

Protecting the Public's Health: An Estimate of Staffing Needed to Serve the Nation

Project Report

October 2021



Staffing Up: Determining Public Health Workforce Levels Needed to Serve the Nation

Project Report

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PROJECT SUMMARY

Introduction

Since 2008, there has been a 15 percent decrease in the governmental public health workforce, which was already operating with minimally sufficient levels of staff. Continued funding reductions (which led directly to staff reductions) have severely hindered the ability of our nation's health departments to address community needs and protect and promote health. The COVID-19 crisis increased awareness of these critical public health gaps among a broader national audience.

Local leaders may be able to make compelling cases for why additional investment in public health infrastructure is necessary to enhance public health staffing and capacity in their communities. However, a lack of consistent data on the current state of public health infrastructure, including funding and staffing, makes it difficult for health departments to identify and champion the right level of staffing to respond to public health needs. While there are several frameworks that have outlined the activities and responsibilities of governmental public health departments, none have articulated the number of staff needed to meet those activities and responsibilities based on the size of the jurisdiction served and other factors. This is a critical question for the public health field to answer in order to champion and ensure sufficient staff to protect the public's health.

Project Overview

The Public Health National Center for Innovations (PHNCI) partnered with the de Beaumont Foundation on a workforce initiative, "Staffing Up: Determining Public Health Workforce Levels Needed to Serve the Nation" ("Staffing Up"). The goal of the initiative was to develop a national estimate of staffing needed to provide foundational public health services across the United States. The estimate will support efforts to secure sufficient funding for the public health system in the United States.

Between September 2020 and June 2021, PHNCI and the de Beaumont Foundation engaged public health experts, including representatives from territorial, state, local, and Tribal health departments, federal partners; non-governmental partners; and academia, to serve on a Steering Committee and a Research Advisory Committee. Committee members guided two research teams who employed quantitative and qualitative methods to examine public health staffing needs and generate the national estimate.

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The project concluded that the **U.S. needs to hire a minimum of 80,000 more full-time equivalents (FTEs) in state and local governmental public health departments** – an increase of 80 percent – to provide adequate infrastructure and minimum public health services to the nation. Based on existing shortages, **54,000 additional FTEs should be deployed to local health departments and 26,000 to state health departments.**

The estimate represents the **minimum** number of FTEs needed and do not consider additional staff that may be needed to respond to emergencies (i.e., surge capacity). They are calculated based on data from state and local health departments (prior to COVID-19) and as such, are not representative of workforce needs for U.S. territories, freely associated states, or Tribal Nations. Ascertaining workforce needs for these entities requires deliberate collaboration and data collection relevant to their needs and desires around public health service provision.

Project Team and Structure

Staffing Up engaged stakeholder groups and researchers to advise and implement the work to ensure alignment with best practices and evidence (see Figure 1). These included:

Core Project Team: A core team of staff from PHNCI and de Beaumont Foundation managed the project and its components.

Quantitative Research Team: The quantitative research team oversaw the review of all data and generated the estimate. [Learn more about methods and findings that informed the estimate.](#)

Qualitative Research Team: The qualitative research team conducted key informant interviews and focus groups with policy experts and practitioners as well as a survey of the Steering Committee to inform the development of the estimate and its dissemination to the field. [Learn more about the findings from the qualitative research.](#)

Steering Committee: A [Steering Committee](#) of 28 public health representatives advised on key questions, such as:

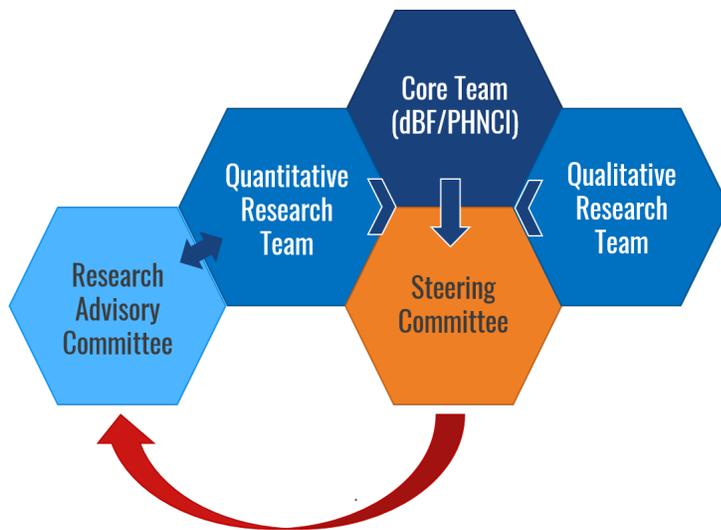
- What public health framework(s) should serve as foundation for the estimate?
- In classifying staff, do the data support categorizing by job title or job duties?
- What information about staffing will be most useful for health department leadership to make the case for additional funding to augment the current workforce? How should that information be presented?
- What level of detail can we provide based on the data available?

Research Advisory Committee: The [Research Advisory Committee](#) of 11 members provided methodological expertise and guidance to the quantitative and qualitative research teams.

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Figure 1: Staffing Up Decision Making and Coordination Framework



What's Next: Developing a Public Health Workforce Calculator

The development of the national estimate relied on modeling existing expenditure and staffing data for a sample of local and state health departments. A partnership between PHNCI, the de Beaumont Foundation, and the Centers for Disease Control and Prevention Center for State, Tribal, Local and Territorial Support will support additional data collection, analysis, and modeling efforts that will guide the development of a **public health workforce calculator that will allow health departments to determine the number and type of staff to provide minimum public health services.**

The calculator will be released in Summer 2022. [Learn more.](#)

DEVELOPING THE NATIONAL ESTIMATE: QUANTITATIVE METHODS AND FINDINGS

Introduction

The quantitative research team undertook several processes, informed by the Steering Committee, Research Advisory Committee, and qualitative input from the field to develop the national estimate presented herein. The team relied on existing staffing and funding data for state health departments (SHDs) and local health departments (LHDs) to model current staffing levels and estimate the workforce needed to fully implement elements of the [Foundational Public Health Services \(FPHS\)](#) across the country.

Assumptions

Governmental Public Health

The U.S. public health system is made up of public, private, and third-sector entities that contribute to the delivery of public health services. Together, their differing roles, relationships, and interactions work

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as a system – the public health system – to contribute to the health and well-being of people throughout the nation.

Within this system, governmental public health departments are generally responsible for those services most consistent with the role of government and, in some cases, they fill a critical need in a community that is not being met by the private or third sector (non-profit, philanthropy, etc.). In the United States, governmental public health generally includes the U.S. Public Health Service, relevant federal agencies as well as territorial, state, local and Tribal health departments.

In many cases, governmental public health departments are subordinate to general governmental entities (e.g., county government) and receive varying levels of support from those entities. Common examples include:

- Rent and/or management support services provided to the health department for a fee
- Rent and/or management support services provided in-kind (no financial exchange)
- Direct services provided by another agency for a fee
- Direct services provided by another agency without direct compensation
- Direct public health services and/or funding provided to partner in non-governmental (private or third) sectors.

The diversity of these relationships and lack of consistent understanding of them creates a practical challenge to consistently and appropriately accounting for costs associated with public health functions.

Territorial Public Health Departments

The United States currently administers 15 territories classified by 1) incorporation and 2) whether they have an organized government recognized by the U.S. Congress. Five of these territories are populated, nine are unpopulated, and two are unpopulated and disputed. The five populated territories, American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands, are most relevant to this effort, as they have populations that should have access to public health services and organized governments (American Samoa's government isn't recognized as organized by Congress but is considered de facto organized) delivering those services/through which to deliver those services.

To understand territories' governmental public health workforce needs, it will be necessary to understand the transformation required for government to deliver the FPHS and the cost of those efforts, as public health services are largely integrated with clinical care. Given that the workforce needs estimates generated during Staffing Up do not include services to territorial populations, estimates of the workforce needs there should be additive to these estimates.

Tribal Health Departments

As of March 2020, the United States recognizes 574 sovereign Tribal governments, including Alaska Native Villages.¹ Federally recognized Tribes and Alaska Native Villages are unique governmental entities that retain sovereignty as a nation-state on a population/membership basis, rather than a geographic

¹ <https://www.ncsl.org/legislators-staff/legislators/quad-caucus/list-of-federal-and-state-recognized-tribes.aspx#federal>

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basis. While many federally recognized Tribes and Alaska Native Villages govern sovereign geographic territory, their governance and service delivery also extend to their members based on membership and other eligibility criteria, rather than geography.

While Tribal members are citizens of their Tribes as sovereign governments, they are also citizens of the United States and the states, counties, cities, and other local governments where they reside. Conversely, non-Tribal members living in Indian Country are not citizens of the Tribe on whose land they reside. Therefore, federally recognized Tribes and Alaska Native Villages may have concurrent jurisdiction for delivering governmental services, like public health services.

The U.S. government is obligated to provide health care to Native Americans and Alaska Natives on the basis of the U.S. Constitution, treaties, case law, and other statutes.² These services are largely funded by the Indian Health Service, whose strategic goals include “to ensure that comprehensive, culturally-appropriate personal and public health services are available and accessible to American Indian and Alaska Native people.”

Additional data would be needed to understand the desired roles and responsibilities of Tribes and Alaskan Native Villages related to delivering the FPHS and the additional cost associated with those activities. To better ascertain workforce needs, deliberate collaboration with them should be undertaken, and data collected.

In some communities, it may make sense to include state-recognized, as well as federally recognized Tribes in future public health implementation and workforce analysis, although funding obligations for those agencies may differ.

Programmatic Framework

Staffing Up sought to develop a national estimate of staffing needed to support implementation of elements of a minimum package of public health services, known as the Foundational Public Health Services (FPHS). The concept was first described in a National Academy of Medicine (NAM), report, “For the Public’s Health: Investing in a Healthier Future,” which explored opportunities to address the continued underfunding of governmental public health in the U.S. The report recommended the field define a “minimum package of public health services” for local and state public health departments. This recommendation was taken up by the governmental public health practice community, and between April 2013 and March 2014 the Public Health Leadership Forum (PHLF), funded by the Robert Wood Johnson Foundation and facilitated by RESOLVE, developed the FPHS.

Since being published in 2014, the FPHS have been stewarded by the Public Health National Center for Innovations at the Public Health Accreditation Board and adopted by state public health systems throughout the U.S.

Data and Sample

Data Sources

² <https://www.ihs.gov/newsroom/factsheets/basisforhealthservices/>

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The quantitative research team evaluated a wide range of existing data sources for inclusion in this analysis with the goal of leveraging the most comprehensive, accurate, and appropriate data available. The final data used for this study came from four secondary sources: 1) States participating in the PHNCI 21st Century (21C) Learning Community, 2) NACCHO Profile surveys, 3) ASTHO Profile surveys, and 4) the Public Health Workforce Interests and Needs Survey (PH WINS).

21st Century Learning Community Data

The [21st Century \(21C\) Learning Community](#) is a group of states in various stages of adopting the FPHS framework, from initial conceptualization to implementation. Data on funding and staffing levels were obtained from state and local health departments in four 21C Learning Community states – Colorado, Ohio, Oregon, and Washington. The final sample included three state health departments (Colorado, Oregon, and Washington) and 168 local health departments (37 in Colorado, 76 in Ohio, 30 in Oregon, and 25 in Washington).

Colorado

Colorado's governmental public health system is decentralized and bifurcated such that a state public health department, Colorado Department of Public Health and Environment (CDPHE) (inclusive of a state central office as well as a public health laboratory), delivers a subset of services centrally to all Coloradans and 53 LHDs deliver other services locally in their jurisdictions.

In 2019, the Colorado governmental public health system, led by the Colorado Association of Local Public Health Officials, undertook an assessment to understand current implementation and spending on and the cost of implementation of the FPHS framework. For consistency with Colorado's 2008 Public Health Reauthorization Act, Colorado has elected to refer to as Core Public Health Services [CPHS]) as defined in the "[Colorado Public Health System Transformation Core Public Health Services Operational Definitions Manual, May 2019.](#)"

The final validated dataset included function-level data on current implementation and spending and full implementation of the FPHS based on fiscal year 2018 and in 2018 dollars (full implementation data were collected in 2019 and therefore assumed to be consistent with 2018 dollars, for these purposes). Data limitations include 1) reliance on self-reported data, 2) lack of consistent understanding of the at-the-time nascent FPHS operational definitions on the part of assessment respondents, 3) variation in data collection based on differences in agency characteristics, fiscal years, accounting methods, and accounting systems, and 4) variation in respondent financial acumen and cost estimation experience.

The final results of this effort were published in a comprehensive report, the [Colorado Public Health System Transformation Core Public Health Services Needs Assessment Report, January 2020](#), which provides additional detail about the assumptions, data collection methods, and limitations of this dataset.

Ohio

Ohio's governmental public health system is decentralized and bifurcated such that a state public health agency, Ohio Department of Health, delivers a subset of services centrally to all Ohioans and 113 LHDs delivered other services locally, within their jurisdictions.

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In 2018, the Ohio Public Health Partnership developed a tool that would allow LHDs to assess the costs of providing the FPHS. The costing tool developed for this purpose was incorporated into the Annual Financial Reports that all LHDs in Ohio are required to submit to ODH annually.

As a result, all Ohio LHDs have collected annual data on FPHS spending since fiscal year 2018. Data used for Ohio LHDs came from the 2018 AFR and the embedded FPHS costing tool, which Ohio LHDs completed and submitted to the Ohio Public Health Partnership between January and June 2019.

The data were validated for internal and external consistency. The final validated dataset included element-level data on current staffing and expenditures of the FPHS for 86 Ohio LHDs (76 percent of all LHDs) covering a population of 9,804,714 (84 percent of Ohio's total 2018 population of 11,690,000). In addition, the costing tool asked respondents to estimate their current levels of attainment for each of the services and activities included in the FPHS. Data limitations include: 1) reliance on self-reported data, allowing for respondent bias and 2) lack of understanding of how to best quantify attainment levels on the part of costing tool respondents.

The final results of this effort were published in a comprehensive report, [Costing the Foundational Public Health Services in Ohio, October 2019](#), which provides additional detail about the assumptions, data collection methods, and limitations of this dataset.

Oregon

Oregon's governmental public health system is decentralized and bifurcated such that a division of the broader state health department, Oregon Health Authority Public Health Division, delivers a subset of services centrally to all Oregonians and 34 LHDs deliver other services locally, within their jurisdictions.

In 2015 and 2016, the Oregon governmental public health system, led by the Oregon Public Health Authority Public Health Division, undertook an assessment to understand current implementation and spending on and the cost of full implementation of their FPHS framework, as defined in the [Oregon Public Health Modernization Manual](#), (version dated January 2015, subsequently updated in September 2017).

Data was collected over approximately eight weeks, between January and March 2016. Respondents were provided with a consistent data collection instrument and comprehensive technical assistance, including access to active/live technical assistance from a consultant team. The data were validated for internal consistency (i.e., are individual agency results consistent?) and external consistency (i.e., are results consistent across and among respondents?).

The final validated dataset included function-level data on current implementation and spending and full implementation of the FPHS based on fiscal year 2015 and in 2016 dollars. Data limitations include: 1) reliance on self-reported data, allowing for respondent bias, 2) lack of consistent understanding of the at-the-time nascent FPHS framework on the part of assessment respondents, and 3) variation in respondent financial acumen and cost estimation experience.

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The final results of this effort were published in a comprehensive report, the [State of Oregon Public Health Modernization Assessment Report, June 2016](#), which provides additional detail about the assumptions, data collection methods, and limitations of this dataset.

Washington

Washington's governmental public health system is decentralized and bifurcated such that a state public health agency, the Department of Health (DOH) governed by the State Board of Health, delivers a subset of services centrally to all Washingtonians and 35 LHDs delivered other services locally, within their services areas (primarily at the county level, with some serving multi-county districts).

In 2017 and 2018, the Washington governmental public health system, led jointly by the state's SACCHO, Washington State Association of Local Public Health Officials and DOH, undertook an assessment to understand current implementation and spending on and the cost of full implementation of the FPHS framework as defined in [Washington's Foundational Public Health Services Functional Definitions Manual, Version 1.4](#).

Data was collected over approximately 11 weeks, between May and July 2020. Respondents were provided with a consistent data collection instrument and comprehensive technical assistance, including access to active/live technical assistance from the consultant team. Unfortunately, the consultant team was unable to collect data from six of Washington's LHDs (Chelan-Douglas Health District, Grant County Health District, Klickitat County Public Health, Okanogan, Snohomish, and Whitman).

The data were validated for internal and external consistency. The final validated dataset included element-level data on current implementation and spending and full implementation of the FPHS based on fiscal year 2016 and in 2016 dollars. Data limitations include: 1) reliance on self-reported data, 2) lack of consistent understanding of Washington's FPHS functional definitions on the part of assessment respondents, and 3) variation in respondent financial acumen and cost estimation experience.

The final results of this effort were published in a comprehensive report, the [Washington State Public Health Transformation Assessment Report for State and Local Public Agencies, September 2018](#), which provides additional detail about the assumptions, data collection methods, and limitations of this dataset.

Other Data Sources

NACCHO and ASTHO Profile Data

The research team obtained additional staffing and expenditure data for each LHD included in the sample based on their most recent NACCHO Profile survey response (2019, 2016, or 2013).

For the SHDs in the sample, the research team obtained additional staffing and expenditure data for each SHD's central office from the most recent ASTHO Profile survey (2019).

PH WINS

The Public Health Workforce Interests and Needs Survey ([PH WINS](#)) is a nationally representative source of data about the governmental public health workforce. With detailed data on demographics and trends, the survey helps agencies identify and meet the needs of their employees and communities.

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Using data from 2017, data from PH WINS were used to characterize the division of labor, by the FPHS, and between LHDs and SHD Central Offices. The total public health workforce was calculated for each of the FPHS. Next, the proportion of the workforce employed at LHDs and the proportion employed at SHDs was calculated for each FPHS. For instance, across the country, 78 percent of environmental health staff worked in LHDs and 22 percent in SHDs.

This approach assumed that this same current division of labor between LHDs and SHDs would be retained at full staffing levels. Using this assumption, estimates of the local public health workforce increase were utilized to generate estimates of the commensurate increase in the state public health workforce. The results of this analysis were used to calculate the SHD FTE needs, contingent on the LHD FTE needs.

The state/local division of labor approach was used as described above due in part to a small sample size of SHD survey data. The approach did not attempt to normatively alter the current state/local division of labor number. This report treats the division of labor number agnostically. Future work or interpretation of this calculation could reasonably revise this assumption up or down based on additional insights or data.

Alignment of Data Sources

The source data varied on the basis of programmatic framework and differences in purchasing power associated with inflation/year and cost of living. To create a consistent sample from these four disparate sources, the research team cross-walked the data to a consistent programmatic framework. While it was desirable for this programmatic framework to be the prevailing national framework – the FPHS – data limitations made this difficult.

Instead, data were aligned to a [previous version of the FPHS framework developed by the Public Health Leadership Forum](#). The only limitation in using that framework is that “accountability” is included in the Foundational Capability “organizational competencies,” whereas accountability is held separately in the current FPHS model.

To address purchasing power, the research team applied a [state-local government purchasing price deflator](#) and a [cost of living indicator](#) to account for differences in the cost of living across communities in the four states.

Measures

The measures of interest included indicators of health departments’ current spending and staffing as well as estimates of health departments’ “full-implementation” spending and staffing (i.e., the amount of spending and level of staffing required by an agency to fully implement the FPHS in their community).

Current Spending and Staffing

Detailed information on current levels of staffing and spending was available for all LHDs in the sample.

Colorado (n=1 state health department, 36 LHDs): The Colorado Department of Public Health and Environment and 36 LHDs reported their staff FTEs (based on 2,080 annual labor hours), labor spending

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(defined as salaries and benefits for all directly employed staff), operating costs (defined as the costs of supporting the program's day to day functions, including contracted and professional services), capital and in-kind (the estimated value of goods, service, or transactions that were received for free and "spent" to help deliver core public health services).

Because operating spending included contracts that might be considered labor replacement, the quantitative research team assumed that the FTE and labor spending data might underrepresent true FTE and labor spending.

To address this, the quantitative research team assumed that all non-labor spending (excluding that related to facilities and fleet and data systems) represented labor replacement and increased labor spending by the total of non-labor spending to generate a labor-adjusted labor spending value. To calculate the additional FTE attributable to this additional labor spending, it was divided by the average labor spending per FTE; this value was then added to reported FTE to generate the labor-adjusted FTE.

Ohio (n=76 LHDs): Ohio LHDs reported total annual labor hours spent on each Foundational Capability and Area as well as total labor cost by Foundational Capability and Area. Ohio LHDs also reported non-labor costs at the Foundational Capability- and Area- level, including spending on contracts. For the purpose of this analysis, the research team assumed that all contracts represented labor replacement and increased the reported labor hours and costs by the full value of contracts. To compute FTEs by the FPHS, the research team divided the annual labor hours in each FPHS by 2,080 hours.

Oregon (n=1 state health department, 29 LHDs): The Oregon Health Authority Public Health Division and 29 LHDs reported their staff FTEs (based on 2,080 annual labor hours), labor spending (defined as salaries and benefits for all directly employed staff), non-labor costs (defined as the program specific costs of supporting program functions, including materials; supplies; small equipment, such as computers or lab equipment; professional services; and other contracted services), and overhead spending (facility related costs such as rent, maintenance, or utilities and other overhead costs, like fleet); labor, non-labor, and overhead spending are additive to total spending. The FTE and spending data was reported at the function-level (the level below Foundational Capabilities and Areas) and "rolled-up" through addition to the Foundational Capability and Area level. Because non-labor spending included contracts that might be considered labor replacement, the quantitative research team assumed that the FTE and labor spending data might underrepresent true FTE and labor spending. To address this, the quantitative research team assumed that all non-labor represented labor replacement and increased labor spending by the total of non-labor spending to generate a labor-adjusted labor spending value. To calculate the additional FTE attributable to this additional labor spending, it was divided by the average labor spending per FTE; this value was then added to reported FTE to generate the labor-adjusted FTE.

Washington (n=1 state health department, 24 LHDs): The Washington Department of Health and 24 LHDs reported their staff FTEs (based on 2,080 annual labor hours), labor spending (defined as salaries and benefits for all directly employed staff), and non-labor spending (inclusive of all costs other than salaries and benefits for directly employed staff, including contracts that might be considered labor replacement); labor and non-labor spending are additive to total spending. The FTE and spending data

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was reported at the element-level (the level below Foundational Capabilities and Areas) and “rolled-up” through addition to the Foundational Capability and Area level. Because non-labor spending included contracts that might be considered labor replacement, the quantitative research team assumed that the FTE and labor spending data might underrepresent true FTE and labor spending. To address this, the quantitative research team adjusted the data for labor replacement based on the average ratio of operating spending to overall non-labor spending across the Colorado and Oregon portion of the sample at the element-level; this value was added to labor spending to generate a labor-adjusted labor spending value. To calculate the additional FTE attributable to this additional labor spending, it was divided by the average labor spending per FTE; this value was then added to reported FTE to generate the labor-adjusted FTE.

Full-Implementation Spending and Staffing from 21C states

Estimated levels of spending and staffing required to fully implement elements of the FPHS were originally constructed using two approaches. These estimates are utilized in this project’s analytic model as “source data.”

Approach 1: Zero-based budgeting (CO, OR, WA)

For health departments in Colorado, Oregon, and Washington, the research team obtained full-implementation spending on staffing based on a zero-budgeting exercise that these departments conducted as part of their data collection.

Approach 2: Gap analysis using attainment levels (OH)

For health departments in Ohio, the research team performed gap analysis using reported attainment levels to estimate full implementation staffing and spending. Specifically, the team computed any additional labor hours and labor costs needed to fully implement elements of the FPHS, assuming that any current gaps are covered solely by the LHD without relying on community partners.

Analytic Approach

The research team employed two separate approaches to estimate the additional staffing needed by LHDs and SHDs, respectively.

Estimating Staffing Needs for Local Health Departments

This project utilized the data to model the *total* number of FTEs needed as a function of population size. Several different models and approaches were explored, considering characteristics like service mix or rurality and measures of need, but, fundamentally, population size alone proved the most predictive.

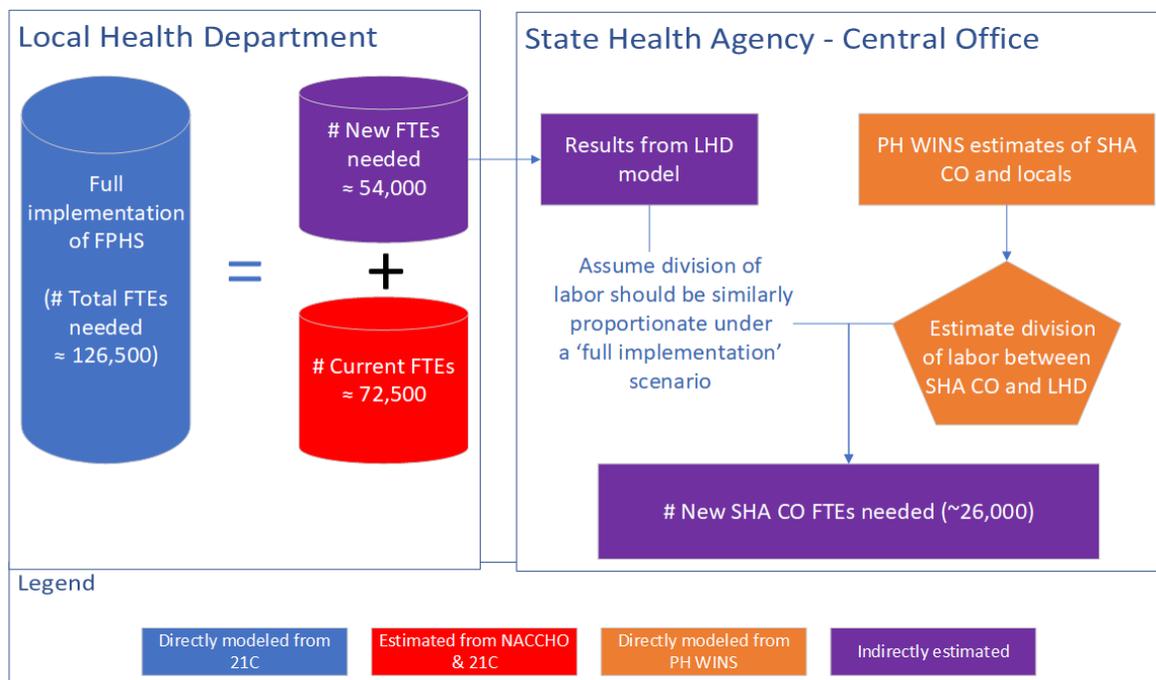
The model extrapolated the data from the 168 LHDs in the sample to the 2,450 LHDs in the country. This model estimates only the FPHS services and does not estimate the need to meet expanded or additional services, which vary substantially across communities.

To calculate the number of *new* FTEs, the team divided the current FTEs from agency totals in the 168 LHDs and applied that proportion nationally to 2,450 LHDs.

Figure 2: Analytic Approach

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Estimating staffing needs for state health departments

Because of a lack of available data for states to replicate the approach used for LHDs, data from PH WINS were used to model the "division of labor" between SHD Central Offices and LHDs nationally, by the FPHS. For each FPHS, the proportion of the overall workforce within SHD Central Offices versus LHDs was calculated. Then, the gap estimation model for LHDs (described above) was used to staff up the local workforce. To maintain a consistent division of labor, we then increased the number of SHD Central Office FTEs commensurately.

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Findings

Current staffing levels

Based on data from the recent NACCHO Profile survey, total current staffing for all LHDs is 136,127 FTEs. Of these, the team estimated that 72,817 FTEs were involved in providing the Foundational Capabilities (FSc) and Foundational Areas (FAs). Based on data from the most recent ASTHO Profile survey, total current staffing for state health departments was 63,921 FTEs. Of these, the team estimated that 31,000 FTEs were involved in providing the FCs and FAs. Combined, state and local health departments currently employ approximately 200,000 FTEs, of which 104,000, or 52 percent, are involved in providing the FCs and FAs.

Future staffing needs

This project estimates that LHDs require an additional 53,402 FTEs to fully implement the FCs and FAs. This represents a 73 percent increase over current staffing levels. For LHDs serving populations of fewer than 50,000 residents, the additional staffing needs are the most substantial and indicate staffing increases of 209 percent for LHDs serving fewer than 25,000 residents (Table 1). A 137 percent increase in staffing for LHDs serving between 25,000 and 50,000 residents was indicated.

For LHDs serving populations of 50,000 or more, the additional staff needed is more incremental on a percentage change (between 43 and 108 percent), but relatively larger in terms of the absolute size of the workforce gap. The analysis suggests that upwards of 17,500 additional FTEs are needed to fully staff our nation’s largest LHDs to deliver the FCs and FAs, which represents an approximately 50 percent increase in the size of the public health workforce in these jurisdictions.

SHDs, need an additional 26,030 FTEs to fully implement the FPHS. This represents an 8 percent increase over current staffing levels.

Combined, state and local health departments will need 79,432 new FTEs to fully implement the FCs and FAs across the country. This represents an increase of 77 percent over current staffing levels.

Table 1: Current and Needed FTEs per 100,000, by agency type and population served.

Local Health Departments Population served	Current FTEs	Total FTEs needed	Increase	Percentage Increase
<25,000	4,000	13,000	9,000	230%
25,000-49,999	5,500	13,000	7,500	140%
50,000-99,999	7,000	15,000	8,000	110%
100,000-199,999	8,500	14,500	6,000	70%
200,000-499,999	14,000	20,000	6,000	40%

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500,000+	33,500	51,000	17,500	50%
Sub-Total	72,500	126,500	54,000	70%
State Health Departments	31,000	57,000	26,000	80%
Total	103,000	183,000	80,000	80%

Limitations

While the research team used all available data to produce the estimates presented in this report, there are limitations that may affect the findings. First, detailed data on public health funding and staffing at the level of the FPHS was only available for LHDs in four states and three SHDs in these four states. All four states included operate under decentralized public health governance structures.

Second, the majority of LHDs in the sample represented small- and medium-sized agencies. Only 11 LHDs in the sample served populations of more than 500,000 residents. As a result, the estimates may not adequately represent the additional staffing needed by LHDs serving large populations, including big cities.

Finally, existing data sources were limited to local and state health departments. No comprehensive funding and staffing data were available for territorial or Tribal health departments. As a result, our findings do not include estimates of the additional staffing needed in these agencies to fully implement the FCs and FAs.

DEVELOPING THE NATIONAL ESTIMATE: QUALITATIVE RESEARCH

Introduction

Qualitative methods were used to garner input into the development of a national tool for estimating staffing levels, assess reactions to the national estimate, and obtain suggestions for how these are shared across different audiences.

The qualitative work consisted of three activities: 1) key informant interviews to inform the development and utility of a staffing tool for public health, 2) a survey of the Staffing Up Steering Committee to assess perspectives and reactions to the national estimate, and 3) focus groups with key stakeholders to collect feedback on the national estimate, understand levels of support for the estimate, and inform the development of communication materials.

Methods and Findings

Key Informant Interviews

Key informant interviews were conducted as the national estimate was being formulated and developed and were intended to inform the development and eventual rollout of the estimate.

Methods

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A purposive sample of public health practitioners and experts was identified by the Staffing Up core team and included individuals with diverse experiences and perspectives. Participants were recruited via email invitation to participate in a one-hour video conference interview. Emails included an overview of the Staffing Up project. Twenty-five individuals were invited to participate in interviews and 17 did so, representing a 65 percent response rate. Upon scheduling an interview, participants were sent the semi-structured interview guide and a presentation with background and additional detail about the Staffing Up project. With the consent of participants, interviews were recorded and transcribed. Interviews were conducted between December 2020 and January 2021.

Throughout the time interviews were being conducted, the two researchers present for all interviews would meet to discuss emerging themes. This list of themes was regularly modified as interviews continued. After all interviews were complete and had been transcribed, the researchers independently reviewed three transcripts and assigned themes and subthemes. Differences in coding between the two were reviewed, discussed, and reconciled. The remaining 14 interviews were then divided amongst the two researchers for coding.

Findings

Three themes identified are presented in this report including: design considerations, implementation and use considerations, and output considerations (Table 2). Subthemes were identified within each theme domain and are presented alongside explanations and select participant quotes in Table 1.

Design considerations included challenges in creating benchmarks for staffing; wanting flexibility in the tool, both in terms of level and services; and flexibility in input variables. Several possible benchmarks that could be used in the tool were discussed including accreditation, the 21st Century Learning Community states, or health departments that provide either the Foundational Public Health Services or a comprehensive set of services. Ultimately, there was consensus that there are strengths and drawbacks to each of these benchmarks including lack of prespecified standards and applicability of these benchmarks to all state and local health departments. For example, regarding accreditation, one participant stated “Accreditation is typically a specified standard, rather than a performance standard. In other words, do this and you shall be accredited...It provides us the appearance of performance excellence and continuous improvement.” Using 21st Century Learning Communities as a benchmark raised concerns about generalizability of those staffing levels and activities to other states with different policies, structures, and finances. Participants also suggested several input variables that they perceived would help tailor estimates to accurately reflect the needs of their communities, such as women of childbearing age, geography, drive times, disease prevalence, tax base, accreditation status, governance, services provided, and poverty rates.

Implementation and use considerations included suggestions for how health departments would use the estimates and what they would need to do so. The most common subthemes included needing support in how to assess the current workforce and a strong need for analytic transparency in the eventual tool including assumptions and limitations. More specifically, individuals described the need for information regarding the methods, data sources, assumptions, and limitations that the calculations were based on.

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As one participant noted, “Before we get to advocacy, what I would make sure that people clearly know what the assumptions were in whatever gets created, and then be granted the permission to at least think about what their exceptions are. And there might be better language for that. But it is that idea that it needs that transparency of like, you know, ‘here's the work we did, we're bringing you a tool, it may be more or less academic or not’...Because otherwise, you'd get horrendous pushback, because your tool is not right, because it doesn't suit me.”

Lastly, participants also raised output considerations. It was suggested that findings from the staffing estimate tool may be used to assess different use cases or scenarios, consider cross-training current staff or rewriting job descriptions, and for sharing services through local and state agencies, neighboring communities, or regionalization. Participants discussed concerns about difficulty in expanding staffing based on a staffing estimate tool due to existing budgets or continued difficulty recruiting. It was suggested that the tool could be used to assess different options such as sharing FTEs across jurisdictions, centralizing or regionalizing certain positions or services, or expanding training for current staff to be able to acquire new skills that could fill needed roles. However, participants suggested that doing so may require re-writing job descriptions. Participants also described considerations for sharing their own findings either internally or externally with policymakers or other relevant stakeholders. Having materials such as a template press release for the public or decision makers was suggested as being a helpful addition to facilitate this external sharing.

Steering Committee Survey

When the quantitative research team released the estimate stating 80,000 new FTEs were needed, summary tables and explanations were shared with supporting information to the Steering Committee members for their review. A survey was created to assess their reactions, concerns, and potential support of national estimates.

Methods

An open-ended survey was developed to gather insights from Steering Committee members. It included questions regarding initial reactions, concerns, unintended consequences, levels of support, and potential implications of the national estimates. All 28 Steering Committee members were sent the survey in May 2021 and given two weeks to complete it. A total of 13 individuals responded to the survey (46.4 percent response rate). Responses to individual survey items were characterized as being positive, negative, or neutral and reoccurring themes were assessed.

Findings

First, there was general consensus that the estimates and materials (as presented) did not provide enough detail for respondents to feel confident in how the estimates were developed, what they represent, or how they should be interpreted. Respondents wanted more detail on the benchmarks, data, and limitations of the approach in order to feel confident in the estimates. Most respondents did generally agree that the national estimate seemed reasonable, although some felt it was too small. Respondents also felt that without additional detail of the estimates and approach, the national number alone was insufficient. Overall, many respondents were reluctant to support the estimates at this time without additional information on the data, approach, and interpretation of the estimates. Lastly, respondents suggested that there should be caution in rolling out these numbers. Specifically, it should

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be clear what these estimates do and do not represent and how they should be interpreted (i.e., per 100,000 population).

Focus Groups

The last qualitative component was to conduct focus groups with three relevant stakeholder groups to provide further insight about communicating the national estimates.

Methods

Focus groups were conducted with three stakeholder groups that included 1) individuals who had participated in the earlier key informant interviews, 2) health department leaders, and 3) policy and advocacy experts. Lists of potential health department leaders and policy/advocacy experts were generated by the full Staffing Up team. Like with the key informant interviewees, we sought a variety of perspectives and experiences for the focus groups. A total of 22 individuals participated in focus groups (nine previous interviewees, seven health department officials, and six policy/advocacy experts). Upon accepting the invitation to participate in a focus group, participants were provided select information and output from the draft tool. A semi-structured guide was also developed to provide an outline for the focus group discussions. Focus groups were scheduled for one hour via Zoom, recorded with the permission of the participants, and occurred in early June 2021. Common responses as well as unique perspectives were compiled across all of the focus groups.

Findings

Findings from the focus groups can be divided into two sections: reactions to the estimates and potential unintended consequences. First, there was widespread support among the focus groups that estimates like these would be beneficial to the public health community. Like the Steering Committee, many of the focus group participants felt the national estimate seemed reasonable. A small proportion also thought it seemed too small. There was widespread consensus among all focus groups that the national estimate should not be released alone. All suggested that the national estimate should be accompanied by both the state/local estimates and the estimates by FPHS. In addition to the estimates, focus group participants suggested including information about how the estimates were generated, what the FPHS are and include, and what the estimates are intended to represent when releasing the tool and accompanying materials.

Potential unintended consequences and concerns by the focus group members were also shared. First, participants suggested that a common solution to reaching the estimates suggested by the tool will be sharing staff or regionalization approaches. They suggested that it should be cautioned that it is not just the count of FTEs that matters, but you need the right people with the needed skills and training to fill those positions. Participants proposed having additional information about what the FPHS are would help combat this tendency to 'count heads.' Second, there was concern that policymakers or others may question if health departments are already accredited, didn't they already make the case that they are meeting the needs of their communities? PHNCI and agencies using the tool should be prepared to respond to these types of questions. Lastly, there were several concerns raised regarding possible funding related to these staffing estimates. Participants encouraged federal funding guidance on how any possible funding should funnel from federal to state and state to local agencies to ensure equitable

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allocation. It was also proposed that dissemination materials will be needed to again explain what the FPHS are and that doing them should not replace other existing public health activities and funding. There was also agreement that any funding should be mandatory, long term, and flexible. Along with these suggestions was that it be conveyed that staffing for public health is a part of infrastructure and funding should be clearly allocated to governmental public health agencies.

Table 2: Themes and Subthemes from Qualitative Interviews

Theme	Subtheme	Example Quotes
Design Considerations	Challenges with benchmarks	“I am not convinced that those [21C] states are reflective of public health nationally. You know, whenever we do work in public health, and we're trying to identify the exemplars, we often end up in Oregon and Washington. That probably is not feasible in states like mine just because of different politics, different financing, all kinds of different things. So, you know, I think asking [participant's state] to meet Oregon's measures is probably not going to be palatable. And we can say that for almost any state. So, I don't know that necessarily gets us there. You know, we certainly have states that are exemplars, but they are exemplars within their own system that they've developed, and how transferable that is, I think, is still open to question.”
	Flexibility of level and services	“There's such wide variation state by state in the services that local health departments provide. I just don't know how it would be tailored to our specific needs in [our state].”
	Flexibility of input variables (including list of suggested variables)	“I think the most valuable way to use the tool would be if it's a tool that is kind of more like modeling a little bit where you can play with different variables and really try to plug in variables that are critical for your county and use it as a way to inform. But certainly, it's not going to be hard and fast. It could be, depending on how accurate it is. Over time, it could be a bigger piece of what influences the final decisions.”
Implementation and Use Considerations	Complexity of existing resource assessments (baseline data collection)	“I think there will need to be a lot of accounting, that will happen. And I think that that in and of itself could create challenges, because public health agencies right now are really strapped. They don't have a lot of time to set aside to do that kind of accounting. But kind of back to my original point, I think that even as they tried to do that accounting, there's going to be a level of arbitrariness to it where these things just don't fit into neat categories. So, they're just going to have to go ‘Well, let's say 20 percent, here and 80 percent here.’ It's just, again, to the extent that we try to tie this to things that are vague, I think it's going to be really, really hard to come up with specific numbers.”
	Technical assistance for baseline data (including examples of agencies who have done so)	“An example might be useful. Maybe just sharing how one state or one entity did it. ‘It went to this person, this person did the analysis, then they sent that back.’ Did they do a survey across the organization? Just have very high level how they envision us using it. Yeah, and of course, we would adapt it for whatever we need, but a very practical, ‘Here's what you do. Here's how we envision using this.’”
	Analytic transparency	“I tend to feel like if we have a calculator, if a good question comes up about how the calculation was developed and if we can't substantiate

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Theme	Subtheme	Example Quotes
	(including methods, data sources, assumptions, and limitations of final estimates)	[the calculation] or explain it and understand what's influencing the value, then the foundational value of [the calculation] will be questioned."
	Estimates must be realistic	"I think [one contact tracing calculator] told us that we needed to hire like 100,000 contact tracers, or something crazy that we could never ever afford. And that might have been what we needed at the time. But it was so unrealistic that we just wrote it off. So just making sure that it's realistic - whatever realistic means or doable. Like, even if it's lower than it should be, I think starting somewhere that people aren't going to just completely go off and write it off would be really important."
	Support materials (including contact for technical assistance, webinars, example announcements, case studies of implications if staffing levels met)	"Whatever guidance comes out with [the calculator] needs to be pretty comprehensive. While I may have a lot of experience, developing workforce building plans and core competency assessments and looking at staffing profiles, I don't think that's necessarily the case across the state."
Output Considerations	Transparency in sharing agency-level output (both internal and external, template press release)	"I think the potential of viewing this new idea of basing it on actual data, either numbers of cases, numbers of septic systems, numbers of women of childbearing age, that state of it, it's kind of out there, right? And if we can then figure it out like to do X services, or X group of services for that need, it looks like we need about this many FTEs, then the hard work and the difficult conversations come in how do we distribute that? And that's more an in-state conversation."
	Output scenarios or use cases (may include cross-training, rewriting job descriptions, working with unions, service sharing, etc.	"I think it would be so exciting to have a calculator and although I haven't done a staffing calculator, I think of mortgage rates or mortgage loans where you change the variables and then you see what that looks like. What we also do this with is estimating our retirement. You know, 'if I retire tomorrow, I don't get very much money.' It allows you to run scenarios. That's what I think we really need - a scenario. So not only do we need to fund the FTEs that we need, we need to think about whether there are different ways to structure how we distribute these."

DISCUSSION

Despite complex population health challenges and increased investment in health care, funding for public health has not kept up with inflation over the past several decades. And, governmental public health workforce planning is challenging with no sense of appropriate or adequate staffing ratios. While much has been written about what governmental public health departments should do, there is little available to guide health departments or appropriators when determining necessary staff to deliver the recommended services.

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The Health Resources and Services Administration annually identifies health professional shortage areas (HPSAs) and medically underserved areas (MUAs). This is possible because staffing ratios have been developed to guide the necessary medical personnel needed per a specific number of people. Such ratios either do not exist in public health or have not been consistently applied in public health workforce planning.

The COVID-19 pandemic has highlighted challenges in the capacity of state and local governmental public systems. Even before the pandemic, chronic underfunding of governmental public health led to a 15 percent decrease in the workforce since the 2008 Recession.

This project represents the first step to quantifying the public health staffing needed to serve the nation. An additional 80,000 FTEs would help to ensure that every community in America is served by a public health system that is sufficiently staffed. However, it is important to note that the estimates presented in this report represent only the additional staffing needed to fully implement the FCs and FAs. Researchers estimate that to provide all necessary public health services would require even more staff, as would a public health emergency like COVID-19. Detailed analysis of data from LHDs in Ohio supports this by showing that those expanded services represent around one third of LHDs' total staffing.

What's Next: Developing a Public Health Workforce Calculator

The development of the national estimate relied on modeling existing expenditure and staffing data for a sample of local and state health departments. A partnership between PHNCI, the de Beaumont Foundation, and the Centers for Disease Control and Prevention Center for State, Tribal, Local and Territorial Support will support additional data collection, analysis, and modeling efforts that will guide the development of a **public health workforce calculator that will allow health departments to determine the number and type of staff to provide minimum public health services.**

The calculator will be released in Summer 2022. [Learn more.](#)

Appendix A: Steering Committee

John Auerbach President and CEO Trust for America's Health	Elaine Auld Chief Executive Officer Society for Public Health Education
Scott Becker Chief Executive Officer Association of Public Health Laboratories	Georges Benjamin Executive Director American Public Health Association
Vickie Bradley <i>ᏉᏃ ᏁᏃᏁᏃᏁᏃ ᏁᏃᏁᏃ</i> Secretary, Public Health and Human Services Eastern Band of Cherokee Indians	Doris Brown Executive Director Bureau of Community Preparedness Louisiana Department of Health

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<p>Brian Castrucci President and Chief Executive Officer de Beaumont Foundation</p>	<p>Nafissa CisseEgbuonye Public Health Director Black Hawk County Public Health</p>
<p>Allison Foster President National Board of Public Health Examiners</p>	<p>Mike Fraser Chief Executive Officer Association of State and Territorial Health Officials</p>
<p>Lori Freeman Chief Executive Officer National Association of County and City Health Officials</p>	<p>Bianca Frogner Associate Professor, Department of Family Medicine Director, Center for Health Workforce Studies Deputy Director, Primary Care Innovation Lab University of Washington, School of Medicine</p>
<p>Paul Halverson Professor, Founding Dean Richard M. Fairbanks School of Public Health</p>	<p>Janet Hamilton Executive Director Council of State and Territorial Epidemiologists</p>
<p>Chelsie Huntley Director Minnesota Department of Health</p>	<p>Karrie Joseph Deputy Director, Public Health, Policy and Programs National Indian Health Board</p>
<p>Chrissie Juliano Executive Director Big Cities Health Coalition</p>	<p>Paul Kuehnert President and Chief Executive Officer Public Health Accreditation Board</p>
<p>Leisha Kidd-Brooks Environmental Health Manager City of Longview Environmental Health Department</p>	<p>Laura Magaña President and Chief Executive Officer Association of Schools and Programs of Public Health</p>
<p>Glen Mays Professor and Chair, Department of Health Systems, Management and Policy Colorado School of Public Health, Anschutz Medical Campus</p>	<p>Megan McClaire Acting Chief Deputy Director Los Angeles County Department of Public Health</p>
<p>Mysheika Roberts Health Commissioner</p>	<p>Denise Smith Executive Director</p>

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Columbus Public Health	National Association of Community Health Workers
John Weisman Secretary of Health, Washington State Department of Health	

Ex-Officio Members

José Montero Director, Center for State, Tribal, Local, and Territorial Support Centers for Disease Control and Prevention	Pattie Simone Director, Division of Scientific Education and Professional Development, Center for Surveillance, Epidemiology, and Laboratory Services Centers for Disease Control and Prevention
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Liaison Member

Sheila K. Pradia Williams Senior Advisor to the Associate Administrator Director, Office of Strategy, Programs and Partnerships Bureau of Health Workforce Health Resources and Services Administration	
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Appendix B: Research Advisory Council

Angela Beck Associate Dean for Student Engagement and Practice Clinical Assistant Professor of Health Behavior and Health Education Director Behavioral Health Workforce Research Center Director Region V Public Health Training Center University of Michigan School of Public Health	Mike Meit Senior Fellow, NORCs Public Health Research Department Director of Research and Programs East Tennessee State University Center for Rural Health Research NORC at the University of Chicago
Betty Bekemeier Kirby & Ellery Cramer Endowed Professor Director, Northwest Center for Public Health Practice Affiliate faculty, UW Center for Studies in Demography and Ecology Adjunct Professor, UW School of Public	Jean Moore Director, New York Center for Health Workforce Studies State University of New York at Albany School of Public Health

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Health, Department of Health Services University of Washington School of Nursing	
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