

PUBLIC HEALTH JOBS CORPS:

Responding to COVID-19, rebuilding the community health workforce



Updated January 22, 2021

I. INTRODUCTION

The United States is facing an unprecedented series of crises that threaten the health of all Americans. The COVID-19 pandemic, resulting economic instability, and escalating distrust in institutions have resulted in hardships for millions. The catastrophic failure of the Trump administration's COVID-19 response exposed and exacerbated the urgent need to build a public health system in the U.S. that recognizes social determinants as a key driver of inequity, prioritizes access to high-quality integrated clinical care, and embeds the right to health at its core. Families in America need action—to stop COVID-19, to rebuild trust in government, and to alleviate injustice and suffering.

II. PUBLIC HEALTH JOBS CORPS OVERVIEW

Currently, the U.S. health system is inequitable, fragmented, and focused on high-cost hospital care to the detriment of public and community health. The U.S. spends more on health care than any other OECD country, yet has the lowest life expectancy and highest chronic disease burden.¹ At the same time, public health departments and community health centers in the U.S. have been progressively defunded over the last 40 years.² As a result of this historic disinvestment, and driven by systemic racism throughout the system³, Black, Latinx, and indigenous communities struggle to access quality care and treatment.

The COVID-19 pandemic has exacerbated these inequities and disproportionately impacted communities of color. Hospitalization rates due to COVID-19 for Black, Hispanic, and American Indian and Alaska Native (AIAN) people were roughly five times higher than that of White people.⁴ The COVID-19 related death rate among Black people is over twice as high as the rate for white people.⁵ As COVID-19 continues to ravage communities across the country, the U.S. needs a systemic investment in jobs focused on the health of historically marginalized populations.

To address the COVID-19 pandemic and prevent ongoing and future public health catastrophes, we call for the creation of a national community-based Public Health Jobs Corps (PHJC) of 640,000 staff. Creating a new federally funded and locally managed community-based workforce can help curb the COVID-19 pandemic, improve economic and health outcomes, and address the range of social and structural factors that drive health inequity.

We envision a community-based workforce that can be rolled out in two phases over the coming year:

PHASE 1 – STOPPING COVID-19: 100,000 individuals dedicated to the COVID-19 response

PHASE 2 – RESILIENCE AND RECOVERY: 540,000 Community Health Workers (CHWs) hired over 3 years, with a cadre of 100,000 hired immediately and focused on COVID-19 vaccine outreach

The remainder of this memo articulates the structure of this essential workforce; key considerations for its implementation; and a modeling approach to estimate personnel needs. We must immediately invest in this community-based workforce not just to survive the COVID-19 pandemic, but also to build up a public health system capable of containing future outbreaks and creating a healthier and more equitable future for all Americans. We must take action now: The health of our nation hangs in the balance.

III. PHASE 1 – STOPPING COVID-19

The Public Health Jobs Corps must include a community-based workforce to carry out urgent COVID-19 response functions over the short-term. Case investigation, contact tracing, and access to testing will remain critical components of the COVID-19 response, even as the vaccine rolls out. Case investigation and contact tracing are essential pillars of infectious disease control and have been proven to reduce community spread, break chains of transmission, and save lives.⁶ Supporting vulnerable individuals to safely isolate and quarantine has also been recognized as a critical component of contact tracing by many leading public health groups, and modeling shows that adherence to public health measures are critical to reducing the pandemic's impact.⁷

1. **CASE INVESTIGATION & CONTACT TRACING:** Case investigation is necessary for each newly diagnosed person so that their close contacts can be informed. Contact tracers alert the contacts of the new “case” to inform them of their risk and how they can minimize risk to others.⁸ Contact tracing is vital to the early detection of COVID-19, especially among high-risk populations.
2. **CARE RESOURCE COORDINATION:** The COVID-19 pandemic has shown that many public health measures are economically regressive. Essential workers often do not have paid sick leave and yet are the most at risk of exposure. Social distancing is only possible for the privileged and quarantine and isolation are burdensome to those with limited resources. Social supports—whether food, transportation, application for benefits, or housing—must be mobilized to help these vulnerable populations, and care resource coordinators are needed to assist patients navigating complex networks of programs. Community members can serve as care resource coordinators to work with case investigators, contact tracers, and others on the care team to facilitate identification of needs and the provision of social supports to allow those with COVID-19 or those at risk to get tested, safely quarantine, receive care or get vaccinated.^{9,10}

Vaccine outreach workers are a key component of the COVID-19 response. These jobs are included in Phase 2 (Resilience and Recovery) given the similarities between this role and that of a CHW, and because we expect vaccine outreach workers will transition to the permanent community-based health workforce as herd immunity is achieved.

COVID-19-related jobs should be centralized within public health departments and accountable to a standardized and commonly understood set of metrics. Case investigators and contact tracers should be based within public health departments, and overseen by a centralized office at the state level. Based on the dismal record of private companies delivering on contact tracing, any external contracts should be based on proven capacity; and contractors must be held accountable to quantifiable reach targets.

Care resource coordinators must be integrated with or closely linked to contact tracing structures to follow through on individual cases and ensure linkage with the resources needed to safely isolate and quarantine. Hiring care resource coordinators under the same umbrella as contact tracers and case investigators can facilitate the most robust coordination and referrals and enable easier navigation of privacy. However, under this structure, care resource coordinators must maintain close communication and collaboration with local community-based organizations and service providers in order to ensure continuity of referrals and integration of social support needs into future programming.

Any investment in COVID-19-related jobs should be matched with an investment in greater social service provisions. The economic impacts of COVID-19 have put increased pressure on vulnerable families and myriad social determinants of health remain unmet. Given that a major focus of the community-based workforce will be to identify social support needs and mobilize resources to meet them, a corresponding investment in social support infrastructure will be required. This funding should continue in the form of expanded state and federal benefits programs and/or broader health legislation.

IV. PHASE 2 – RESILIENCE AND RECOVERY

As the COVID-19 burden decreases, the COVID-19 response workforce should form the basis of a permanent community health workforce. States and communities across the U.S. have invested in CHW programs which are proven to improve chronic disease outcomes, reduce hospitalizations, and lower health care costs.¹¹ However, the lack of a universal CHW role definition or accreditation, erratic funding sources, and poor integration with the overall health system has prevented the development of a nationally-scaled CHW program. Building a professional CHW workforce as a permanent fixture in the U.S. will address inequities and improve outcomes for multiple conditions, such as chronic disease, mental health, and substance abuse. Building a CHW workforce will be a multi-year process, but 100,000 individuals must be hired immediately to focus on COVID-19 vaccine outreach and mobilization. The core CHW functions include:

1. **VACCINE OUTREACH:** COVID-19 vaccine hesitancy is high and distribution efforts have been inadequate. These barriers can be surmounted with community-based vaccine outreach workers. Community-based vaccine outreach workers can help answer questions about vaccine safety; coordinate sign-ups for vaccinations (that are often held on online platforms that may be difficult to access for elderly populations or those faced with low-literacy or internet barriers); facilitate transport to vaccination events; and conduct follow up to support completion of the second dose in the series. Vaccine outreach worker efforts must be focused on providing transparent information and allowing for informed consent rather than persuasion.
2. **INDIVIDUAL HEALTH ACCOMPANIMENT:** At the core of the CHW force is *accompaniment*, a practice of proactively reaching out to vulnerable and disenfranchised individuals in the community setting and building meaningful connections by providing direct, longitudinal support around key drivers of health. CHWs respond to both 'biological' and 'non-biological' factors that cause illness by ensuring equal weight is given to addressing the biomedical and economic, social, and political determinants of health. CHWs provide culturally appropriate health promotion and guidance on behaviors that influence health outcomes, such as medication adherence, healthy eating, and exercise. Given the outsized burden of chronic disease in some communities, CHWs may provide basic clinical monitoring (e.g., taking blood pressure) with appropriate training or certification to support a patient's mental and physical well-being.
3. **RESOURCE NAVIGATION:** CHWs identify and navigate the logistical, social, and economic barriers to health at a community level. They support individuals and families to navigate health care systems (i.e., by linking to primary care or medical specialists, providing assistance with insurance enrollment, arranging for bilingual providers or translators, or helping track follow-up needs). Social support must be mobilized to help these vulnerable populations, and CHWs assist patients navigating complex networks of programs. Often working closely with care teams, they identify social vulnerabilities and connect individuals with services and community resources to address social determinants of health such as food, shelter, or mental health support.
4. **COMMUNITY OUTREACH, ADVOCACY, AND ORGANIZING:** CHWs act as advocates and organizers to empower and achieve positive change in the communities they serve. Given their proximity to and familiarity with evolving community needs, CHWs are uniquely suited to identify systemic barriers to care, advocate for solutions, shift power dynamics, and shape clinical and community development systems to more adequately meet the needs of residents. When operating as integrated members of care delivery teams, CHWs serve as patient advocates and work to increase the cultural competence of providers.

V. CONSIDERATIONS FOR BUILDING A COMMUNITY-BASED WORKFORCE

GOVERNANCE AND MANAGEMENT:

CHWs must be integrated within community-based organizations and adapt their focus to local priorities

- **To maximize their effectiveness, CHWs (including those who transition from COVID-19 response jobs) should be integrated within community-based organizations (CBOs) that serve vulnerable populations.** CHWs are most impactful when serving as a trusted link between the community and the health care system,¹² improving the structural competency of care delivery, and strengthening fragmented systems by connecting clinical and social services. CHWs play a powerful role intermediating the distrust that vulnerable communities have of the medical system based on patterns of health injustice; therefore, ensuring that CHWs are embedded in community-based infrastructure but connected to care delivery teams is a powerful proposition to scale their impact. Health clinics or departments with proven links with local CBOs may apply to integrate CHWs, and existing hospital-based CHW programs should be maintained; however, given the deeply-rooted inequities and prevailing top-down nature of U.S. health systems, these entities should not be the primary governance structure. Regardless of supervising entity, CHW programs must include several core tenets: robust public health expertise; close ties to clinical care delivery; and community engagement, including program leadership comprised of CHWs.
- **CBOs that house CHWs should maintain close links with local care delivery systems** such as hospitals and federally qualified health centers (FQHCs), ideally through a shared HIPAA compliant software to facilitate communication between clinical providers and community teams.¹³ True integration requires all members of an organization to understand who CHWs are and what they do. A strong community health system link prioritizes the importance of quality community resources and support (i.e. access to nutritious food, safe housing, high-quality childcare) to prevent, delay, or manage health conditions, especially for chronic disease. CHWs can play a critical role as patient advocates and should participate as members of provider boards in order to influence traditional health care provision with community-based feedback.
- **The CHW workforce should be federally funded but implemented locally to align with community priorities and needs,** with state-level oversight and accountability. CHW funding should be allocated based on population and health disparities, with funds disbursed through local priority setting planning bodies and semi-participatory budgeting. Additional support focused on financial oversight, program implementation, and management should be provided to implementing organizations; this may be delivered through a third-party advising entity and/or fiscal sponsorship vehicle.
- **The above core functions (vaccine outreach; individual health accompaniment; resource navigation; community outreach, advocacy, and organizing) must be adapted to specific community needs** in a fashion that is both data-driven (based on reported health disparities) and community-directed (based on direct insights from local leaders). As CHWs take community-based leadership roles, they may indicate which programmatic investments are needed to best serve local residents (and therefore yield greater return on investments and reduce waste), and how best to design said programs to be culturally relevant to the needs of the community.

For example, rural populations may need a greater focus on care delivery; urban groups serving a large immigrant population may need a greater focus on navigation and cultural representation. In areas hardest hit by the opioid epidemic,¹⁴ the focus of CHWs may include harm reduction and the intersection of addiction with mental health disorders. In historically marginalized communities suffering from disproportionate rates of chronic disease,¹⁵ the focus should include prevention and management of these health conditions.

- **The new permanent CHW workforce should build on the tremendous efforts of existing CHW programs.** Existing CHW programs should have access to new funding and be integrated in national scale efforts; tribal programs have demonstrated notable impact and success in their community health workforce programs. CHW leadership may be considered for a national Advisory Panel to feed current best practices into program design.

QUALIFICATIONS AND TRAINING:

The community-based workforce should be selected based on core competencies and lived experience that reflects the communities they serve

- **Community-based workers should reflect the communities they serve** (whether through ethnicity, language, socioeconomic status, and/or lived experience) and have deep familiarity with the affected communities. This diversity is essential for staff to form trusting connections with the individuals and families, to develop relationships with community structures and resources, and to ensure needs are reported and addressed.

Hiring criteria should not be contingent upon educational attainment or past formalized training. Community knowledge is not conferred through degrees, but rather through a diverse set of experiential, professional, and academic experiences. The community-based PHJC should avoid putting in place any barriers to community-based participation and not perpetuate the very systems which have historically excluded communities of color. Case Investigators will need to be able to use public health software to access protected health information but requiring a high school diploma or GED will unnecessarily exclude immigrants and others who may have faced lack of access or structural barriers to education.

Candidates can be assessed for basic literacy, numeracy, and data collection skills regardless of their actual educational attainment, and building these skills into onboarding curricula and on-the-job training can further strengthen workforce professionalization and standardization. Selection should be primarily based on demonstrated qualities (teamwork, compassion, trustworthiness, empathy, strong communication skills, ability to motivate other individuals).

- **CHW job and skill training must be centralized at the state level to ensure consistency, and must be flexible enough to be adapted to specific health needs of the community.** Training must integrate technical and empathic skills, with the goal of achieving improved clinical outcomes and furthering economic and social justice among historically marginalized communities. It should equip CHWs to perform three core tasks, recognizing that each individual or program may focus on a subset of these activities: 1) health accompaniment; 2) resource navigation; 3) community outreach, advocacy, and organizing. Specialized training should be deployed based on the most urgent needs in a community. Upon training completion, CHWs should be credentialed by a nationally recognized accreditation with state-level oversight, which will ensure that the CHW skillset is broadly recognized and the career elevated, while defining the scope of work and core competencies.

RECRUITMENT AND ONGOING PROFESSIONAL DEVELOPMENT:

The community-based workforce should be from and dedicated to the communities they serve

- **Multi-channel recruitment should be as grassroots as possible** and prioritize hiring individuals from low-income communities, communities of color, LGBTQ, and immigrant populations, including people with disabilities; high-need regions such as rural communities; and those facing barriers to employment. Filling these roles with individuals from the communities they serve will enable them to build the trust critical to successfully connecting families and individuals to the resources they need for health.
- **The community-based workforce should deliver economic justice**, which means paying prevailing wages and benefits, with pay equity across race and gender. CHWs must receive benefits including health care, paid time off, paid sick leave, retirement support, and the right to organize for a safe workplace. To ensure jobs are of high quality, statutory language and federal guidance must create a wage-and-benefits floor for the program with robust labor protections and opportunities for worker voices, as well as stipulated support requirements.
- **Members of the COVID-19 related workforce (both new and existing jobs) should be offered the opportunity to transition into long-term CHWs as the burden of pandemic decreases.** Career support and professional development trainings should be built into workforce planning for short term COVID-19 jobs, and training priority offered to members of the COVID-19 response workforce who want to evolve into CHW roles. Long-term CHWs should be provided structured opportunities to grow into management positions, or linked with formal career development pathways within public health departments and community-based organizations. By ensuring that CHW jobs are on-ramps to long-term professional development, we can also bolster the economy and address national health outcomes and health inequity.

IV. WORKFORCE MODELING

Summary

We estimate a total of 640,000 new jobs are required for COVID-19 response and building a community health workforce. This includes an initial 100,000 new COVID-19 jobs (building on an estimated existing 80,000 COVID-19 contact tracers, case investigators, managers, and supervisors) and 540,000 new permanent CHW roles (in addition to an estimated existing 115,000 CHWs). The 180,000 COVID-19 responders should be offered the opportunity to train into long-term CHW roles as the U.S. response brings COVID-19 cases under control.

These jobs must be allocated at a community level within each workforce group.^{16,17} All COVID-19 jobs and 100,000 CHWs dedicated to vaccine outreach should be funded within the first 100 days of the new administration to meet surging case and vaccination demand, while the remaining permanent CHW workforce can be scaled up over the next three years. Together, this would create a workforce of 180,000 COVID-19 emergency response staff and approximately 655,000 CHWs focused on both vaccine rollout and long-term health outcomes.

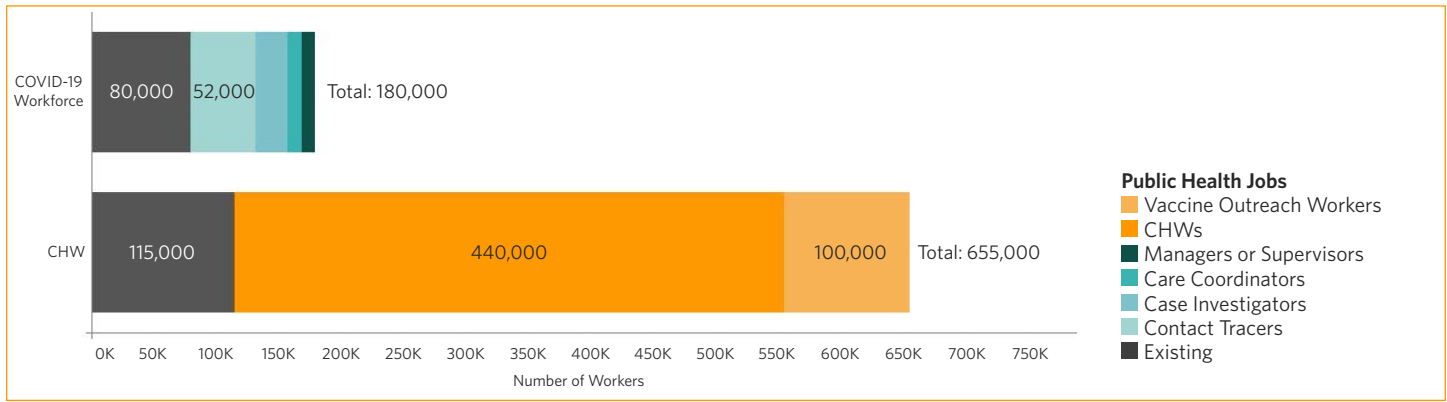


Figure 1: Proposed Public Health Job Corps

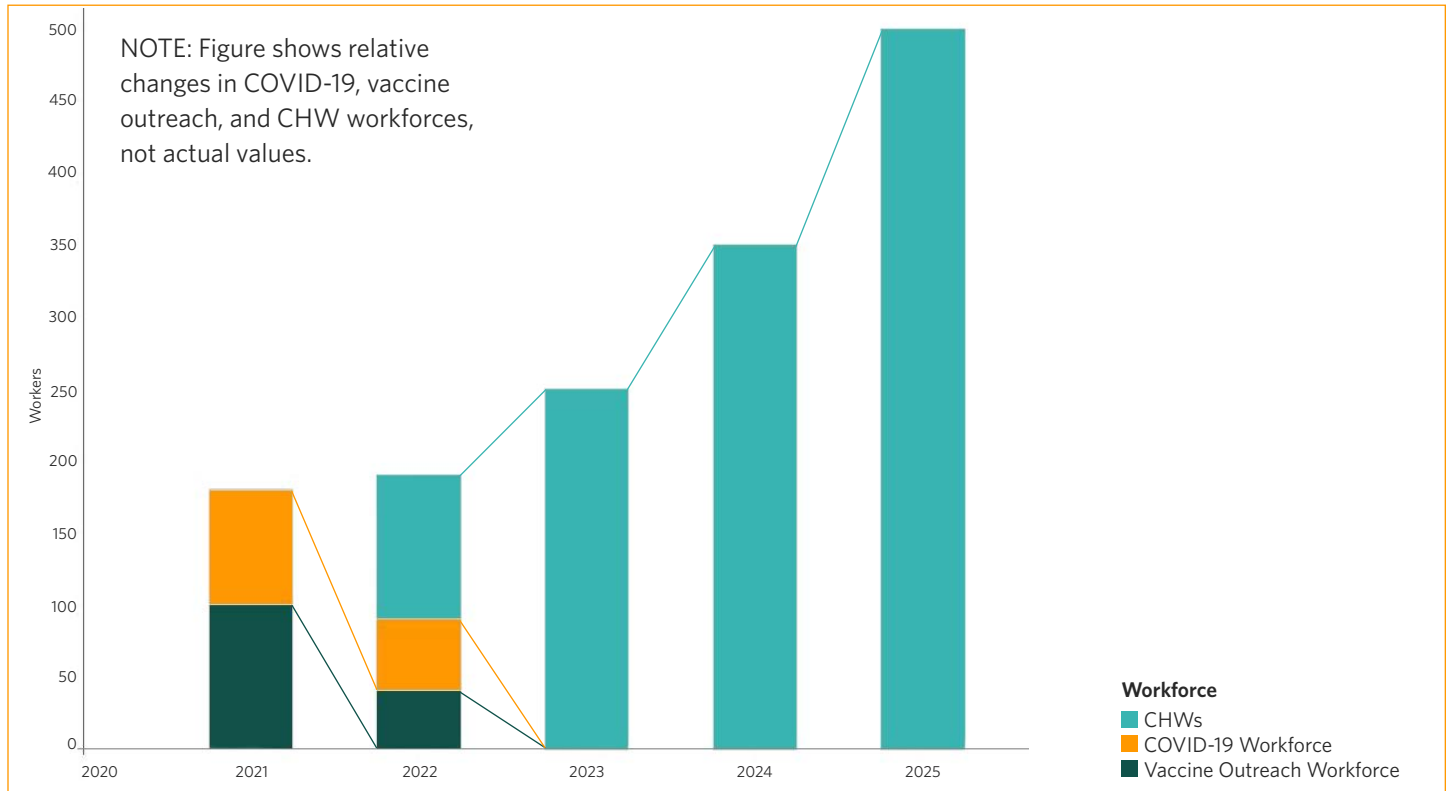


Figure 2: The Public Health Jobs Corps would rapidly staff the COVID-19 workforce and vaccine outreach in the short term. Vaccine outreach staff would eventually transition into CHW roles.

V. CONCLUSION

We are faced with a historic opportunity. By investing in a community-based workforce as a permanent fixture of our health care system, we can both tackle the COVID-19 crisis and rebuild our hollowed-out caregiving and public health infrastructure for the future. A systemic investment in jobs hired from and focusing on the health of historically marginalized communities will address the immediate urgency of the COVID-19 pandemic, improve economic and health outcomes, and dismantle the structural and social factors that drive health inequity.

VI. APPENDIX: MODELING METHODOLOGY

Modeling methodology overview

The COVID-19 workforce model is derived from the expected daily number of newly diagnosed COVID-19 cases as modeled by the CDC and assumptions regarding contact tracer, case investigator, and care resource coordinator workflows. The CHW workforce model compares estimates for total personnel needs in a scenario where all states are brought to a higher resourcing level, versus a scenario that estimates the number of CHWs required to serve the total population that would benefit from CHW outreach. Modeling a CHW workforce in this fashion measures outputs (number of CHWs), not outcomes, in its methodology. However, CHWs are proven to improve chronic disease outcomes, decrease hospitalizations, increase health insurance coverage, and bolster employment.

COVID-19 workforce model detail

The estimates for the COVID-19 workforce were calculated with a widely used tool developed by the Analysis Group to estimate the staffing requirements for contact tracers, case investigators, care resource coordinators, and managers based on daily case rates.¹⁸ Select inputs and assumptions are detailed in Figure 4. The CDC COVID Data Tracker forecast¹⁹ projects COVID-19 cases to consistently surpass 200,000 daily cases through January. To meet this case load, the COVID-19 workforce would need to build on existing staff already operating in these roles and hire up to an *additional* 50,000 contact tracers; 26,000 case investigators; 10,500 care resource coordinators; and 11,000 managers or supervisors. This would bring the nation's COVID-19 workforce to 180,000 workers.

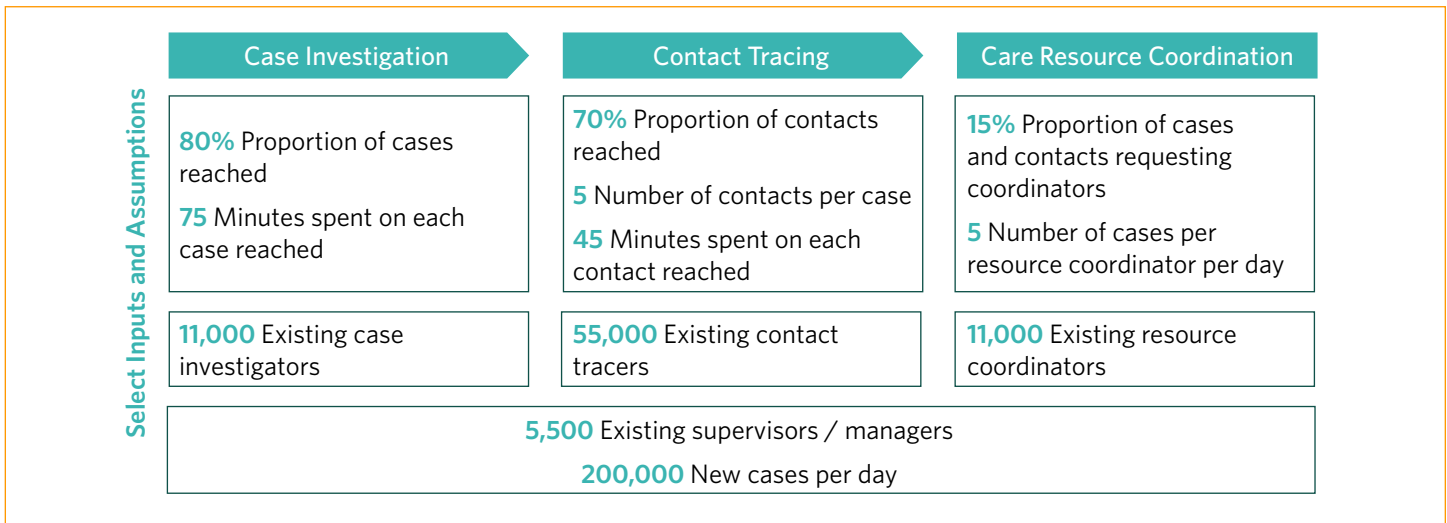


Figure 3: Select inputs and assumptions made to calculate the necessary COVID-19 workforce given case rates and existing workers.

CHW workforce model detail

According to the U.S. Bureau of Labor Statistics, there are approximately 127,000+ CHWs and health educators currently employed in states across the country. This estimate likely does not encompass the full number of individuals dedicated to roles that fit within the broad umbrella of CHW work but represents the clearest aggregate figure available. The number of community health workers and related jobs varies significantly across regions: states including Alaska, Massachusetts, New Mexico, New York, Vermont, and Washington D.C. have high ratios of CHWs and health educator jobs per 1,000 jobs (~1-2), while many other states have much lower CHW employment ratios.

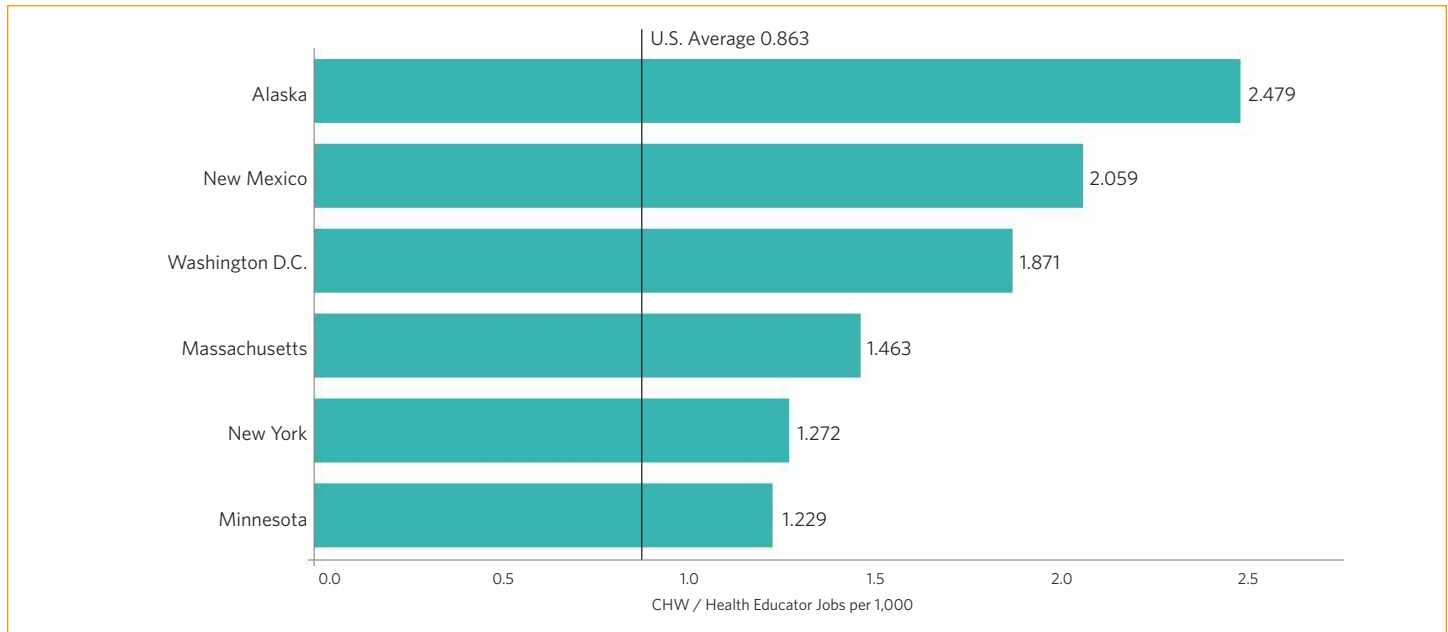


Figure 4: Community Health Worker and health educator workforces vary widely by state.

CHWs and health educators are part of a broader community health workforce, including primary care physicians, nurses, physician assistants, nurse practitioners, home health and personal care aides, social workers, mental health and rehabilitation counselors, and social services and community managers. Resourcing of these roles varies significantly across states.

Low range estimate

The low range of modeling estimates calls for a new CHW workforce encompassing 500,000 roles. This estimate is based on the projected total number of CHWs nationwide if all states scaled their programs to twice the level of Washington, D.C., which has the highest combined resourcing of CHWs and clinical personnel, thus making it a useful model for national program scale-up. This workforce includes CHWs (~1.8 CHWs and health educators per 1,000 jobs) and other integral occupations such as physicians, nurses, and social workers, according to Bureau of Labor Statistics data. The low range of the model uses CHW resourcing of twice current implementation levels in Washington D.C. to project estimates of the total national workforce need, recognizing that despite stronger relative resourcing versus other geographies, health access and outcomes in Washington, D.C. remain far from optimal for vulnerable populations.

High range estimate

The high range of modeling estimates calls for a new CHW workforce encompassing 540,000 jobs. This estimate is derived from assumptions regarding the total population in greatest need of these services, defined as individuals at or below 200% of the Federal Poverty Level, and the percent of these individual services could feasibly cover in the near term. CHW programs in the U.S. vary in their operating models, with some having as few as 10 patients per CHW and others ranging up to 100 patients. To account for the variation in roles that CHWs will play (some individually dedicated and others serving a broader community), the model assumes a ratio of ~50 patients per CHW.²⁰ The model assumes coverage of 35% of eligible individuals with its initial scale. These figures represent a starting point for investment in this vital component of a stronger U.S. health care system. With demonstrated success, the expectation is that this workforce would scale substantially above these figures over time.

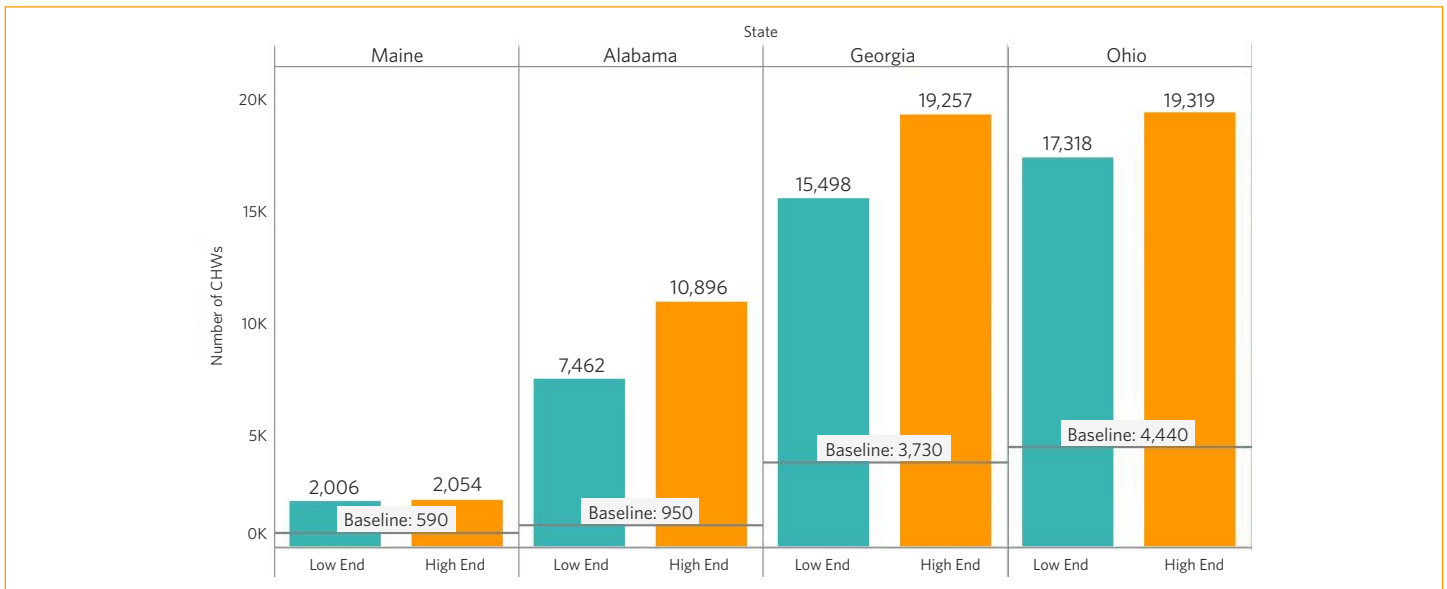


Figure 5: Range of estimated CHW workforce requirements for select states.

ENDNOTES

- 1 The Commonwealth Fund. (Jan 2020). U.S. Health Care from a Global Perspective, 2019: Higher Spending, Worse Outcomes? <https://www.commonwealthfund.org/publications/issue-briefs/2020/jan/us-health-care-global-perspective-2019>
- 2 KHN. (July 2020). Hollowed-Out Public Health System Faces More Cuts Amid Virus. <https://khn.org/news/us-public-health-system-underfunded-under-threat-faces-more-cuts-amid-covid-pandemic/>
- 3 Since 2010, spending for state public health departments has dropped by 16% per capita and spending for [local health departments](#) has fallen by 18. At least 38,000 state and local public health jobs have disappeared since the 2008 recession, leaving a skeletal workforce for what was once viewed as one of the world's top public health systems.
- 4 Kaiser Family Foundation. (Aug 2020). Racial Disparities in COVID-19: Key Findings from Available Data and Analysis. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-covid-19-key-findings-available-data-analysis/>
- 5 Kaiser Family Foundation. (Aug 2020). Racial Disparities in COVID-19: Key Findings from Available Data and Analysis. <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-covid-19-key-findings-available-data-analysis/>
- 6 In Massachusetts, months into the work of the Community Tracing Collaborative, the data showed that it had been effective in curbing the spread of the virus. In Delaware, contact tracing and a mask mandate are credited with significantly lowering the spread and toll of COVID-19. A study showed that infections fell by 82%, hospitalizations decreased by 88%, and deaths fell by 100% in the period from April 20th through June 25th as these and other measures were put in place. In England, an Excel error in the contact tracing system meant that a lot of cases weren't traced immediately. In areas that had more of these delays, there were more cases. The study notes that: "Conservative estimates suggest that the failure of timely contact tracing due to the data glitch is associated with more than 125,000 additional infections and over 1,500 additional COVID-19-related deaths."
- 7 CDC, ASTHO, Resolve to Save Lives
- 8 Centers for Disease Control and Prevention. (Nov 2020). Investigation a COVID-19 Case. <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/investigating-covid-19-case.html>
- 9 In Massachusetts, data from the statewide contact tracing program shows that 15-20% of cases were referred for social need assistance. The most common need was food, with a wide range of other needs identified including assistance with housing, personal protective equipment (PPE), cleaning and other supplies, access to medical care, as well as concerns related to domestic violence, immigration status and employment.
- 10 Rouhani et al. (2020). Care Resource Coordination: An Essential Pillar of an Effective and Equitable Pandemic Response. Partners In Health.
- 11 Penn Center for Community Health Workers. (July 2020). Effects of a standardized CHW intervention on hospitalization among disadvantaged patients with multiple chronic conditions: A pooled analysis of three clinical trials. IMPaCT.
- 12 Includes Federally Qualified Health Centers (FQHCs), managed care systems and/or Accountable Care Organizations (ACOs), social safety net hospitals, patient-centered medical homes, and community pharmacies.
- 13 On Navajo Nation, Community Health Representatives (CHRs) communicate with adjacent clinical teams through the CommCare technology, ultimately seeking to improve clinic-community linkages through strengthened collaborations between public health nurses and CHRs. See King et al. (April 2017). Strengthening the role of Community Health Representatives in the Navajo Nation. BMC Public Health.
- 14 In Appalachia, overdose mortality rates for people aged 15-64 are 65% higher than the rest of the country. See Appalachian Regional Commission. (2017). Appalachian Diseases of Despair. The Walsh Center for Rural Health Analysis.
- 15 Black Americans have a higher mortality rate for pulmonary disease and asthma and a higher hospitalization from diabetes than any other population in the US. See Forno, E. and Celedon, J. (2014). Asthma and Ethnic Minorities: Socioeconomic Status and Beyond. Journal of Allergy and Clinical Immunology.
- 16 U.S. Bureau of Labor Statistics. (2020). Health Educators and Community Health Workers. <https://www.bls.gov/ooh/community-and-social-service/health-educators.htm#tab-2>
- 17 Simmons-Duffin, S. (Oct 14, 2020). COVID-19 Contact Tracing Workforce Barely 'Inching Up' as Cases Surge. <https://www.npr.org/sections/health-shots/2020/10/14/923468159/covid-19-contact-tracing-workforce-barely-inching-up-as-cases-surge>
- 18 Analysis Group & Partners In Health. (2020). COVID-19 Contact Tracing Staff Projection Tool. <https://www.pih.org/sites/default/files/lc/PIH%20COVID-19%20Contact%20Tracer%20Workforce%20Model.xlsx>
- 19 Centers for Disease Control and Prevention. Observed and forecasted weekly COVID-19 cases in the United States. https://covid.cdc.gov/covid-data-tracker/#forecasting_weeklycases
- 20 Penn Center for Community Health Workers. (July 2020). Effects of a standardized CHW intervention.