Preparing for a Maryland Statewide Healthcare Workforce Data Clearinghouse: State and National Landscape Findings

2022

Prepared By:

primary care coalition

For the Maryland Department of Health, Office of Population Health Improvement

This publication was supported by the Maryland Department of Health (MDH) with funding from the Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award with 100 percentage funded by MDH from CDC/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by MDH, CDC/HHS, or the U.S. Government.

Table of Contents

Description of Research Performed

The Primary Care Coalition (PCC) conducted exploratory research on available healthcare workforce data clearinghouse models to inform the development of a clearinghouse blueprint for Maryland. To be submitted by the end of calendar year 2022, the clearinghouse blueprint will outline recommendations for a Maryland model based on our stakeholder data availability and Maryland Department of Health management capacity. Whatever form the clearinghouse ultimately takes, it should be able to both gather data and report on current statewide workforce capacity.

PCC's research process included a literature review and interviews with representatives of successful healthcare workforce data clearinghouses in other states. PCC completed an initial web-based search of all 50 states to determine which ones have both a current healthcare workforce data repository in place and state findings available online. Based on these criteria, PCC interviewed representatives from Colorado, Iowa, Montana, Nebraska, North Carolina, South Carolina, Texas, Utah, Vermont, and Virginia. The literature review included current publications related to workforce data repository development for these states, exploring available data on the quality, efficiency, effectiveness, and sustainability of these models in comparison to Maryland data needs. In addition to reviewing literature released by other states, PCC considered the results available in library databases, medical journals, and search engines, as well as other Maryland government resources. Key search terms included data repository, workforce data collection, workforce tracking system, and healthcare data repository.

Contacts from 3RNet, a business entity with data repository experience, and current Maryland data stakeholders such as the Maryland Longitudinal Data System Center, the Maryland Primary Care Office, and the Maryland Nursing Workforce Center also participated in interviews.

Detailed findings are organized by state below, identifying broader lessons learned for the Maryland blueprint in the discussion section.

Findings by State

The findings below were determined by individual interviews with various states and stakeholders, as well as with other data sources within the state of Maryland.

Several states have statutory authority to collect supplemental data at the time of license renewal for health professionals. While not a requirement for successful data collection, legislation can help ensure continuity of efforts when staffing changes occur and interests change. Of note, sometimes legislative language may limit the type of information or method of collection in such a way that precludes its use for successful health workforce analysis (NGA, 2020).

Colorado

Established	2017
Organizational Host	Colorado Department of Public Health and Environment
Regulatory Authority	Colorado Department of Public Health and Environment
Funding	Approximately $500,000 annually
Funding Sources	HRSA, Federal Student Loan Repayment Program, tobacco settlement funds, J-1 waiver program fees, marijuana sales tax, and other private funding
Data Collection Method	Paper surveys as well as mining existing licensure, payer, and vital statistics databases
Data Collection Timeframe	Surveys every 2 years, databases annually
Website	https://cdphe.colorado.gov/prevention-and-wellness/health-access/health-workforce-planning-and-assessment/workforce-development-strategy
Interview Source	Steve Holloway, Director of Health Access and Tamara Davis, Data Specialist

State legislation created the Colorado Health Systems Directory as a repository for data on all of the state's licensed and registered clinical fields. The Colorado State Health Workforce Planning and Assessment division of the Colorado Department of Public Health and Environment receives funds from the Affordable Care Act State Health Care Workforce Development Planning Grants (HRSA-10-284). The division uses a Soundex algorithm to match data from 14 sources, including the state Medicaid agency, the Division of Small Plan Insurance, the Colorado Medical Society, and birth/death registries to existing records. It reviews 40 million rows of data annually.

The division used an outside vendor to build and update their system over the last five years. The vendor has five employees to maintain the system, while the health department also has five staff members dedicated to this work. The repository provides paper surveys and receive responses via fax or mail every two years, using Remark OMR (optical mark recognition) software to complete 90% of the data entry for over 100,000 surveys. Initial software setup cost $700, with an ongoing cost of $500/year for three data access licenses. Colorado has diverse funding sources to support repository work, including a Health Resources and Services

Administration (HRSA) base grant, Federal State Loan Repayment Program, tobacco settlement funds, the state general fund, fees collected from the J-1 visa waiver program, private funding, and state marijuana sales tax proceeds.

Iowa

Established	1977
Organizational Host	University of Iowa Carver College of Medicine
Regulatory Authority	Office of Statewide Clinical Education Programs (OSCEP)
Funding	Unknown, amounts vary based on departments and projects involved
Funding Sources	Iowa State Legislature (Iowa State Initiative), Department of Public Health, All Healthcare Colleges except nursing, Delta Dental, Contracts with various projects
Data Collection Method	Relational database: Licensure lists from boards, phone calls
Data Collection Timeframe	Boards every 2 years, phone calls every 6 months
Website	https://www.iowaruralworkforce.org/iowarsquos-healthcare-system--workforce-capacity.html
Interview Source	Theresa Dunkin, Assistant Director and Linda Thiesen, Data Analyst

The Iowa Physician Information System (IPIS) was created in 1977 to track the state's physician resources and currently reports on more than 5,900 active physicians in the state. It is an integral part of the Iowa Health Professions Inventory (HPINV), which tracks human resources for an expanded range of health professions, including advanced registered nurse practitioners and physician assistants. The Iowa Health Professionals Tracking Center (IHPTC) manages these systems; it is a division of the Office of Statewide Clinical Education Programs (OSCEP) housed at the University of Iowa Carver College of Medicine.

IPIS draws from more than 30 categories of data sources, including community hospitals, personal contacts in the field, continuous telephone contacts, newspaper clipping services, newsletters, telephone directories, licensure listings, physician association membership directories, medical journals and reference documents. The IPIS database can perform trend analysis, benchmarking, and projections from more than 100 information fields for each Iowa

physician. Fields include degree, worksites, county, telephone number, fax number, gender, professional activity, practice arrangement, birthdate, birth state, medical college, practicing specialty, training information and specialty certifications. See Appendix II for detailed field examples. Iowa uses the database to regularly describe its physician workforce, inform medical education programs, and evaluate workforce initiatives. The physician database served as the prototype for Iowa's other health professions tracking systems.

IPIS maintains data collection and verification by one full-time staff member and one part-time student. There is an additional full-time staff member that answers questions, creates graphs/ charts, completes data orders and research requests, and produces reports. The HPTC director interfaces with university administration, state legislators, and the department of health, giving presentations by request. The center produces a multitude of charts, graphs, trendlines, and reports annually, as well as analyses of specific topics produced in response to ad hoc requests. Stakeholders for the physician inventory were identified as representatives for each of the following: University of Iowa Carver College of Medicine, University of Iowa College of Public Health, Des Moines University of Osteopathy, Iowa Board of Medicine Licensure, and Iowa Department of Public Health.

Montana

Established	2016
Organizational Host	WIM Tracking
Regulatory Authority	Montana Primary Care Office
Funding	Undisclosed
Funding Sources	State, hospital, and grants
Data Collection Method	Website search, Paper survey mailings
Data Collection Timeframe	Quarterly and annually
Website	Company website: https://www.wimtracking.com (state database housed within a private site with secure access only)
Interview Source	Jena Smith, Founder and CEO

Montana contracts with an outside vendor (WIM Tracking) for data collection and storage. WIM has a manual data entry/collection process, generating database information by mining facility websites in the state. It then mails letters to an identified contact at each healthcare organization asking them to verify the current staffing data via web link. Gift card incentives encourage contacts to complete web-based data verification. WIM repeats this process annually. For large organizations such as hospitals, WIM works directly with human resources to determine staffing numbers and profession types. The website has been in operation for 6 years and can identify gaps by city and profession. The application is very detailed to include facility type, parent company (if there is more than one location), city, state, county, and telehealth services. The facilities can also answer additional questions through the application to update their practice profile, which includes updated contact information, if the facility serves patients with disabilities, if it is accessible for people with disabilities, and if it receives information about student loan repayment.

Nebraska

Established	1995
Organizational Host	University of Nebraska College of Public Health
Regulatory Authority	Nebraska Department of Health and Human Services
Funding	$30,000 per year for direct data
Funding Sources	Primary Care Office grant
Data Collection Method	Paper survey mailings
Data Collection Timeframe	Quarterly and semi-annually
Website	https://www.unmc.edu/publichealth/hpts/
Interview Source	Thomas Rauner, Health Program Manager

Nebraska's system was modeled on Iowa's and is housed at the University of Nebraska's College of Public Health. It was implemented in four phases over four years. Phase 1 was limited to physicians, and by phase 4 the system also includes allied health, physician assistants, clinics, dentistry, pharmacy, pharmacists, registered nurses, and nurse practitioners. The state's Health Professions Tracking Service (HPTS) data system is used to maintain extensive data and act as a regional contact network, receiving over 2,600 calls for various

provider updates and data requests per month and completing over 30,000 survey mailings per year. Mailed survey return rates are 75%, versus 20% for emails.

The HPTC reports information on more than 5,700 health care facilities and more than 11,800 healthcare workers. The data collected for clinics includes business name, mailing address, street address, telephone and fax numbers, health system affiliations, and associated practitioners. The data collected for hospitals includes county, administrator/CEO, non-profit or for-profit status, number of licensed beds, swing beds, and operation code, in addition to the information fields collected for the clinics. The information collected for healthcare professionals includes full name, degree, primary practice site, telephone and fax numbers, practicing specialty(s), license number(s), UPIN, place and date of birth, gender, ethnic background, medical school and dates, residency and fellowship, training specialty(s), board certification, practice setting, practice arrangement to include what type of providers are available at each location, site hours per week, formal academic activity, overall status to include the practice is accepting new patients and type of insurance, and languages spoken. Clinics are surveyed quarterly with a 95% return rate, hospitals are surveyed semi-annually with a 100% return rate, and professionals are surveyed annually with a 75% return rate via paper mailings. HPTS data users include health workforce policy makers and planners, university and state researchers, hospitals and health systems, and rural communities. These users run their own queries through individual access permissions or institutional data agreements.

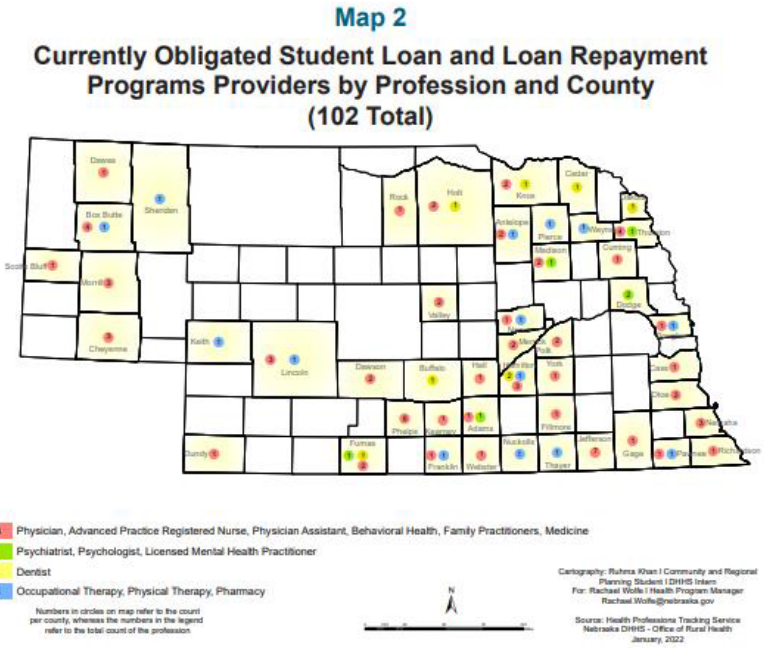

Figure 1: Currently Obligated Student Loan and Loan Repayment Programs Providers by Profession and County.

Source: Nebraska Rural Health Systems and Professional Incentive Act. (2021). Nebraska Rural Health Advisory Commission's Annual Report (p.10). (PH-PB-3 12/2021).

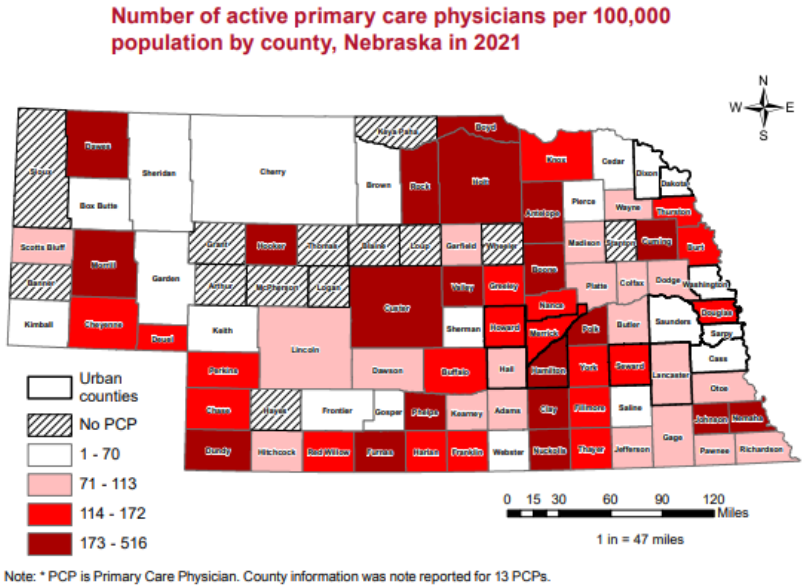

Figure 2: Primary Care Physicians in Nebraska by County.

Source: Tak H, Chakraborty B, Carritt N, Palm DW, Deras M, Horner RD. The Status of the Nebraska Healthcare Workforce: 2022 Update (p.8). Omaha, NE: UNMC Center for Health Policy; 2022. https://www.unmc.edu/rural-health/data-resources/status_of_the_nebraska_healthcare_workforce_update_2022_final.pdf

North Carolina

Established	1979
Organizational Host	Sheps Center for Health Services Research at the University of North Carolina
Regulatory Authority	State Department
Funding	Unknown for this specific department
Funding Sources	NC AHEC Program Office and the Office of the Provost at the University of North Carolina at Chapel Hill
Data Collection Method	Licensure board surveys
Data Collection Timeframe	Annually
Website	https://nchealthworkforce.unc.edu/
Interview Source	Hilary Campbell, Director

North Carolina's workforce team is based in the Cecil G. Sheps Center for Health Services Research (Sheps Center) at the University of North Carolina, which has a formal data collection relationship with the state. Various program models have been in place since the 1970s, with the most recent iteration, a physician projection model, launching in 2012. The model includes physicians in a participatory planning effort with open-source data to anticipate the current workforce trajectory and identify mismatches between supply and need, as well as modeling the potential impacts of policy changes on that trajectory. The model assigns each physician a single specialty classification, out of total of 36, which are grouped into 5 broad specialty categories: adult medical specialties, adult surgical specialties, adult primary care specialties, pediatric medical and surgical specialties, and other specialties. Medical students are tracked by gender, location, age, length of training, annual attrition, and branching/switching. Data on direct patient care physicians consists of gender, age, specialty, hours worked, and retirement forecast.

Using licensure data it holds for 21 health professions, the center maps the state's distribution of active versus inactive healthcare workers as well as data on the state's population and healthcare infrastructure. The center generates county-level models based on data consolidated from health systems and ACOs. These combinations define the current state and enable the North Carolina Department of Health and Human Services to determine where latent workforce capacity could be activated.

The center operates two publicly-available online tools to explore the state's workforce capacity data: Sheps Health Workforce NC and FutureDocs Forecasting Tool. A third tool, The DocFlows App, tracks interstate physician transfers.

The FutureDocs model interface displays the alignment of supply and utilization, baseline and projected supply and distribution, and baseline and projected utilization by clinical service area and setting. It also includes information about data, assumptions, and model design. Users can compare baseline to probable system changes using environmental change scenarios, as well as comparing workforce over time period, geographic areas, and specialties. FutureDocs allows forecasting at the state (all states, not just North Carolina) and tertiary service area level.

Sheps Health Workforce NC allows users to map the distribution of 21 health professions by county, Medicaid region, or Area Health Education Centers from 2000 to 2020. The display includes the ratio of healthcare professionals to area residents as well as select provider demographic characteristics. County-level distribution data without demographics are also available for download as comma-separated values, while blog posts and issue briefs provide additional workforce data insights, including fields like practice setting that are not available in the interactive tool.

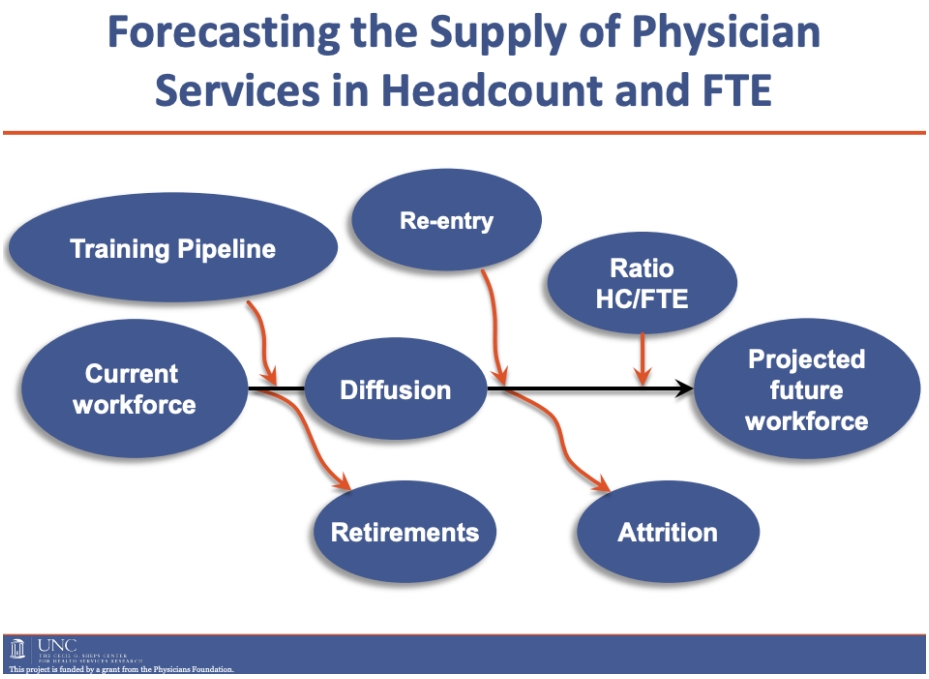

Figure 3: Forecasting the Supply of Physician Services in Headcount and FTE.

Source: Fraher E. Health Workforce Modeling: Past, Present and Future Challenges and Opportunities. Presented at AAMC Health Workforce Conference; May 3, 2012. https://www.shepscenter.unc.edu/wp-content/uploads/2014/09/AAMC_Fraher_May2013.pdf

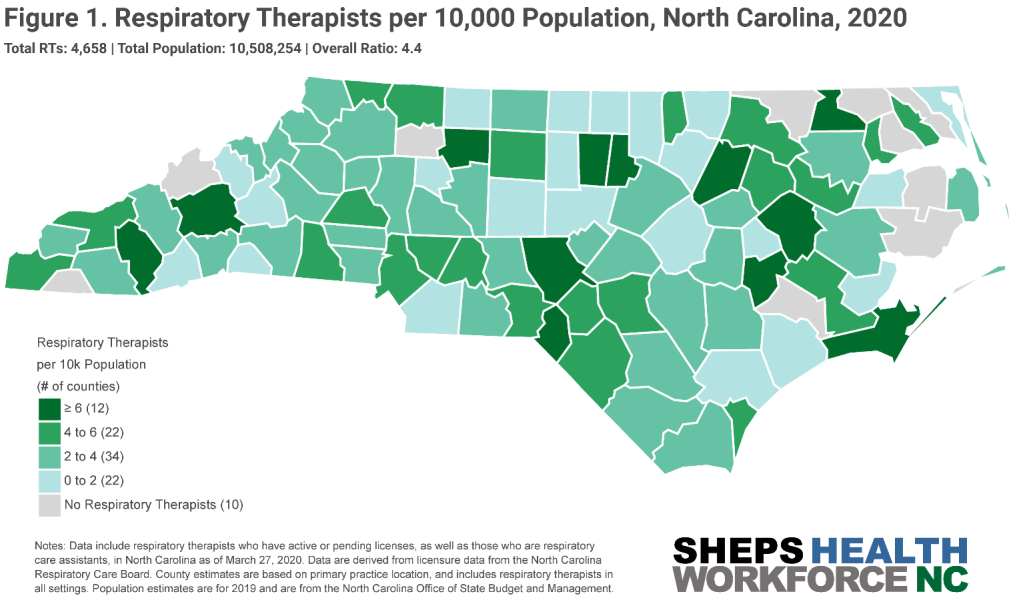

Figure 4: Respiratory Therapists per 10,000 Population, North Carolina, 2020.

Source: Fraher E, Galloway E, Spero J, and Wilson H. "North Carolina's Respiratory Therapist Workforce: Availability to treat COVID-19." Sheps Health Workforce NC Blog Graphic from March 25, 2020. https://nchealthworkforce.unc.edu/blog/respiratory_therapist_nc/

South Carolina

Established	1972
Organizational Host	South Carolina AHEC Program Office
Regulatory Authority	State Department
Funding	$460,000 annually
Funding Sources	Federal funding from HRSA, Duke Endowment
Data Collection Method	Electronic and paper survey mailings
Data Collection Timeframe	Every 2 years
Website	https://www.scahec.net/
Interview Source	Katie Gaul, Director

The South Carolina Area Health Education Consortium (AHEC) collects licensure data from the state board based on a data use agreement, with no legislative mandate in place. Data collection happens every two years, but the data collected is estimated to be one to two years older than that due to the structure of licensing, which is conducted by the state's Department of Labor Licensing and Regulation, and data storage, which is managed by the state's Fiscal Affairs Office. Physician data collected includes address information, race, age, sex, medical school, and sometimes residency information. One of the big limitations in the South Carolina data system is that it is limited to 99 fields, three of which are dedicated to a physician's first and last names and middle initial.

Unlike data entities in most other states, the AHEC is a state agency, which makes it easier to set up the data fields. The Duke Endowment, a private philanthropic organization, provided seed funding to launch its South Carolina Office for Healthcare Workforce (SCOHW) in 2009. The division received sustaining state funding in 2016. It has an annual operating budget of

$460,000, most of it from a permanent $450,000 state budget line. A contract with the state primary care office provides an additional $10,000 a year in five-year increments, to support SCOHW work on Health Professional Shortage Area (HPSA) designations.

Texas

Established	1989
Organizational Host	Texas Department of Health to the Statewide Health Coordinating Council
Regulatory Authority	Center for Health Statistics, Texas Department of State Health Services
Funding	Undisclosed
Funding Sources	Federal funding from HRSA
Data Collection Method	Licensure board survey
Data Collection Timeframe	Every 2 years
Website	https://www.dshs.state.tx.us/chs/hprc/default.shtm
Interview Source	Ashlee Bledsoe, Team Lead

The Texas data clearinghouse, the Health Professions Resource Center, is located within the Statewide Health Coordinating Council and overseen by the Center for Health Statistics of the Texas Department of State Health Services, which receives data from the different licensing boards via email and a Secure File Transfer Protocol server. By statute, certain health care provider licensing boards must supply the coordinating council with a minimum dataset including information on address, date of birth, etc. Statutory rules also require the coordinating council to produce certain reports for the state government.

The clearinghouse team cleans their data to determine which professionals are actively practicing in the state of Texas. The clearinghouse defines active practice as seeing patients for at least 20 hours per week for at least 6 months per year. Licensing boards provide clearinghouse staff with codebooks when needed. The clearinghouse team is small and works directly with data requestors to determine what years and variables are needed for each profession, then provide the requestor with that data. Routinely available reports include supply and demand projections for dentists and physicians, including analysis specific to primary care physicians and psychiatrists.

Utah

Established	1997
Organizational Host	Utah Medical Education Council (UMEC)
Regulatory Authority	Eight-member board appointed by the Governor
Funding	Roughly $500,000 annually over multiple departments
Funding Sources	State general fund, state education fund, and health systems
Data Collection Method	Board captures data from license process and sends to host
Data Collection Timeframe	Every 2 years
Website	https://umec.utah.gov/
Interview Source	Clark Ruttinger, Executive Director

Utah's system, the Utah Medical Education Council (UMEC), has operated for 20 years as an independent, state-chartered body to collect workforce, claims, and education data from various state agencies for a comprehensive picture of the state's healthcare workforce pipeline.

Funding comes from both the state general fund and the state education fund, and the survey is extended to all professions. Various state government agencies are involved in assembling the data, including some with contracts to receive data but without permission to receive or connect to other identifying information. Utah connects licensing data to other government sources, including an MOU with the state workforce investment board that connects licensing data with unemployment insurance data. Employers also submit employment data, and batching licenses with their reporting submissions. Utah's education data set includes almost all the data about every student who has gone through public education in the state preschool to graduate school. The system tracks data about residencies to understand residency growth and retention. Insurance claims provide NPI data from billing, as well as diagnosis and service utilization data.

The state has different licensing boards for different professions. The licensing board does not survey providers but does share all information collected during the licensure process, including social security number, license number, age, gender, license status and expiration date, and whether the provider has had any disciplinary actions. H.B. 176, the Utah Health Workforce Act, is recently-passed legislation to integrate surveys into the licensure process and create a more powerful advisory body to guide survey content and analysis work.

Vermont

Established	1994
Organizational Host	Vermont Department of Health
Regulatory Authority	Health Department
Funding	Unknown, amounts vary based on departments and projects involved
Funding Sources	State and research grants
Data Collection Method	Licensure board surveys
Data Collection Timeframe	Every 2 years
Website	https://www.healthvermont.gov/health-statistics-vital-records/health-care-systems-reporting/health-care-workforce
Interview Source	Jessica Moore, Public Health Analyst

Vermont divides healthcare licensure among two groups, the Vermont Board of Medical Practice, which is housed in the health department, and the Vermont Office of Professional Regulation, overseen by the Secretary of State. Both groups include a survey in their licensure process as part of a legislative mandate, which also requires licensing boards to ascertain

any missing information. However, survey data is attached to renewals only, meaning that health professionals who leave the state before renewing their license are not included in the data set.

The workforce reporting program, which is housed in the health department's Center for Health Statistics, uses Survey Gizmo (now Alchemer) to compile survey data from the licensing boards through a survey link in the license renewal process. This outside vendor sends survey links to licensing boards for inclusion in renewal applications and hosts the completed survey data. The program tried to integrate surveys into the board-hosted licensing systems but ultimately opted for an outside source for easier retrieval of survey results.

The state workforce reporting program for physicians has been in place since the early 1990s, with legislative mandates for other health professions added in 2012. Produced for audiences including the Board of Medical Practice and the Secretary of State, reports include healthcare workforce data on over 25 health professions. Funding for this work comes from the state Primary Care Office as well as through additional grants from the Health Resources and Services Administration (HRSA). HRSA offers several grant opportunities throughout the year to which states can elect to apply. The state office does not report on licensed practical nurses and

registered nurses, instead sending these data to Advanced Practice Registered Nursing, which puts out its own report.

Virginia

Established	2012
Organizational Host	Virginia Department of Health Professions
Regulatory Authority	Legislation
Funding	Roughly $500,000 annually
Funding Sources	Federal, state, colleges
Data Collection Method	Licensure board surveys
Data Collection Timeframe	Annually and bi-annually
Website	https://www.dhp.virginia.gov/PublicResources/HealthcareWorkforceDataCenter/
Interview Source	Elizabeth Carter, Director

Virginia operates a home-grown data platform, the Healthcare Workforce Data Center (HWDC). Established by statute, the HWDC has collected and analyzed data for the last decade. Though there is a legislative mandate in place to collect data during the license renewal process, license applicants can choose to opt out of the data collection process. However, very few actually do. Survey questions for respiratory care practitioners are included in Appendix II as an example of data fields collected. The HWDC continues to grow as stakeholders, including the Health Workforce Technical Assistance Center and other state agencies request more data types. Profession Reports are the mainstay of HWDC's data products, providing a statewide look at the workforce by profession.

Virginia also has a separate longitudinal data system that enables researchers to access state education and workforce data. The longitudinal system provides comparisons across professions, geographically, and over time, as well as profession-specific questions. In addition, salary/compensation and retirement expectations are also available. The longitudinal system has a tremendous amount of data and information on all the specialties in the state, including funeral data.

Other Data Collectors

3RNet

Nebraska is a founding member of the National Rural Recruitment and Retention Network (3RNet), which has a strong workforce tracking system modeled on Iowa's. Member states are using their Primary Care Office for some of this data collection. Members leverage their Health Professional Shortage Area scores to request data from licensing boards, and renewing a license depends on answering questions. Some states have researchers at universities that provide grant money for data sets to help fund the process. Other states have utilized statewide medical foundations and medical schools to be able to track their workforce retention following graduation. Payers, insurance companies, Medicaid providers, and Medicare providers can also provide data obtained during the reporting required for reimbursement.

National Governors Association

The National Governors Association (NGA) has served state and territorial leaders since 1908, providing a mechanism for governors to work together on policy priorities, access technical assistance resources for their state executive team, and connect with corporate partners.

The healthcare workforce is one of the NGA's issue areas, and the association produced a 2020 toolkit to help states use workforce data to address personnel supply and distribution concerns, including emergency deployment and pipeline planning. The publication suggests policy decisions that can be informed by healthcare workforce data as well as best practices for gathering and analyzing that data.

A related organization, the National Conference of State Legislatures, works with state legislatures on regulatory efforts or legislative mandates.

Fitzhugh Mullan Institute for Health Workforce Equity

Housed at the George Washington University, the Mullan Institute leverages multidisciplinary faculty and staff resources to include cultural, economic, and training considerations as well as professional healthcare practice. The Institute publishes workforce trackers of diversity, contraceptive care, and behavioral health services. Tracker information is displayed in maps that allow for individual customization of elements like geographic area and provider type. The Behavioral Health Workforce Tracker map can drill down at the state and county level to identify behavioral health medication prescribers and counselors by provider type. Tracker coverage includes Maryland.

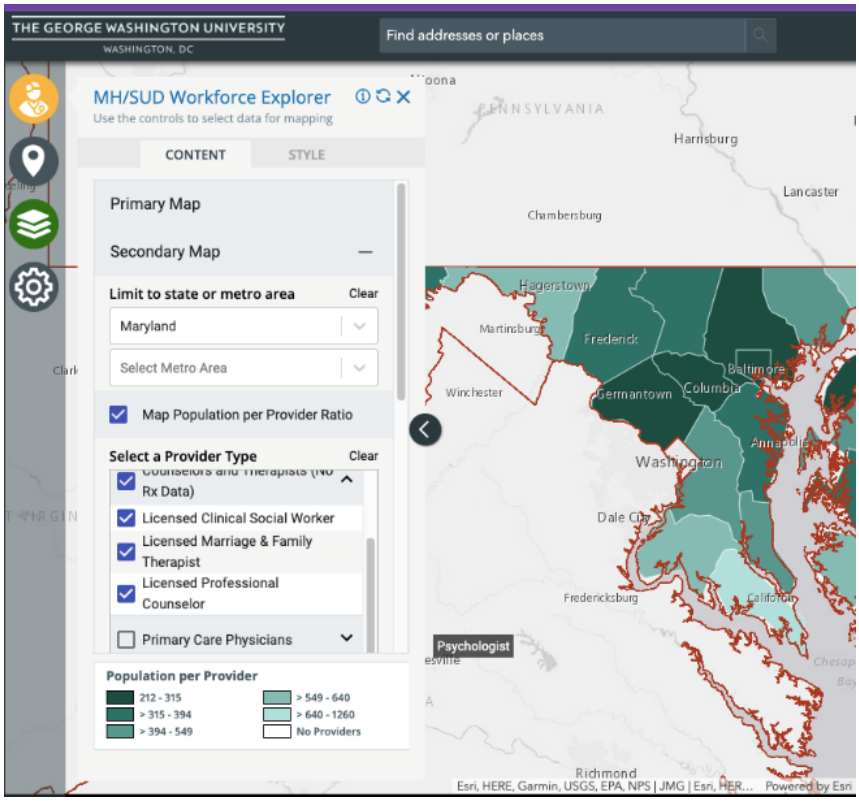

Figure 5: Mullan Institute [Behavioral Health Workforce Mapping] for Maryland

Outside Vendor Services

Some states contract with a third-party vendor to host data, design reports, create graphs and presentations, and reduce staffing strain within state government departments. WIM Tracking and Alchemer are two such companies providing services to the states included in this review.

WIM Tracking is an independent Montana based healthcare workforce company that provides clients with workforce reports, geospatial visualizations, and healthcare resources. Montana currently uses WIM tracking for all their data repository, data collection, and report generation needs. Pricing quotes are customized based on a state's project scope.

Alchemer offers both survey software and data storage capabilities, as well as integration options for other software systems via Application Programming Interfaces (APIs), or system links. The company also offers webhook actions to translate data fields into survey forms or transmit survey data to another database. Vermont currently uses Alchemer as its data repository. Pricing includes access to Alchemer, 1 integration, single sign-on, silver onboarding (4 hours), assigned customer success manager, direct line of communication between the state agency and Alchemer, and up to 500,000 annual responses (Alchemer does not charge for overages or per response). The cost for 5 to 10 users with various levels of access and up to 500,000 surveys completed annually would be $25,0000 to $30,000 per year. Rates are negotiable once the project is finalized.

Qualtrics is a global company that offers a healthcare data repository as well as a range of IT services, training, and consulting. Pricing is available after a demonstration and overview of organizational needs.

Survey Monkey is a global business known for providing free online surveys. The platform's paid models offer additional services including marketing tools to boost survey response feedback and analytical tools to identify response trends. The platform can also be used as a data repository for secure online survey responses. Pricing varies based factors including the number of users, the number of survey responses allowed, and data functionality. Baseline team pricing is $75/month, with enterprise quotes available for more complex systems and added security features.

Maryland Data Stakeholders

Maryland Longitudinal Data System Center

Authorized under Senate Bill 275 in 2010, the Maryland Longitudinal Data System Center came online in 2013. Initially, legislation called for a repository of K through 12 student data; higher education data, including data from Maryland's independent colleges and universities; and data from the Department of Labor, primarily the unemployment insurance data and adult education programs. The center maintains a data system for all levels of student and workforce data and conducts analysis to guide outcome improvement efforts. Each of the center's data-sharing partners is represented on its 15-member governing board, including the Higher Education Commission, the Chancellor of the university system, the Superintendent of Schools, the Secretary of Labor, a representative for local schoolteachers, and a workforce development representative. Even with a legislative mandate in place, the governing board still needed to create terms/guidelines for each of the data sharing partners and codify them in data sharing agreements. Federal funding covered the data center startup costs, and a general budget line-item funds ongoing operations as a state agency. Current funding is available through the Workforce Innovation and Opportunity Act (WIOA), signed into law on July 22, 2014, which authorized quarterly payments from the state to the center to perform current data extrapolations and reports.

Independent contractors have linked all the student and workforce data in a combined database, based on individual personal identifiable information from each sector. Every data element entered and removed from the system requires approval and gets reported to the legislature annually. Since inception, the system has added juvenile services data, child welfare data, and is working now with the healthcare occupation agencies. The healthcare work is part of a new initiative under the Career Preparation Expansion Act, which requires data collection from licensed health professionals under the jurisdiction of the Maryland Board of Physicians. However, the State Department of Education has stopped collecting Social Security numbers, effectively ending the match process between current education and workforce data. The center has been commissioned to study the distribution of health care professionals in the state and identify areas of geographic shortage. These new data elements should be available by September.

There is an opportunity for a researcher to gain access and organize the data if needed for the state.

Maryland Primary Care Office

Situated within the Maryland Department of Health's Office of Population Health Improvement, the federally-funded Maryland Primary Care Office (PCO), situated within the Maryland Department of Health's Office of Population Health Improvement, has a mandate to improve access for primary care, mental health, and dental outpatient services throughout the state. Until 2018 the office had an agreement to include a provider survey through the Maryland Board of Physicians' (MBP) license renewal process. However, a state expedited license law, the Interstate Medical Licensure Compact (SB 234) now precludes the board from including surveys in the license renewal process, and the PCO can only retrieve public data from the MPB website. Any new physician survey requires agreement from the MBP, which could incorporate a short data collection survey during licensure or link to a longer survey once the license renewal information and payment process was complete. The PCO also receives Medicaid provider claims data for outpatient services to complete its work related to Health Professional Shortage Areas (HPSAs) designations. Inpatient data is excluded due to federal grant criteria.

The federal government has emphasized maternal care as part of the PCO's criteria in determining primary care underserved areas. Therefore, nurse practitioner midwives are now among the vetted provider types, along with physicians (family practitioners, general practitioners, pediatricians, obstetrician-gynecologists, internists, psychiatrists, and dentists) through the HPSA designation process. The PCO uses the Board of Nursing website to look up the license status of midwives, but the site does not provide address data. This step has to be done separately through an Internet search.

Federal grant criteria require the PCO to use the Health Resources and Services Administration's database, which imports NPI provider data by taxonomy per relevant federal policy for each state. The PCO uses the data gathered from the Maryland Board of Physicians website, the Board of Nursing website, Maryland Medicaid claims data, and other publicly available data to update, add, or delete the providers imported into the federal database for Maryland. This process allows the program to determine underserved areas based on where providers are rendering services. Data added to the federal database cannot be released by the federal government without permission from MDH.

Maryland Nursing Workforce Center

The University of Maryland School of Nursing's Maryland Nursing Workforce Center retrieves data from the American Association of Colleges of Nursing and the National Center for Health Workforce Analysis, extrapolating Maryland data to create/design their own reports. The latest Bureau of Labor Statistics (BLS) reports showed 84,000 licensed Maryland nurses but only 57,000 working within the state. A limitation of the data is the inability to disaggregate working nurses by clinical setting. The Center aims to access licensure data to demonstrate licensee trends, however the Board of Nursing database creates separate files for license renewal rather than connecting an individual's data to past licensure to allow for a relational database. The Board of Nursing's website has limited information, with no data on race or age and no capability for relational analytics. The system cannot retrieve employment data for reporting, but it can provide breakdowns by specialty on request.

Maryland Board of Physicians

The Maryland Board of Physicians is the state licensing authority for multiple healthcare provider disciplines including physicians, physician assistants, respiratory care practitioners, and athletic trainers. The board enforces care standards by investigating alleged misconduct and penalizing providers for substantiated claims.

The board was interviewed and asked their stance on data collection. The board found the data collection purpose meaningful and impactful and would like to participate in data collection. However, the board would not be interested in taking on the role of a data repository. Providing a link at the end of the licensure process, following payment, that would send participants to a secure system hosted and managed by another entity, is the board's preferred solution. There is also a public roster available on the board website that has provider information by specialty and location. The board would be able to send a digital file to the workforce database for processing and data mining, but there is no tracking of medical school data.

Discussion

The participants presented above provided diverse views and information pertaining to the development, implementation, and sustainability of their healthcare workforce data repository programs, including samples of data elements and interactive maps. Participants expressed a high degree of agreement on issues including data collection methods, the value of information collected, and legislative mandates supporting data efforts. Participants had made different choices about paper versus virtual survey data collection based on their state's experience with return rates. The Iowa and Nebraska models illustrate the value of beginning with a single profession, even if the plan is for a more expansive resource. Few states currently track the behavioral health workforce, and Maryland may want to consider a data exchange with the Mullan Institute, where a robust behavioral health resource already exists.

Based on the data collected through this project, there are two core models for operating a state data repository:

1) Create a data repository housed within the Maryland Department of Health or another state entity, such as the university system, with dedicated staff conducting all data mining activities and responding to data requests.

2) Contract a third-party vendor to provide a data repository and fulfill reporting requests on demand.

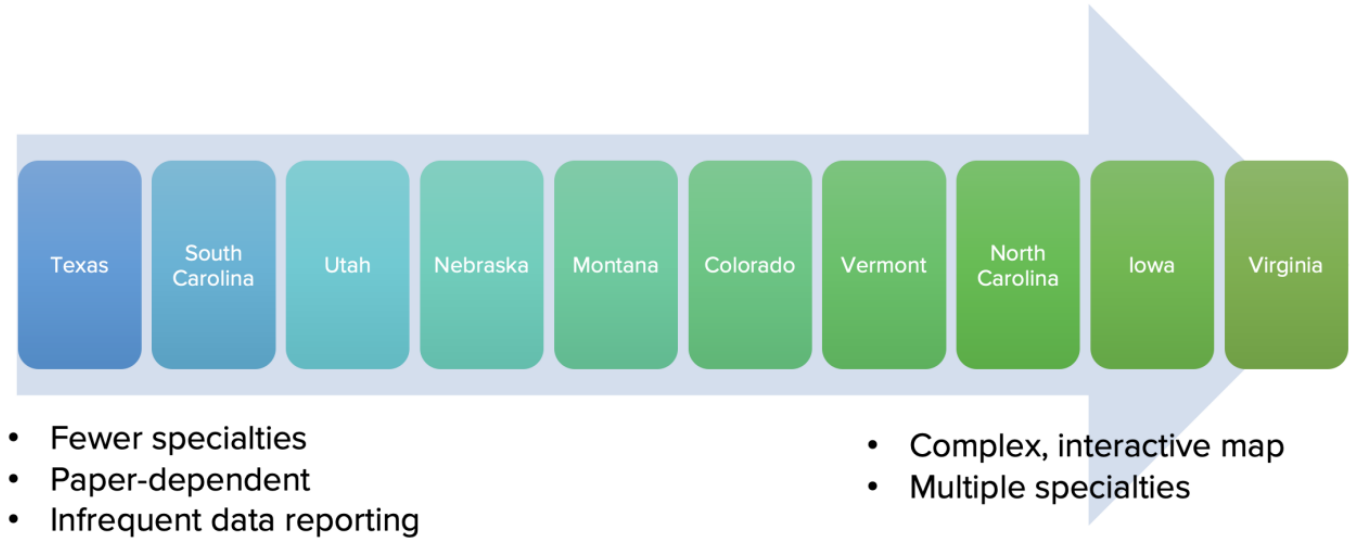

Figure 6: Evaluated Spectrum of State Data Clearinghouse Complexities and Features

While many states have chosen one or the other, it is also worth considering these models as opposite ends of a spectrum and determining the right balance of each for Maryland's needs. Colorado, for example, relies on both an outside data collector and on state government staffing to operate its repository.

Figure 6 orders the states reviewed by the complexity of their resulting data repositories. In general, states that partner with outside vendors produce systems toward the middle of the complexity spectrum, while those that rely entirely on state government staffing tend to be less robust. The most complex systems are typically housed within academic institutions, though Virginia's model is a notable exception, offering the most robust system but doing so within the state health department.

Perhaps the greatest challenge is providing a clear cost overview of the available options. Representatives from several state repositories could not provide a total annual budget for their repositories because staff working on the project came from different administrative divisions. As noted in the Maryland Healthcare Workforce Data Clearinghouse Blueprint request for proposals, the state's planning will need to consider both the start-up costs for its desired model and the projected operating costs over time.

Maryland's licensure landscape adds to the challenge, since it has several different licensing boards that regulate physicians, nurses, and behavioral health specialists. Currently, these boards have neither the capacity nor the statutory mandate to capture or maintain healthcare workforce data for the state. Their current technologies are outdated, and these stakeholders lack qualified staff to upgrade their systems.

Using a third-party vendor would likely be the least labor-intensive choice with the fastest startup time to create a Maryland data repository, since it would not involve additional hiring or system design work. There are several pricing options that can be negotiated based on features and data needs, including security management and potential access to existing templates for data collection or reporting. However, the maintenance costs associated with an outside vendor

may be higher than for one relying on MDH personnel, and the department would not have direct access to raw data. PCC will work with MDH to determine the available resources and functional priorities as key factors in constructing the clearinghouse plan. The resulting blueprint will map pathways toward creating a robust database that can support Maryland's continuing healthcare policy innovation.

Additional Sources Consulted

https://gis.ne.gov/portal/apps/experiencebuilder/experience/?id=e3bbcc604b72448582d83843cf7eb494

American College of Healthcare Executives. https://www.ache.org/learning-center/research/about-the-workplace/maximizing-talent

Explore Health Workforce Data Policy. Health Resources & Services Administration.

https://bhw.hrsa.gov/data-research/explore-health-workforce-data-policy.

Find Shortage Areas. Health Resources & Services Administration.

https://data.hrsa.gov/tools/shortage-area

Health Workforce Research Centers. Health Resources & Services Administration.

https://bhw.hrsa.gov/data-research/health-workforce-research-centers

Health Workforce Technical Assistance Center. https://www.healthworkforceta.org/

National Forum of State Nursing Workforce Centers. https://nursingworkforcecenters.org/

Review Health Workforce Research. Health Resources & Services Administration.

https://bhw.hrsa.gov/data-research/review-health-workforce-research;

Appendix I: State-to-State Clearinghouse Structural Comparisons

State	Colorado	Iowa	Montana	Nebraska	North Carolina	South Carolina	Texas	Utah	Vermont	Virginia
Established	**2017**	**1977**	**2016**	**1995**	**1979**	**1972**	**1989**	**1997**	**1994**	**2012**
Organizational Host	Colorado Department of Public Health and Environment	University of Iowa Carver College of Medicine	WIM Tracking	University of Nebraska College of Public Health	Sheps Center for Health Services Research at the University of North Carolina	South Carolina AHEC Program Office	Texas Department of Health to the Statewide Health Coordinating Council	Utah Medical Education Council (UMEC)	Vermont Department of Health	Virginia Department of Health Professions
Regulatory Authority	Colorado Department of Public Health and Environment	Office of Statewide Clinical Education Programs (OSCEP)	Montana Primary Care Office	Nebraska Department of Health and Human Services	State Department	State Department	Center for Health Statistics, Texas Department of State Health Services	Eight-member board appointed by the Governor	Health Department	Legislation
Funding	Roughly $500,000 annually	Unknown, amounts vary based on departments and projects involved	Undisclosed	$30,000 per year for direct data	Unknown for this specific department	$460,000 annually	Undisclosed	Roughly $500,000 annually over multiple departments	Unknown, amounts vary based on departments and projects involved	Roughly $500,000 annually
Funding Source	HRSA, Federal Student Loan Repayment Program, tobacco settlement funds, J-1 waiver program fees, marijuana sales tax, and private funding	Iowa State Legislature (Iowa State Initiative), Department of Public Health, All Healthcare Colleges except nursing, Delta Dental, Contracts with various projects	State, hospital, and grants	Primary Care Office grant	NC AHEC Program Office and the Office of the Provost at the University of North Carolina at Chapel Hill	Federal funding from HRSA, Duke Endowment	Federal funding from HRSA	State general fund, state education fund, and health systems	State and research grants	Federal, state, colleges
Data Collection Method	Paper surveys as well as mining existing licensure, payer, and vital statistics databases	Relational database: Licensure lists from boards, phone calls	Website search, Paper survey mailings	Paper survey mailings	Licensure board surveys	Electronic and paper survey mailings	Licensure board surveys	Board captures data from license process and sends to host	Licensure board surveys	Licensure board surveys
Data Collection Timeframe	Surveys every 2 years, databases annually	Boards every 2 years, phone calls every 6 months	Quarterly and annually	Quarterly and semi-annually	Annually	Every 2 years	Every 2 years	Every 2 years	Every 2 years	Annually and bi-annually
Website	https://cdphe.colorado.gov/prevention-and-wellness/health-access/health-workforce-planning-and-assessment/workforce-development-strategy	https://www.iowaruralworkforce.org/iowarsquos-healthcare-system--workforce-capacity.html	Company website: https://www.wimtracking.com (state database housed within a private site with secure access only)	https://www.unmc.edu/publichealth/hpts/	https://nchealthworkforce.unc.edu/	https://www.scahec.net/	https://www.dshs.state.tx.us/chs/hprc/default.shtm	https://umec.utah.gov/	https://www.healthvermont.gov/health-statistics-vital-records/health-care-systems-reporting/health-care-workforce	https://www.dhp.virginia.gov/PublicResources/HealthcareWorkforceDataCenter/

Appendix II: Sample State Data Fields

IOWA PHYSICIAN INFORMATION SYSTEM (IPIS)
Iowa's Health Professions Inventory (HPINV)
- Field List - Description -

HPINV Field	Field Description
Hcp Id	Unique ID # (computer assigned) unique to OSCEP
First Name	First Name
Middle Name	Middle Name
Last Name	Last Name
Name Suffix	Suffix: Jr. Sr. IV., etc
Email	Email (not maintained at present)
Birth Year	Birth Year
Birth State	Birth State
Birth Country	Birth Country
Campus Bldg	UI Campus Building
Campus Room	UI Campus Room
Ethnic Id	Ethnic ID#
Ethnic Origin	Ethnic Origin - name
Gender	Gender
License Number	License Number from professional licensure board
NPI Number	National Provider Identifier #
Memo	Memo
Worksite History Id	Worksite History ID#
Type Id	Profession: Physician, Dentist, Physician Assistant, Advanced Registered Nurse Practitioner, Pharmacist
Site Type Name	Site Type: Medical Office, Hospital, etc.
Site Type Id	Site Type ID #
Worksite Id	Worksite ID #
Worksite Type	Worksite Type: Hospital, Medical Office, etc.
Status Id	Signifies status of associated Add or Delete function: Relocated, Health, Initial Site, etc.
Wk Hours	Work Hours per week
Wk Weeks	Work Weeks per year
Role Abbr	Role Abbreviation ID #
Role Name	Role Name - Advanced Practice Nurses educational role
Specialty Id	Practicing Specialty Id
Specialty Name	Practicing Specialty Name
Specity1 Id	Specialty1 Id
Specity1	Specialty1
Specity1 Cert	Specialty1 Cert Year
Specity1 Recert	Specialty1 Recert Year
Specity2 Id	Specialty2Id
Specity2	Specialty2
Specity2 Cert	Specialty2Cert Year
Specity2 Recert	Specialty2Recert Year
Specity3 Id	Specialty3Id
Specity3	Specialty3
Specity3 Cert	Specialty3Cert Year
Specity3 Recert	Specialty3Recert Year
Act Id	Activity ID #
Activity	Activity - Allopathic Teaching, Private Practice, Federal, etc.
Arr Id	Arrangement ID #
Practice Arr Name	Professional Practice Arrangement Name - Independent Practice, Integrated Health System, etc.
Fte	Full time equivalent - FT/PT (Dentistry has alternate data)
Effect Date	Effective Date
Admin Date	Administrative Date
Parent Worksite	Parent Worksite #
Parent Wks Name	Parent Worksite Name
Worksite Id	Worksite ID #
June 30, 2022 Ju	Worksite Name
Address1	Address1
Address2	Address2
City	City
City Pop	City Population
County Id	County ID #
County Name	County Name
County Pop	County Population
Rural Urban	Rural/Urban County
State	State
Zip	Zip
Phone	Phone #

Source: Iowa Health Professions Tracking Center
Office of Statewide Clinical Education Programs
University of Iowa Carver College of Medicine

June 30, 2022

IOWA PHYSICIAN INFORMATION SYSTEM (IPIS)
Iowa's Health Professions Inventory (HPINV)
- Field List - Description -

Fax	Fax #
School Id	School ID #
Sch Name	School Name
Sch City	School City
Sch State	School State
Sch Zip	School Zip
Degree Id	Degree ID #
Grad Year	Graduation Year
Orig Iowa Start	Original Iowa Start Date
Active Status	Active Status - Active/Inactive
Res1Sp Id	Residency 1Specialty ID
Res1Specialty	Residency1Specialty
Res1Site Id	Residency1Site ID
Res1Site	Residency1Site
Res1City	Residency1City
Res1State	Residency1State
Res1Grad Yr	Residency1GraduationYear
Res2Sp Id	Residency2Specialty ID
Res2Specialty	Residency2Specialty
Res2Site Id	Residency2Site ID
Res2Site	Residency2Site
Res2City	Residency2City
Res2State	Residency2State
Res2Grad Yr	Residency2GraduationYear
Res3Sp Id	Residency3Specialty ID
Res3Specialty	Residency3Specialty
Res3Site Id	Residency3Site ID
Res3Site	Residency3Site
Res3City	Residency3City
Res3State	Residency3State
Res3Grad Yr	Residency3Graduation Year
Fel1Sp Id	Fellowship1Sp ID
Fel1Specialty	Fellowship1Specialty
Fel1Site Id	Fellowship1Site ID
Fel1Site	Fellowship1Site
Fel1City	Fellowship1City
Fel1State	Fellowship1State
Fel1Grad Yr	Fellowship1Graduation Year
Fel2Sp Id	Fellowship2Sp ID
Fel2Specialty	Fellowship2Specialty
Fel2Site Id	Fellowship2Site ID
Fel2Site	Fellowship2Site
Fel2City	Fellowship2City
Fel2State	Fellowship2State
Fel2Grad Yr	Fellowship2Graduation Year
Fel3Sp Id	Fellowship3Sp ID
Fel3Specialty	Fellowship3Specialty
Fel3Site Id	Fellowship3Site ID
Fel3Site	Fellowship3Site
Fel3City	Fellowship3City
Fel3State	Fellowship3State
Fel3Grad Yr	Fellowship3Graduation Year
Title	Title
Call Date	Call Date
Birth Date YYYY	Birth Date - Year
Effect Date YYYY	Effective Date - Year
Admin Date YYYY	Administrative Date - Year
Orig Iowa Start YYYY	Original Iowa Start - Year
Age	Age

Source: Iowa Health Professions Tracking Center
Office of Statewide Clinical Education Programs
University of Iowa Carver College of Medicine

June 30, 2022

2021 Respiratory Care Practitioners Survey Questions

Section 1: Education and Background

Year of Birth:

Sex:

For each of the questions below, please select the items that best describe your race/ethnicity

Select one:

Select all that apply:

If some other race, please specify:

Where did you graduate from high school (Secondary School)?

Was your childhood spent mostly in rural, urban or suburban areas?

Where did you obtain the degree that initially qualified you to practice respiratory therapy?

Please indicate the highest level of respiratory therapy education you have completed as of today:

Do you hold an active license to practice respiratory therapy in any other jurisdiction? Check all that apply

Please indicate any Board or Specialty Certifications you hold in current standing as of today: Check all that apply

Please indicate any self-designated specialty areas in which you have significant education, training or experience: Check all that apply

If you have any other specialty areas or credentials, please provide short description:

Section 2: Current Employment Status

Which choice best describes your current employment or work situation?

Overall, and taking into account all positions you fill, how satisfied are you with your current employment or work situation?

If employed, how many positions do you currently

Note: There is no legal standard for part-time work, and each employer defines part-time work differently. Part-time work generally refers to workweeks of 35-hours per week or less. Per diem, temporary, contract, self-employed and seasonal workers, and workers subject to annual limits on hours should consider average hours spent working over the term of employment

Considering all positions you currently fill, how long is your average workweek?

Unless otherwise noted, the rest of the questions draw on your experiences over the past 12 months. If you did not work in the past 12 months in a capacity that drew on your occupational background, please skip to Section 6.

Section 3: Primary Work

Location: Section 3 refers to your primary place of employment, work or practice (volunteer or paid) over the past 12 months. This is the location where you spend the most work hours during an average workweek or where you spent the most weeks working in the past 12 months. You do not need to currently work at this location. These questions refer to a location, not an employer. Persons who consistently work in multiple locations (e.g. temporary workers, home health, multi-facility rounds) should choose the location where they are

Please select the Virginia County or Independent City, or other location, of your primary place of employment, work or practice:

How long have you worked at this particular location?

Approximate number of weeks at which at least some time was spent at this work location within the past twelve months (exclude vacation, medical leave, etc):

How many hours do you (or did you) work in an average workweek at this location?

In the average workweek at this location, roughly what percentage of your working hours were spent in the following roles: (Answers should roughly equate to 100%)

Administration or business-related matters

Direct patient care, including patient education and coordination of care

Education of health professions students (including acting as preceptor)

Formal research

Other

Please select the choice that best describes this location's organizational sector:

Please select the choice that best describes this practice setting:

If you selected "other practice setting" please provide a brief description:

Please choose the option that best describes how you are (or were) personally compensated for activities at this

If you only had one practice location in the past 12 months, please skip to Section 5. If you had additional practice locations, please continue.

Section 4: Secondary Work

Section 4 refers to your secondary place of employment, work or practice (volunteer or paid) over the past 12 months. This is the location where you spend the second most work hours during an average workweek or where you spent the second most weeks working in the past 12 months. You do not need to currently work at this location. These questions refer to a location, not an employer. Persons who consistently work in multiple locations (e.g. temporary workers,

home health, multi-facility rounds) should choose the location where they are based. Is this location with the same employer or practice as your primary location, or a different employer/practice?

Please select the Virginia County or Independent City, or other location, of your secondary place of employment, work or practice:

How long have you worked at this secondary location?

Approximate number of weeks at which at least some time was spent at this secondary location within the past twelve months (exclude vacation, medical leave, etc):

How many hours do you (or did you) work in an average workweek at this secondary location?

In the average workweek at this location, roughly what percentage of your working hours were spent in the following roles: (Answers should roughly equate to 100

a. Administration or business-related matters

b. Direct patient care, including patient education and coordination of care

c. Education of health professions students (including acting as preceptor)

d. Formal research

e. Other

Please select the choice that best describes this secondary location's organizational sector:

Please select the choice that best describes this practice setting of your secondary location:

If you selected "Other" please provide a brief description:

Please choose the option that best describes how you are (or were) personally compensated for activities at this secondary location: If you had only two locations in the past 12 months, please skip to Section 5. If you had additional practice locations, please continue.

How many total work locations have you had over the past 12 months?

How many work locations do you have currently?

Section 5: Employment

The Healthcare Workforce Data Center collects compensation information to assess the balance of supply and demand in the state and in localities, and to assist students in planning health careers and choosing specialties. Information from these questions will only be presented in the aggregate. The confidentiality of information for these and all questions is protected by law. All questions are voluntary

Within the past 12 months, have you experienced any of the following: Check all that apply

What is your estimated annual net income from respiratory therapy related activities?

Do you receive any of the following benefits from any current employer? Check all that apply

What is your estimated current educational debt?

At what age do you plan to retire from respiratory therapy?

Within the next two years do you plan to do any of the following: Check all that apply

End of Questionnaire for active practitioners-Thank you!

Section 6: For Inactive Practitioners

If you did not practice, teach or otherwise work in respiratory therapy within the past twelve months, did/are you? Check all that apply

Do you provide any volunteer, mentoring or other services within respiratory therapy in Virginia? If so, approximately how many hours in the past year?

Do you expect to begin working in respiratory therapy in Virginia? If so, when?

End of Questionnaire-Thank you!

https://www.dhp.virginia.gov/hwdc/findings.htm Click here to see results of previous surveys.

Information Needed to Analyze Eligibility for Shortage Designation		Character Type	Example
1	First & Last Name	alphabetic	Jon Doe
2	Specialty	alphabetic and numeric	See Code Sheet – Areas of Concentrations/Specialty*
3	License Number	alphabetic and numeric	D00000
4	Practice Setting	alphabetic and numeric	See Code Sheet – Setting*
5	Practice Site Name	alphabetic and numeric	Name of Facility/Organization
6	Practice Site Address	alphabetic and numeric	201 West Preston Street
7	Practice Site City	alphabetic	Baltimore
8	Practice Site State	alphabetic	Maryland, Virginia, Delaware, Pennsylvania, etc.
9	Practice Site Zip Code	numeric	21201-2301
10	Practice Jurisdiction	alphabetic	See Code Sheet – Jurisdiction*
11	Is a provider in a NHSC or Loan repayment program?	Alphabetic	yes/no
12	Is a provider on J1-Visa or H-1B Visa?	Alphabetic	yes/no
13	Is a provider a Fed Employee?	Alphabetic	yes/no
14	Does a provider provide direct care?	Alphabetic	yes/no
15	Is a provider in practice?	Alphabetic	yes/no

16	Is a provider solely in administration, research or teaching?	Alphabetic	yes/no
17	Does provider work exclusively in inpatient or emergency room care?	Alphabetic	yes/no
18	Practice Hours per Week	numeric	hours per week
19	Does a provider accept Medicaid patients?	Alphabetic	yes/no
20	Does a provider accept Federal SFS?	Alphabetic	yes/no
21	% of Patients Seen with Medicaid	numeric	percentage
22	% of Patients Seen with Federal SFS	numeric	percentage
23	Does a provider accept New Patients?	Alphabetic	yes/no
24	Waiting Time for Appointment – days (Current Patients)	numeric	number of days
25	Waiting Time for Appointment – days (New Patients)	numeric	number of days
26	Date of Birth *(for dentist only)*	numeric	11/17/1980 (month/day/year)
27	Number of Dental Assistant *(for dentist only)*	numeric	number of assistants/auxiliaries

*Code Sheet comes from the Maryland Board of Physicians

Gray shading: Indicates data that might not be available from board or known at time