center	**0**	**0**
School Health	*	**0**
Case Management	**23**	**4**
University	*	**0**
Telehealth	*	**0**
Occupational Health	**19**	**3**
Federal Agency	**373**	**66**
HHS/Public Health Service agency (ASPR, AHRQ, ATSDR, CDC, FDA, HRSA, IHS, NIH, and SAMHSA)	161	43
HHS/Human Services Agency (ACF, ACL, and CMS)	19	5
HHS/Office of the Secretary	18	5
Non-HHS agency	110	29
Federal Clinic	12	3
Other federal government agency	46	12
Other	**56**	**10**
Agency	***N***	**%**
Administration for Children and Families	1*	0.2
Department of Defense	13	2.3
Food and Drug Administration	46	8.1
Health Resources and Services Administration	27	4.8
Department of Health and Human Services	134	24
Department of the Interior	*	0.4
National Institutes of Health	26	4.6
Office of Science	14	2.5
Partnership for Sustainable Communities	*	0.2
Substance Abuse and Mental Health Services Administration	*	0.7
Department of Veterans Affairs	26	4.6
Agency for Healthcare Research and Quality	*	0.2
Federal Bureau of Prisons	92	16
U.S. Marshals Service	6	1.1
Centers for Disease Control and Prevention	25	4.4
Centers for Medicare and Medicaid Services	21	3.7
Department of Homeland Security	96	17
Department of Commerce	5	0.9
Other	25	4.4
Program area	***N***	**%**
Access to Care/Health Systems	91	16.2
Ambulatory	143	25.4
Chronic Disease	98	17.4
Communicable Disease	99	17.6
Correctional Health	174	30.9
Emergency Preparedness	66	11.7
Environmental Health	21	3.7
Family Planning	11	2.0
Home Health	10	1.8
Immunizations	78	13.9
Inspections	41	7.3
Maternal and Child Health	22	3.9
Refugee Health	9	1.6
School Health	12	2.1
Substance Abuse	49	8.7
WIC	*	0.7
Administration	122	21.7
Other	182	32.3

* Indicates cell count total < 5; number not shown to protect identity of respondents.

categories: Health Promotion and Protection (48.7%), Clinical Interventions (40.4%), Care Coordination and Case Management (26.7%), and Organizational Management and Administration (33.6%) (Table 4). Additionally, 12.2% selected "other" as a Job Function. Most of these could be categorized into existing functions we had provided, except for six participants who identified "informatics" as a distinct function of their work.

Table 4
Job Functions and Activities, and Percent Time Spent (N = 565)

	n	%	% Time Spent Mean (SD)
Health promotion and protection	275	48.7	32 (25)
Population-level prevention planning or implementation	116	42.2	
Monitor outcome data for evaluation, quality improvement	123	44.7	
Report data to county, state, or federal entities	70	25.5	
Conduct/Support conduction of Community Health Needs Assessment	40	14.5	
Data sharing to support decision-making	110	40.0	
Health communication	145	52.7	
Disease and health event investigation (including surveillance)	93	33.8	
Disease tracking and interventions (chronic and communicable)	107	38.9	
Other	4	1.5	
Emergency preparedness and disaster recovery	59	10.4	27 (28)
Plan and prepare for emergencies	49	83.1	
Respond to emergencies	44	74.6	
Disaster recovery	17	28.8	
Other	3	5.1	
Environmental safety and quality	48	8.5	21 (22)
Investigate environmental health problems	28	58.3	
Obtain information, specimens, or samples	23	47.9	
Reduce or eliminate exposure to environmental hazards	27	56.3	
Other	2	4.2	
Clinical interventions	228	40.4	49 (30)
Register and enroll clients	32	14.0	
Deliver direct health services to clients	181	79.4	
Perform health screenings	150	65.8	
Review medical records	166	72.8	
Other	16	7.0	
Care coordination and case management	151	26.7	40 (31)
Develop and evaluate care plans	65	43	
Link clients with services in the community (e.g., referral and follow-up)	99	65.6	
Communicate updates and/or concerns about client with other providers involved in client's care	124	82.1	
Other	13	8.6	
Cross-sector collaboration and community engagement or partnership	57	10.1	23 (23)
Develop and maintain community partnerships	46	80.7	
Provide education to the public	34	59.6	
Interact with local or regional media	11	19.3	
Represent the department at community meetings	34	59.6	
Serve on committees, boards, or task forces	42	73.7	
Other	3	5.3	
Research/Evaluation/Quality improvement	129	22.8	38 (31)
Evaluate program performance	66	51.2	
Evaluate population-based systems and services	48	37.2	
Take part in public health research	48	37.2	
Lead or participate in quality improvement processes	90	69.8	
Other	2	1.6	
Policy and advocacy	113	20.0	29 (28)
Provide information to governing bodies to guide public policy	64	56.6	
Develop and/or implement public policy or regulations	60	53.1	
Communicate with governing entities regarding responsibilities	68	60.2	
Community-organizing	17	15.0	
Coalition-building	30	26.5	
Advocacy	56	49.6	
Other	3	2.7	
Enforce laws and regulations	105	18.6	41 (34)
Enforce regulations	79	75.2	
Schedule services and inspections	34	32.4	
Conduct site visits, home visits, or inspections	43	41	
Other	2	1.9	
Ensure competent public and personal healthcare workforce	73	12.9	23 (24)
Develop training materials and job-relevant content	51	69.9	
Disseminate training materials and job-relevant content	53	72.6	
Other	4	5.5	
Organizational management and admin	190	33.6	67 (39)
Manage files, prepare reports, or correspondence	135	71.1	
Manage personnel (e.g., recruit, schedule, train, or evaluate staff)	125	65.8	
Manage inventory	39	20.5	
Manage public health programs	63	33.2	
Supervise, plan, or distribute work to others	116	61.1	
Process billing, fees, and payments	21	11.1	
Financial management (including manage budgets)	49	25.8	
Prepare applications for external funding	13	6.8	
Manage grants, contracts, or service agreements	42	22.1	
Review facility operational plans	61	32.1	
Establish fees for public health services	2	1.1	
Other	8	4.2	
Other job functions	6	1.1	

Across all job functions, there were nine activities that were identified by 100 or more respondents as being a part of their daily work. Four activities were within the Health Promotion and Protection job function: population-level prevention planning or implementation (N = 116), data monitoring and sharing (N = 123), health communication (N = 145), and disease tracking and interventions (N = 107). The other activities were within the Clinical Interventions job function (providing direct services to clients [N = 181] and performing screenings [N = 150]), the Care Coordination job function (communicating updates and concerns with other providers involved in a client's care [N = 124]), and the Organizational Management job function (engaging in organizational/administrative tasks such as managing and supervising personnel [N = 125] and providing reports [N = 135]) (Table 4).

Participants also described the amount of time they spent in each Job Function area (Table 4). Among all job functions, "Organizational Management and Administration" occupied the largest amount of time—53%, on average. Participants who reported engaging in clinical work reported that this function occupied almost half (49%) of their time. The average percent of time in other function areas ranged from 23% for those indicating "ensuring a competent workforce" as a function to 41% for those identifying "enforce laws and regulations" as a function.

Most respondents stated that the job function and activity items we provided accurately reflected their job tasks and responsibilities (N = 88%). This appeared as generally true as most "other" functions or activities identified by respondents could be recoded into existing items. However, three job function categories emerged as having missing activities or activities that required clarification: Cross-sector Collaboration and Community Partnership, Health Promotion and Protection, and Organizational Management and Administration.

For Cross-sector Collaboration and Community Partnership, we recoded some "other" responses to a new activity we labeled "collaboration within and across agencies, departments, and other sectors," since the activity options we provided did not detail this type of collaboration. "Other" activity descriptions provided by respondents that supported this addition included, for example: "engaging internal personnel and international, federal, industry, & academic partners…" and "Develop and maintain interagency partnerships and with industry to facilitate research in medical countermeasures."

Within the Health Promotion and Protection function, we determined the need for a new activity—"Supports and/or provides organizational technical assistance" based on respondents describing the following "other" activities within this function: "Provide technical assistance to federal awardees, analyze data, manage grant portfolios" and "Support functions including technical assistance and site visit to various program structures (small organizations to large health systems)." Two more activities added under the Health Promotion function were regarding data collection and preparation: (a) "Collecting data, specimens, and other information to diagnose and address health problems in the community" and (b) "Data preparation." We also clarified an existing activity to state "Monitor *and/or analyze* outcome data for evaluation and quality improvement." These additions and clarifications were based on the following "other" activity descriptions within the Health Promotion and Protection function: "Collect data from veterans about environmental hazards," "Large part is data modernization/data science," and "Need to add data analysis and informatics."

Within the Organizational Management and Administration function, we added the activity "Develop and/or oversee organizational policies," based on the following "other" activity descriptions from respondents: "Project officer establishing program requirements for future public health providers" and "Involved in reviewing policy and procedures."

We also asked respondents to identify the "title" that most closely corresponded to their current job title and provided a range of options. Almost one-third of respondents selected "other" in response to this question; however, most of their "other" responses corresponded to existing options (e.g., a response of "research nurse" under "other" when "Nurse Researcher or Scientist" was an existing job title option).

Job Functions and Activities—Comparing "Primarily Nonclinical" and "Primarily Clinical" PHS Nurse Officers

When comparing those working in primarily nonclinical vs. primarily clinical settings, a significantly larger proportion of the primarily nonclinical respondents reported involvement in Policy and Advocacy (24.1% vs. 12.2%), Enforcing Laws and Regulations (22.5% vs. 11.2%), and Research/Evaluation/Quality Improvement (26.0% vs. 16.8%) compared with those in primarily clinical settings. Conversely, significantly fewer participants in primarily nonclinical settings, compared with those in primarily clinical settings, reported job functions related to Clinical Interventions (31.4% vs. 57.1%) and Care Coordination and Case Management (22.8% vs. 34.2%) (Figure 1).

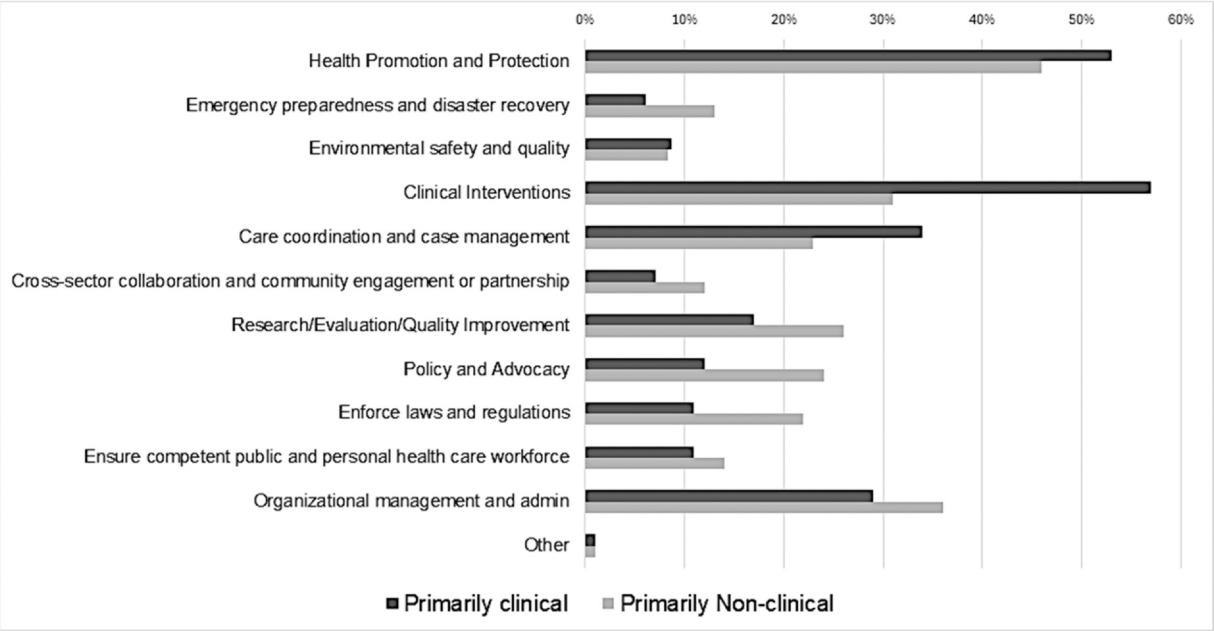

Figure 1. Functions and activities of primarily clinical vs. primarily nonclinical USPHS nurse officers, N = 565. USPHS, U.S. Public Health Service.

Discussion

USPHS nurse officers are a key component of the national PHN workforce, yet research regarding these nurses is limited. Our findings describe a highly educated and diverse element of the nursing workforce with wide-ranging responsibilities and engagement in a variety of activities. Among all USPHS nurse officer respondents, most reported participating in activities that span both systems-level work, such as population-level prevention planning and monitoring/reporting outcome data, and individual-level tasks, including delivering direct services to clients and providing care coordination. Overall, our survey instrument appeared to accurately capture the range of activities representing the work of PHS nurse officers. However, it also revealed the need to include additional functions related to cross-agency collaboration, organizational policy, and data science and informatics. When comparing PHS nurse officers working in primarily nonclinical settings to those in primarily clinical settings, we found that a higher proportion of those working in primarily nonclinical settings were involved in policy and regulatory activities.

Diversity among USPHS nurse officers is greater than both the general PHN and the overall nurse population, with respect to race, ethnicity, and gender identity. Among PHS nurse officer respondents, 28.5% identified as Black or African American, 45.5% identified as White, and 9.7% as Hispanic or Latino. This is notably different than national estimates among PHNs in state and local governmental public health (10% Black, 63% White, and 13% Hispanic or Latino) (de Beaumont Foundation & ASTHO, 2022) and the general nursing population (11% Black, 67% White, and 9% Hispanic or Latino) (HRSA, 2022). Regarding gender among our sample, 25.8% identified as male compared with 7% among state and local governmental PHNs and 12% in the general nursing population (de Beaumont Foundation & ASTHO, 2022; HRSA, 2022). Significant attention has been given to the need to diversify the PHN workforce to reflect the populations served and as a critical part of providing high-quality and culturally supportive care (Castner et al., 2023; Fowler, 2020; Kett et al., 2024). Diversity in the workforce can also enhance work environments through fostering collaboration of team members with a variety of perspectives (ANA, 2023; Porter et al., 2023). An adequately diverse workforce is a gap among PHNs and the nursing workforce more broadly (Choi et al., 2023; Fowler, 2020; Kett et al., 2024); findings here suggest an opportunity for learning from the USPHS Commissioned Corps nurse officers and its nursing leadership in terms of addressing this gap through additional research and a deeper examination of career pathways into the USPHS.

While PHS nurse officers are required to hold at least a bachelor's degree in nursing, we found that a very large proportion of PHS nurse officer respondents had advanced education—both in and outside of nursing—compared with other governmental PHNs and the larger nursing population. Specifically, 47.3% had a master's degree as their highest level of nursing education compared with 22% in local and state PHNs and 16% in the overall nursing population (Bekemeier et al., 2024; HRSA, 2022; Kett et al., 2024). We see a similar and striking difference with respect to those with a DNP (9.7%) and PhD (2.1%) among these PHS nurse officers, compared with 2% with doctoral degrees in the overall RN population (HRSA, 2022). Almost two-thirds of our respondents who had a DNP had it in population health and/or executive leadership. This is much higher than what would be expected among nurses with DNP degrees, given the small number of academic programs producing DNP graduates with a focus in population health (Bekemeier et al., 2021). In addition, approximately two-thirds of respondents also had a non-nursing degree compared with an estimated 37% of nurses in the general population (HRSA, 2024). Altogether, the high academic preparation among USPHS Commissioned Corps nurse officers, along with the large proportion that have education in addition to nursing, speaks to the range of expertise PHS nurse officers bring to their jobs and highlights their value to the public health workforce overall.

This high level of education is reflected in the range of job functions respondents reported, with most time spent engaging in health promotion, clinical, care coordination, and organizational management functions. Similarly, in a 2012 survey focused on local and state governmental PHNs, respondents also reported that they frequently engaged in clinical activities. However, fewer respondents to that survey reported population-based activities, such as health promotion and protection, as compared with the PHS nurse officers in our study (Beck & Boulton, 2016). When specifically examining the primarily nonclinical PHS nurse officers in our sample (approximately 60% of our total respondents), the reported functions differed and included significantly higher instances of policy, research, and enforcement functions than their primarily clinical counterparts. While clinical services are within a PHN's scope of practice, a stronger emphasis on population-based activities aligns more closely with the PHN Scope and Standards (ANA, 2022), the Public Health Intervention Wheel (Schaffer et al., 2022), and other studies of PHN activities (Beck & Boulton, 2016; Choi et al., 2023).

Overall, the distribution of the activities we examined among respondents enhances our understanding of PHS nurse officers and their work. Additionally, frequent reporting of job functions such as health promotion, policy advocacy, and research suggests that function and activity questions such as these would be valuable for assessing functions in the broader PHN population beyond the PHS nurse officers. Questions similar to those piloted in this study may also help identify nurses engaged in public health work outside of traditional public health settings, addressing recent calls to evaluate PHNs based on their roles and functions rather than solely by their work environments (Kneipp et al., 2022).

This survey of PHS nurse officers in the USPHS Commissioned Corps also helped us identify survey items where expansion or clarification was needed. For example, respondent feedback and "other" responses indicated a need to expand some activity options. We also found a potential need to clarify or provide more detailed definitions regarding some activity-oriented questions, as most "other" responses fit the options we provided. However, 88% of respondents agreed that the job functions and activities presented were accurate, suggesting our items can be used to capture the work of PHNs and that overall, clarification rather than numerous additions is likely needed. We also posit that more guidance may be needed to support survey respondents in breaking their job down into specific activities, based on the number of participants that selected "other" and described their program area, rather than an activity. Similar issues were present in the 2012 PHN survey by Beck and Boulton (Beck & Boulton, 2016). Despite the potential need for this guidance when using this type of question, recent PHN enumeration research showing the range of settings and specialties where PHNs work underscores the need for accurate activity-based questions to facilitate a better understanding of the PHN workforce (Bekemeier et al., 2024).

In light of what we learned, we have three recommendations for future nursing workforce surveys:

- National and state nursing workforce surveys should consider adding or modifying existing questions that are focused on respondents' work functions and activities to better understand the roles of nurses and to capture the functions and activities of PHNs. The following functions are specifically recommended to be included as they reflect the most commonly identified functions in our findings:

1. Health promotion and protection
2. Policy development and advocacy
3. Enforcement and regulation

4. Emergency preparedness
5. Cross-sector collaboration and community engagement

- Using "job title" for enumerating the PHN workforce should be done with caution. Job title questions in our survey did not provide insight into the functions and activities of PHS nurse officers. Further, due to significant variation in job titles for the same type of role, it appears to lack validity as a tool for identifying PHNs.
- Future assessments focused on the PHN workforce should use the survey items piloted in this study. The questions we asked were largely shown to be accurate in assessing the range of PHN functions and activities. We recommend further use of this survey, with modifications incorporated. The questions could be used in conjunction with larger public health workforce surveys, such as the Public Health Workforce Interests and Needs Survey (de Beaumont Foundation, 2023).

Limitations

As noted, several of the settings where nurses in the USPHS Commissioned Corps work, such as an inpatient setting, may not be representative of where we would find PHNs outside of the USPHS Commissioned Corps. However, this only represented a small proportion of the PHS nurse officers in this study and likely did not substantially affect results. Further, our subanalysis of primarily nonclinical PHS nurse officers, relative to the total sample of survey respondents, provided a deeper understanding of those in settings more similar to PHNs outside of the USPHS Commissioned Corps. We are unable to determine the reason some PHS nurse officers did not respond to the survey and acknowledge the possibility of nonresponse bias. However, we were able to obtain an almost 50% response rate, providing reasonable confidence of a representative response. Finally, *we also acknowledge having provided response choices related to sex for our demographic question regarding gender that may have affected our ability to accurately account for gender distribution in our sample. This will be corrected in future survey iterations.*

Conclusion

Our findings illustrate the wide-ranging responsibilities of the USPHS Commissioned Corps, with PHS nurse officers who are more diverse and highly educated than the broader nursing workforce overall. As such, there may be opportunities for nursing leaders to learn from this federal, uniformed workforce about ways to recruit and retain such workers as part of growing a more diverse nursing workforce. This study also presented a novel approach to assessing the PHN workforce by using questions focused on their functions and activities, rather than their setting and specialty. Such questions can be used in future assessments to gain a deeper and more nuanced understanding of PHNs' roles and contributions to nursing, to public health practice and to the public's health.

CRediT Statement

Paula M. Kett: Writing – review and editing, Writing – original draft, Visualization, Validation, Supervision, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. *Greg Whitman*: Writing – review and editing, Writing – original draft, Visualization, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation. *Joyce K. Edmonds*: Writing – review and editing, Visualization, Methodology, Investigation, Conceptualization. *Jennifer R. Moon*: Writing – review and editing, Resources, Investigation, Conceptualization. *Aisha K. Brooks*: Writing – review and editing, Resources, Investigation, Conceptualization. *Marin Strong*: Writing – review and editing, Writing – original draft, Methodology, Formal analysis, Data curation. *Betty Bekemeier*: Writing – review and editing, Writing – original draft, Validation, Methodology, Investigation, Funding acquisition, Conceptualization.

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Declaration of Competing Interest

The authors declare no conflicts of interest.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.outlook.2025.102385.

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