Making Data Work

Collecting better health care workforce data to inform state policy and planning

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POLICY POINTS

- States' lack of accurate, reliable data on health care worker supply, distribution, and characteristics compromises state efforts to fund education, professional development, and other recruitment and retention efforts, as well as their planning capacity.
- Opportunities to improve state health workforce data collection include mandating data collection as part of the professional licensing process and standardizing approaches to data collection.
- States' investment in more complete and accurate health care workforce data through
 programs such as the Rural Health Transformation Fund will generate a long-term
 return on investment by maximizing appropriate federal bonuses, loan repayment dollars,
 and other funding.

EXECUTIVE SUMMARY

The COVID-19 pandemic exacerbated health care workforce shortages across many professions, including primary care physicians, behavioral health professionals, nurses, and other direct care professionals.¹ Even before COVID-19, the National Academy of Medicine reported that burnout had reached "crisis levels" among the nation's health care workforce. Burnout and staffing shortages impact patient care and safety, increase costs (e.g., turnover and use of more expensive options such as traveling nurses), and further constrain access to care.²

Since the pandemic, health care workforce shortages have remained high and are projected to continue through 2036.¹ More than 500 bills related to health care workforce issues were passed by state legislatures in 2024.³ Despite this, accurate, reliable data on health care worker supply, distribution, and characteristics remains elusive for many states. The lack of workforce information compromises state efforts to fund education, professional development, and other recruitment and retention efforts, even for in-demand professionals such as primary care and behavioral health providers. It also limits states' ability to plan for future health care needs.

This policy brief provides an overview of **opportunities to improve state health care workforce data collection and analysis**. This brief was informed by interviews with 12 agency leaders and technical experts across seven states and written responses from the Health Resources and Services Administration (HRSA). Themes from the discussions are shared in aggregate and inform the priorities and considerations.

Considerations for Collection and Analysis of Health Care Workforce Data

Priority 1: Improve the completeness of health care workforce data

Consideration 1: Mandate data collection as part of the professional licensing process, through regulation or legislation

Consideration 2: Develop a strategy to collect data from non-licensed health care professionals.

Priority 2: Improve the comparability of health care workforce data

Consideration 3: Standardize data collection

Consideration 4: Collaborate across states to standardize metrics, analyses, and reporting

Implementing these priorities and considerations will advance states' ability to:

- 1. Seek adequate state and federal funding through standardized/comparable supply and demand reporting and shortage information.
- 2. Conduct more informed health care planning efforts.
- 3. Identify and monitor professions facing potential shortages (e.g., primary care, behavioral health).
- 4. Inform and prioritize policies related to recruitment and retention, ranging from payment design and reimbursement levels to grants and loan repayment.

BACKGROUND

Having actionable, complete health care workforce data is important at both state and national levels. National data is important for understanding trends, allocating federal resources, and conducting national health care research and planning efforts. Federal funding and programming inform states' own health care planning and allocation efforts (Figure 1). In addition, states are and can continue to be the drivers of real-time data, supplementing national data with key information they can access through homegrown surveys and boots-on-the-ground efforts.

Figure 1: Summary of Federal and State Health Care Workforce Data Efforts

Federal Efforts	State Efforts			
 Health Resources and Services Administration (HRSA): Produces state and national reports based on current estimates and projections, primarily using the Health Workforce Simulation Model available through the National Center for Health Workforce Analysis.⁴ Manages federal programs, funding, and resources related to health care workforce data, such as Health Professional Shortage Area (HPSA) designations. Centers for Medicare & Medicaid Services (CMS): Maintains HPSA Bonus Payment Program, a 10% bonus payment for primary and mental health care providers practicing in a geographic HPSA. Bureau of Labor Statistics: Provides workforce data, including labor projections, based on data provided by licensed professionals. 	 States maintain workforce data dashboards using licensure data and sometimes non-licensure data. States are responsible for validating federal data through their own licensure surveys and other data collection efforts. 			
Improvement efforts: Drive national standardization of definitions and data collection efforts to inform more accurate projections and real-time data for national comparison and research.	Improvement efforts: Through collaboration with state departments and increased federal funding and support states could improve real-time data collection efforts to support state and national priorities.			

While national data collection often drives state efforts, many limitations and data challenges exist. The Health Workforce Simulation Model⁵ used by HRSA to produce state and national reports is based on current estimates and projections with much of this data gathered through optional surveys,^a compromising completeness and limiting the number of occupations and geographies having sufficient sample sizes to support reliable analyses.⁶ Second, HRSA data is not available for many occupations, including those that lack licensure processes, such as community health workers (CHWs), or those that do not often provide services to Medicare beneficiaries, such as pediatricians. Third, while HRSA has established Minimum Data Sets⁷ to provide standardization guidance on workforce survey questions, the tools are incomplete, disconnected, and inconsistent, making implementation difficult.

Despite these limitations, HRSA workforce data serves as the foundation for critical funding decisions — it determines whether a geography, population group, or health care facility is designated as a Health Professional Shortage Area (HPSA) or Medically Underserved Area

^{*}HRSA National Provider Identifier (NPI) data is based on the NPI file maintained by CMS, which relies on states to supplement it with state-specific data.

(MUA).8,9 In turn, these shortage designations determine eligibility for loan repayment and scholarship programs, J-1 visa waivers, and certain provider bonus payments.8 This creates a problematic disconnect between available federal workforce data and high-stakes policy decisions that affect health care in each state.

In response, many states have developed their own processes to validate and improve on the federal shortage data to demonstrate their state's true workforce shortage needs and ensure they are afforded the opportunities and funding that accompany HPSA and MUA designations. HPSA shortage designation is not automatic. It requires an application process in coordination with a state's primary care office and re-application every three years. Interviewees from states shared that improved state data as well as dedicated resources and time are necessary to navigate the complexities of federal requirements and perform the data validation to ensure appropriate federal funding and resource allocation. Individual state efforts include monitoring HPSA dashboards, developing state licensure surveys, and adjusting state HPSA rational service areas^b to more accurately reflect shortages. The Exceptional Medically Underserved Populations and Governor-Designated Secretary-Certified Shortage Areas for Rural Health Clinic designations were driven by state-developed policies. Many states have also developed their own health care workforce dashboards utilizing HRSA data, internal licensure surveys, and other data sources.

This state-by-state approach requires significant resources, and the lack of standardized data coupled with incomplete and imprecise information limits the dashboards' ability to accurately evaluate current workforce levels and project future needs. Better health care workforce data collection would enable states to more effectively target resources, plan for future health care needs, and ensure adequate provider coverage for their populations.

PRIORITIES AND CONSIDERATIONS

The following priorities and considerations were informed by interviews with state agency leaders and subject matter experts and a review of state and national workforce data collection processes and dashboards.

Priority 1: Improve the completeness of health care workforce data

Most states' main source of workforce data is licensure data collected through state-administered surveys sent to health care professionals during license renewal. However, states vary significantly in their approach, including the types of professionals surveyed and the questions asked. Several states are also working to collect more detailed demographic information and details on employment, such as practice location and whether the individual works full or part time.

Several interviewed stakeholders emphasized the need for more timely data to inform workforce planning and policy priorities. Most states currently collect workforce data only every two years, coinciding with licensure renewals. While more frequent data collection would provide better insights into workforce trends, making changes to survey questions, scope, and timing often requires legislative approval, a process that can be cumbersome and slow.

b The methodology used to determine whether an area meets the definition of a primary care geographic HPSA includes designation of rational areas for the delivery of services, designated by boundaries such as counties or groups of contiguous counties (Code of Federal Regulations, Appendix A to Part 5, Title 42, https://www.ecfr.gov/current/title-42/chapter-l/subchapter-A/part-5).

Many states also struggle with data completeness due to the largely voluntary nature of these surveys. Survey response rates tend to be significantly lower in states where survey completion is not required for licensure or when providers can opt out of the entire survey. When survey completion is required for licensure or when providers must opt out of each question, response rates can be over 80%. This stark difference highlights the challenge of relying on voluntary data collection. A significant gap also exists for non-licensed health care workers. Currently, only one state represented in the interviews captures data from non-licensed professionals, despite the growing importance of roles like CHWs and medical assistants. Interviewees in all the other states said they saw this as a near-term priority. One state represented in the interviews is in the early stages of utilizing its All-Payer Claims Database (APCD) to track primary care providers and gather demographic information. APCDs, however, only include providers listed on claims.

National funding, for example through HRSA, to prioritize standardization of licensure data collection, as described in consideration 3, could be significant in advancing health care workforce data collection efforts.

Nationally, the Bureau of Labor Statistics uses the monthly Current Population Survey to collect licensure data and track workforce trends, and the National Center for Health Workforce Analysis uses licensure data to develop workforce projections and share data tools; however, both are limited by often voluntary data collection, variations in licensure requirements by profession, and state data collection variations. Differences in data definitions and collection include that the U.S. Bureau of Labor Statistics methodology does not use standardized North American Industry Classification System (NAICS) codes and only captures data for licensed professionals. For other data sources, wage records often do not include job titles, preventing states from knowing anything beyond the setting where the employee works. National funding, for example through HRSA, to prioritize standardization of licensure data collection, as described in consideration 3, could be significant in advancing health care workforce data collection efforts.

Consideration 1: Mandate data collection as part of the professional licensing process, through regulation or legislation.

States that mandate health care licensure data collection and embed their licensure survey into the licensure renewal and/or application process tend to have the highest quality, most complete health care licensure data. States with high licensure survey response rates:

- Mandate survey completion as part of the licensing process.
- Allow respondents to opt out of certain questions but require that they answer a minimum set.
- Grant broad legislative or regulatory authority to an agency or department to oversee routine updates to the surveys, such as adding or editing questions.

Lessons learned from states are as follows:

- Gain support from directly involved stakeholders and stakeholder coalitions to champion
 the mandate to require licensed health care professionals to complete workforce surveys
 as part of the licensure process. For example, in New Hampshire, the State Office of Rural
 Health presented the proposed legislation to each licensing board to incorporate their
 input and ensure there would be no pushback.
- 2. Meet with lawmakers early to ensure priorities align; adjust as needed.
- 3. Minimize provider reporting burden as much as possible in statute/rule (e.g., embed survey as part of routine licensure process and include minimal write-in options).
- 4. If unable to advocate directly, provide information to stakeholder coalitions encouraging their outreach efforts.

State Case Studies

Oregon:¹⁰ Under the Health Care Workforce Reporting Program, health profession licensing boards collaborate to collect health care workforce data via their licensing renewal processes. Some professions require annual renewal, and some require license renewal every two years. Oregon statute requires collection of certain categories of data, such as demographic data, but does not dictate the specific questions asked. Health professionals must respond to a minimum set of survey questions for licensing. Other questions are optional. Oregon credits its strong survey response rates to the required questions.

California: The California Health Workforce Research Data Center within the Department of Health Care Access and Information is responsible for collecting, analyzing, and distributing information on educational and employment trends for health care occupations. California mandates a survey as part of the licensure renewal process. Respondents can decline to answer each question individually but cannot opt out entirely.

Consideration 2: Develop a strategy to collect data from non-licensed health care professionals

Only one state collects data from non-licensed health care professionals, and even this effort captures limited information. Collecting data on non-licensed workers — like CHWs, medical assistants, and home health aides — would help states tell a more complete story about their health care workforce capacity and needs. Based on lessons learned from the one state collecting CHW workforce data, we recommend the following approach:

- Pilot the data collection process by collaborating with one or two certification boards
 that already collect data for licensed professionals and have an interest in gathering data
 on non-licensed health care workers. Alternatively, consider partnering with a group
 of unlicensed professionals that are working toward becoming a licensed professional
 group and may currently be required to register with offices of professional regulations or
 boards. Expand efforts after gaining initial success.
- 2. Gain support by highlighting the important work of non-licensed professionals, the growing need for them, and the lack of data on their professions.
- Conduct the non-licensed professional survey similarly (e.g., timing and structure) to the licensed professional survey, while being flexible to accommodate partner needs and priorities, for example, potentially structuring the process as an add-on to existing reporting systems.

Priority 2: Improve the comparability of health care workforce data

Overall, state interviewees said more standardization in data collection, analytics, and reporting would allow for more cross-state comparability. Standardization would enable national and regional benchmarking and tracking of trends, inform national research efforts, support state workforce recruitment and retention efforts, and contribute critical data for validation of state shortages to ensure appropriate federal funding and resource allocation.

Current data collection approaches limit comparability. As mentioned previously, challenges with HRSA data have prompted states to develop their own processes to gather and validate provider data for workforce designation through a combination of licensure surveys, supplemental research, and even cold calling. The result is data that is not comparable across states, incorrect HPSA designations, and, in turn, inadequate funding for some areas experiencing provider shortages.

Approximately 20 states maintain interactive workforce dashboards, as shown in Figure 2. However, metrics, definitions, and displays vary significantly, limiting their utility for cross-state comparisons. Some states share information on certain types of providers (e.g., behavioral health providers are the focus in Illinois, 12 and nursing is the focus in Maryland 13). Some states are only permitted to share high-level summaries of demographic information. For example, in Oregon, demographic data is only available at the occupation level by year. Rhode Island offers views of demographic data filtered by occupation, practice, age, and gender. Figure 2 highlights the large variation in health care workforce data that states include in their public-facing dashboards.

States also differ in the types of visualizations and formats used for analyzing health care workforce data. Some states primarily display data via maps (e.g., Delaware¹⁴), while others display graphs and provide various filters and data displays, such as number of licensed health care workers, and inflow and outflow among health care workers (e.g., Rhode Island¹⁵).

Figure 2: Active State Health Care Workforce Data Dashboards

State	Licensed	Non-	Employment	Future	Education data (e.g., training, recently graduated)	Filters		
	health care workers	licensed health care workers	detáils/ supply data	projections		Geography	Demo- graphics (e.g., race, ethnicity, language)	Specialty
AZ			Access/ location only					
CA	Χ		Coming soon	X	X	X	X	X
DE	Χ		Χ		Χ	X	X	X
FL	EMS only		EMS only			EMS only		
GA	X		X				Female/male only	X
IL	BH only				BH only	BH only		
IN	Χ		Χ		Χ	X	X	Χ
MD	Nursing only		Nursing only		Nursing only	Nursing only	Nursing only	Nursing only
MN	Χ					Х		X
МО	Χ			Χ		Χ		X
ND	Χ					Χ	Χ	X
NC	Х					Х	Х	Х
NH	Х				Х	Х	Х	
NJ	Х		Х			Х	Х	Х
NY	Х		Х			Х	Х	Х

OR	Х		Х			Х	Х	Х
RI	Χ		Χ		Χ		Χ	Χ
sc		CHW location/ access data	Access/ location only					
TX	Χ		Χ	Χ		X		
VA	Χ		X	X	Χ	Χ	Χ	Χ
WA	Х					Coming soon	Coming soon	Coming soon

Notes: This exhibit does not include states that only produce annual reports. BH = behavioral health; CHW = community health worker; EMS = emergency medical services.

Consideration 3: Standardize data collection

State agencies charged with health care workforce data collection find it beneficial to collaborate with partners in state government, professional associations, and the provider community. These collaborations include developing processes for data collection and sharing — which may include creating a new data collection portal/hub, developing and executing data sharing agreements, and determining which data elements to collect. One state recommended establishing data sharing and matching agreements with various departments, which enables information to be learned about license (e.g., employment status) when such information is not collected through the licensure process. In addition to establishing data-sharing agreements with in-state departments, several states are working on establishing considerations across states to obtain wage record data for providers who work in bordering states, which would improve states' ability to analyze data pertaining to individuals who are employed in neighboring states.

The Cross-Profession Minimum Data Set (CPMDS) roadmap and tool of provides a useful framework for collecting standardized health care workforce data. The CPMDS was developed by Veritas Health Solutions with support from the Health Regulatory Research Institute and guidance from several national medical boards and offers a set of core questions to guide the collection of "minimum necessary" data elements for health care workforce planning. This tool can help states identify the potential data sources for each recommended data element and build processes to obtain the necessary data. Using the standard set of questions included in the CPMDS would significantly improve cross-state comparability of health care workforce data.

Consideration 4: Collaborate across states to standardize metrics, analyses, and reporting

With more standardized data collection as a foundation, states can further improve the comparability of workforce data with consistent metric definitions, similar analytic approaches, and report templates. Interested states could participate in a cross-state workforce data workgroup to develop and implement the considerations below.

Examples of workforce metrics and measures to standardize:

- a. How to define and calculate full-time employment
- b. How to define and calculate provider and setting types

Examples of report templates to develop:

- a. Trends in the number of licensees by health care profession
- b. Percentage of licensees employed in the state

- c. Employed in a health care setting
- d. Geographic differences
- e. Filters for primary care and behavioral health workforce
- f. Employed in any setting
- g. Trends in non-licensed professionals
- h. In-state wage records matched with licensure data for each health care profession
- i. Wages and counts by industry and career progression among certain professionals
- j. Median wage records
- k. Inter-state wage record sharing
- I. Race, ethnicity, age, gender (demographic data that would be collected from licensure survey)
- m. Workforce diversity
- n. Examination of whether the health care workforce reflects the diverse needs of the state
- o. Career advancement, such as the percentage of nursing assistants that advance to registered nurse
- p. Education data (could be self-reported or gathered from schools)
- q. Supply and demand modeling

Interviewees raised particular concerns with regard to supply and demand modeling reports. Understanding future health care workforce needs and whether the projected supply will meet those needs is a priority for many states. State interviewees believe that longitudinal analyses and supply and demand modeling will increase the use of workforce data platforms and support health care planning, as well as help states meet federal reporting requirements.

However, states will need to work through some challenges to develop these more complex analytics. In some cases, data gaps will need to be resolved. An important first step is implementing data validation processes. Additionally, to compare projections across states, states will need to adopt similar approaches to supply and demand modeling to ensure consistency.

California is an emerging leader in workforce forecasting, with a current focus on oral health and primary care, and plans to expand the model to allied health professions.

Interviewees suggested that it would be helpful for states to work more closely together, share knowledge, and exchange best practices and modeling techniques to both ensure comparability and reduce duplicative work. Supporting this collaborative approach, California plans to make its supply and demand modeling open source.

Supply and Demand Modeling Resources

HRSA Health Workforce Projections: Includes technical documentation for HRSA's Health Workforce Simulation Model.¹⁷

Current and Projected Future Health Care Workforce Demand in Vermont: Describes data and methods used to conduct supply and demand modeling in Vermont in 2017. Conducted by IHS Markit (now part of S&P Global), this study used various local, state, and national data sources and a microsimulation model approach to model different scenarios of potential changes in care use and delivery. The study focused mostly on demand, and a limitation is the lack of supply projection data for comparison.¹⁸

State interviewees believe that longitudinal analyses and supply and demand modeling will increase the use of workforce data platforms and support health care planning, as well as help states meet federal reporting requirements.

CONCLUSION

Complete, accurate, and consistent health care workforce data across states is critical for accurate allocation of current state and federal resources and successful planning. The priorities and considerations outlined in this brief will support multi-state collaboration to improve the accuracy, timeliness, and comparability of workforce data. With improvements in workforce data collection, analyses, and reporting, states will be better positioned to seek adequate funding, conduct health care planning, identify potential shortages, and improve recruitment and retention.

ABOUT THE REPORT

The priorities and considerations in this brief were informed by interviews with 12 agency leaders and technical experts across seven states, written responses from the Health Resources and Services Administration, and additional research conducted by Freedman HealthCare.

Freedman HealthCare is a focused, independent consulting firm dedicated to improving health care affordability, quality, access, and equity by empowering clients with actionable data. Freedman HealthCare has supported workforce efforts in multiple states, including standing up a workforce dashboard in Rhode Island and supporting Vermont's efforts to develop a statewide workforce dashboard, including leading a national consortium of states with workforce dashboard development experience.

State/Organization	Participant Name	Job Title
California, Office of Health Workforce Development	Eric Neuhauser, MPA	Research and Evaluation Branch Chief
Delaware, Office of Healthcare Provider Resources and State Office of Rural Health	Nichole Moxley	Chief; Director
Delaware, Delaware Health Force	Tim Gibbs, MPH	Director and Principal Investigator
Indiana, Bowen Center for Health Workforce Research and Policy	Hannah Maxey, PhD, MPH	Founding Director
New Hampshire, Rural Health & Primary Care Section, Department of Health and Human Services	Danielle Hernandez, MPH	Administrator, Health Professions Data Center
Rhode Island, Executive Office of Health and Human Services	Rick Brooks, MS	Director of Healthcare Workforce Transformation
Rhode Island, Department of Health	Manuel Ortiz, MPA	Chief, Office of Primary Care and Rural Health
Vermont, Department of Health	Luca Fernandez, MPA	Rural Health Programs Administrator
Vermont, State Office of Rural Health	John Olson, MEd	Chief
Oregon, Oregon Health Authority	Andy Davis, MBA	Research Analyst
Oregon, State of Oregon	Meredith Halling, PhD, MS	Research Analyst
Oregon, Oregon Health Authority	Deepti Shinde, MPP	Evaluation and Policy Advisor
Federal Health Resources and Services Administration Shortage Designation Branch	Provided written responses	

NOTES

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ABOUT THE AUTHORS

Emily Levi, MPH is an experienced health care project manager with over 20 years of experience working with state, federal, and community partners in the areas of value-based care initiatives, alternative payment models, state health care planning, data governance, and health care workforce data initiatives. Recent work at Freedman HealthCare (FHC) includes ongoing work implementing the Rhode Island Health Care System Planning Foundational Report. Emily produces technical policy analyses to inform health care system planning and manages multiple project workstreams. Ms. Levi also has extensive expertise in health care workforce data systems and the challenges and opportunities for states to improve health care workforce data to better inform policy and transformation. Prior to joining FHC, Emily worked for the MaineHealth Accountable Care Organization, where she managed federal and state value-based care programs.

Janice Bourgault, BS, CPC, CPB, a senior consultant at Freedman HealthCare (FHC), is a nationally recognized leader and subject matter expert with over 30 years of experience in the health care industry, including over 15 years working with and supporting the implementation and operation of all payer claims databases (APCDs). Janice collaborates with clients to find optimal solutions to challenges and opportunities for innovation and advancement. Recent projects include supporting the work of the Vermont Healthcare Workforce Data Center and the states of Rhode Island and Minnesota in reporting on healthcare spending drivers through interactive dashboards. Prior to joining FHC, Janice spent over 13 years working for Onpoint Health Data.

Mary Jo Condon, MPPA, a principal consultant for Freedman HealthCare, has supported multiple states in the development of care delivery and payment models that put primary care at the center, expand care teams, integrate community resources, and utilize data to address the medical, behavioral, and social needs of patients and caregivers. While at Freedman HealthCare, Condon has led multilayered, data-driven health policy projects requiring extensive stakeholder engagement, complex analytic methodologies, and clear, concise presentation of cost and quality outputs. Recent projects include leading the Delaware Department of Insurance Office of Value-Based Health Care Delivery, developing an environmental scan of state approaches to behavioral health investment, and supporting the states of Massachusetts, California, and Maryland in efforts such as measuring investment in primary care and behavioral health and uptake of alternative payment models.



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