HMA

HEALTH MANAGEMENT ASSOCIATES

*Funding for Training of California's
Non-Physician Workforce: What Programs and
Data Exist and What They Tell Us*

*Research and Consulting in the Fields of Health and Human Services Policy, Health Economics
and Finance, Program Evaluation, Data Analysis, and Health System Restructuring*

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Introduction

California Future Health Workforce Commission

In February 2019, the California Future Health Workforce Commission published its final report, which identifies the issues, proposes a comprehensive plan for building California's health workforce, establishes 10 priorities and 17 other recommended steps for closing the state's workforce gaps by 2030. The report is the culmination of the combined efforts of a statewide leadership group representing the health, education, employment, labor, and government sectors, along with those of Commission staff, technical advisory committee, and subcommittee members and stakeholders.

Project Goal

The Commission recognized that workforce issues exist at multiple license levels and that midlevel practitioners are necessary for meeting workforce needs across the state.[1] Following on the work of the Commission, the California Health Care Foundation (CHCF) asked Health Management Associates (HMA) to gather information on:

- The financial support offered to Californians engaged in training to become non-physician providers
- The data collected on these efforts

Project Overview

HMA conducted a literature review combined with key informant interviews and data collection on available funding sources in order to understand the financial support available to California residents engaged in training to become physician assistants (PAs) and nurse practitioners (NPs). The literature review provided insights into both what is known about the relationship between various educational funding sources for these students and educational and employment choices (what we describe as "outcomes" below), as well as the potential sources of data collected about the key attributes of that relationship. We sought to understand what data are collected and where there are gaps. We hoped to be able to say something about the merits and impact of providing funding for PA or NP training, despite the fact that we understood at the commencement of the project that the available data were likely limited and would constrain our ability to do so.

Methodology

HMA utilized a multimodal approach to understanding funding for the training of California's non-physician workforce that included research and literature review, key informant interviews, and analysis of data. The key informant interviews allowed HMA staff to draw upon strategic expertise from specialists in the field. HMA and CHCF agreed that the scope of the non-physician workforce would be confined to clinicians, such as nurse practitioners and physician assistants, with a focus on primary care non-physician clinicians.

Review of Existing Research

We focused the research and literature review on understanding and identifying what data are available related to non-physician workforce training. More specifically, we sought to understand data gathering efforts related to the utilization and outcomes of training scholarships, loan repayment, and other funding mechanisms that offset the cost of training of and by non-physician clinicians. We concentrated our outreach and data gathering efforts on entities that had a likely investment in collecting and understanding these data. By outcomes, we refer to the employment disposition of non-physician clinicians after they take advantage of any mechanisms that offset the cost of training. This includes retention with the same employer, practice setting (e.g., high physician shortage area/medically underserved area), geographic location (e.g., rural or urban), and/or specialty (e.g., primary care or specialty). While a number of the entities likely to be engaged in data gathering efforts were known in advance, in the course of our research we identified a few additional organizations with information germane to this work and from whom we solicited additional key informant interviews.

Key Informant Interviews

We used key informants to identify the availability and breadth of accessible data on the cost of NP and PA training and the utilization and outcomes of the various mechanisms to offset the financial burden of such training. We also endeavored to identify gaps in that data, and best practices in data gathering to the degree that best practices exist, and to elicit subjective observations and opinions about factors affecting job choice and trends in this important primary care workforce. An interview guide was developed in advance to facilitate the conduct of these semi-structured interviews.

We interviewed staff and Board Directors at seven organizations via audiovisual link from April 20 through May 22, 2020. Additional information about the key informants and their organizations is detailed in Appendix 1.

- Roy Guizado, MS, PA-C, DFAAPA, and Teresa Chien, California Association of Physician Assistants
- Sheila Mauldin, MNM, and Dawn Morton-Rias, EdD, PA-C, National Commission on Certification of Physician Assistants
- David Keahey, MSPH, PA-C, Michael De Rosa, PhD, MPH, PA-C, and Tyler Smith, MPH, Physician Assistant Education Association
- Lynn Doering, PhD, FAAN, and Mary Ann Lewis, DrPH, RN, FAAN, UCLA School of Nursing
- Alexa Curtis, PhD, MPH, FNP-BC, University of San Francisco School of Nursing and Health Professions: Family Nurse Practitioner Program
- Joanne Spetz, PhD, FAAN, Healthforce Center at UC San Francisco

Review of Available Data

We reviewed data collection efforts and collected information from the National Commission on Certification of Physician Assistants data set. We worked with the Commission to get access to their U.S. and California PA survey data, including:

- Number of PAs certified between 2014 and 2018
- Educational debt at graduation, educational loan repayment incentives offered, and their influence on job decision-making

- Factors motivating PAs to seek or accept a PA position in a Health Professional Shortage Area (HPSA) or medically underserved area (MUA)
- Number of PAs who are National Health Service Corps scholars, and challenges finding Corps-affiliated positions

Findings

Context: What Funding Exists Now

We collected information on funding for students engaged in PA and NP training programs (scholarships) and funding to reduce or eliminate outstanding loan amounts (loan repayment, loan forgiveness). In addition, we identified some site-specific funding that supports medical training programs.

Scholarships

The U.S. Department of Health and Human Services (HHS) and Department of Defense (DoD) support a number of scholarships that benefit individuals engaged in training to become PAs and NPs. The HHS agencies Health Resources and Services Administration (HRSA) and Indian Health Service (IHS) each support health care professions scholarship programs.

HHS Agency Scholarship Programs

The HRSA National Health Service Corps (NHSC) scholarship program is available to PAs, NPs, dentists, physicians, and certified nurse midwives. Full-time students can receive up to four years of scholarship support, with a two-year commitment to service in an NHSC-approved site in an HPSA for each scholarship year received. During scholarship years, the student receives support for tuition and eligible fees, along with an annual payment for reasonable educational costs and a monthly stipend for living expenses. The student must attend school in the United States, Washington D.C., or a U.S. territory. The PA Education Association (PAEA) reported that 149 PA students are in the NHSC student pipeline.[2]

The HRSA Bureau of Health Workforce (BHW) administers the Nurse Corps scholarship, which supports nursing students with financial need, covering tuition, fees, and other education costs, plus a monthly living stipend. Each scholarship year requires a one- to two-year service commitment in a Designated Critical Shortage Facility (CSF) located in an HPSA.

BHW Scholarships for Disadvantaged Students Program was established by the Disadvantaged Minority Health Improvement Act of 1990.[3] The scholarships are intended to increase the number of health care graduates practicing primary care, retain more full-time students who are low-income and/or members of racial or ethnic minorities, and increase the number of graduates who work in medically underserved communities. The program gives funding to applicant nursing and other health professions schools to support scholarships for students from "disadvantaged" backgrounds, based on demonstrated financial need and full-time enrollment in an eligible program.[4] Disadvantage may also include educational and environmental disadvantage with concomitant financial need. Participating schools select scholarship recipients based on determinations of need and offer scholarships for tuition and allowable educational and living expenses, up to $40,000 per year. At least 16% of the funding is earmarked for schools of nursing.

The program requires participating schools to have a program for recruiting and retaining students of color as well as requiring them to ensure that at least 20% of their full-time student and graduate populations are from disadvantaged backgrounds (over the most recent three years). Funding is prioritized for schools with at least 15% of underrepresented minorities enrolled full-time in the discipline for which the school is applying, 15% of graduates practicing primary care, and 10% of graduates working in medically underserved communities. For fiscal year 2020, there is an estimated $48.2 million available, capped at $650,000 per awardee institution.

The IHS Division of Health Professions Support (DHPS) administers the American Indians Into Nursing Program, which is intended to increase the number of nurses, nurse midwives, nurse anesthetists, and NPs who deliver health care services to American Indian and Alaska Native (AI/AN) communities. Program eligibility is limited to accredited schools of nursing, accredited tribally controlled community colleges and post-secondary vocational institutions, and nurse midwife programs and NP programs provided by any public or private institution. Grant funds allow the awarded institutions to provide scholarships to AI/AN individuals enrolled in schools of nursing.[5]

The program is organized as cooperative agreements between IHS and the individual institutions. Five schools were funded for 2019–23: University of Arizona, University of North Dakota, Montana State University, Oglala Lakota College, and Salish Kootenai College. These grantee institutions were selected through a limited competition procurement for schools in IHS geographic areas with historic and current high need for nurses.[6] Each of the geographic areas contain IHS service units designated by HRSA as HPSA. Additionally, many of these states have American Indian Serving Institutions (tribal colleges and universities) that feed into universities with nursing programs.

The FY 2019 funding was approximately $1.7 million, with institutions awarded between $300,000 and $400,000. As a cooperative agreement, the awardees work with an IHS program officer to ensure program compliance, receive technical assistance and information from IHS, and agree to participate in grant program meetings.

Eligible students enroll in programs for an associate degree in nursing (ADN), bachelor of science in nursing (BSN), or an advanced practice nursing degree — a master of science in nursing (MSN) or a doctor of nursing practice (DNP). The scholarships pay for tuition, books, fees, and stipends for living expenses.

IHS reports that grantees have used awards to provide scholarships for students in the university's Traditional Pre-Licensure Clinical Nursing program, recruit AI/AN students into nursing programs, fund a project to increase the number of nurses prepared to provide health care to Indian people, and provide scholarships to students and fund college of nursing staff who serve as student advisers and mentors.

DoD – Armed Forces Scholarships
The F. Edward Hébert Armed Forces Health Professions Scholarship Program (HPSP) provides one to four years of tuition and other financial support to eligible individuals. To be eligible, the applicant must also qualify as a commissioned officer and be in active status in the army, navy, or air force. Eligible individuals include people pursuing training to become a physician, dentist, qualifying specialty nurse, counselor, clinical psychologist, or optometrist. The active-duty service obligation for nurses is at least

three years post-graduation, regardless of the length of the scholarship. The length of the program depends on the branch of the armed service and the training program.

Loan Repayment

We identified 15 loan repayment programs (LRPs) that explicitly support PAs and NPs. The programs are sponsored by both federal and state programs. Federal funding directly supports a range of LRPs, primarily through agencies within HHS, the Department of Defense, and Department of Veterans Affairs.

Federal Programs: HHS

The NHSC administers LRPs in exchange for service at an NHSC-approved site:

- Up to $50,000 for two years of service in an HPSA
- Up to $100,000 for three years of service in rural HPSA
- Up to $75,000 for three years of service in an NHSC-approved Substance Use Disorder site (a designated Mental Health HPSA) or site with an overdose rate exceeding the national average for the previous three years

An individual who receives a scholarship through the NHSC can be eligible for the LRP once their scholarship service commitment is completed.

The BHW administers the Workforce Nursing Corps LRP, which will pay 60% of unpaid nursing student loans over two years, along with an additional 25% of the original balance in the third year. To be eligible for repayment, nurses work at an eligible public or private nonprofit Critical Shortage Facility. Nurse faculty employed at an eligible school of nursing can also access loan repayment.

The HHS Indian Health Service offers loan repayment to a range of providers in exchange for work at an IHS facility identified as having a staffing need ($40,000 for two years).

Federal Programs: DoD and Veterans Affairs

The Department of Defense offers LRPs to current military personnel through the Active Duty Health Professions Loan Repayment Programs. Qualified active-duty Medical Corps, Nurse Corps, and Biomedical Sciences Corps members (army, navy, air force) can receive up to $40,000 toward loan payment and reasonable educational and living expenses. Participants have an active-duty obligation of at least two years, with an additional year of active duty for each annual repayment beyond the first two.[7]

The Department of Veterans Affairs' VA Education Debt Reduction Fund offers loan repayment of up to $40,000 per year for VA employees, for up to five years total.

California Programs

California's Office of Statewide Health Planning and Development (OSHPD) is the agency charged with ensuring healthy and safe health care environments across the state. OSHPD includes a range of divisions covering business services, the California Health Facility Construction Loan Insurance Program, regulation of the design and construction of health care facilities, collection and analysis of workforce and training data, and health professions education financing support. The agency's mission is to

advance safe, quality health care environments through innovative and responsive services and information that:

- Finance emerging needs
- Ensure safe facilities
- Support informed decisions
- Cultivate a dynamic workforce

OSHPD houses the Health Professions Education Foundation (HPEF), which supports health professional students and graduates through scholarships and loan repayment programs, including the following:[8,9]

California State Loan Repayment Program (SLRP). SLRP offers loan repayment to health care professionals who provide health care services in federally designated California HPSAs. The service obligation period is two years of full-time work or four years of part-time work.[10] NPs and PAs specializing in adult or family medicine, pediatric medicine, women's health, geriatrics, or mental health and psychiatry can participate. SLRP practice sites pay the provider's salary and match the SLRP funding 1:1.

The total 2020–21 funding is $2,458,420, to be matched by the same amount in practice site funding. One million dollars of the total is earmarked for mental health providers. The award amounts ($50,000 for the initial award year) are determined by federal requirements, but OSHPD may award full, partial, or no funding based on how well the applicant meets program selection criteria, as well as the amount of available funds.[11]

Advanced Practice Health Care LRP. Eligible advance practice providers can get $25,000 in loan repayment, awardable up to three times, in exchange for providing full-time, direct patient care at a qualified facility in California for up to 24 months per award.[12] Qualified facilities are designated by HRSA or the California Shortage Designation Program as a medically underserved area or population, HPSA-Primary Care, HPSA-Dental, or primary care shortage area. State, county, veteran, and correctional facilities, Native Indian Health Centers, and Federally Qualified Health Centers (FQHCs) also qualify.

County Medical Services Program (CMSP) LRP is available to primary care NPs and PAs (along with other providers) working at CMSP-approved facilities in CMSP counties.[13] The initial loan repayment year can be worth up to $50,000, depending on the extent to which the individual meets the requirements and the total available funding. The funding can be extended for up to three years, with the first two extension years funded at up to $20,000 each and the final year funded at up to $20,000.

Loan Forgiveness

The U.S. Department of Education (DOE) administers a loan forgiveness program, with eligibility based on federal and other service rather than to specific job classifications. Program participants must be current employees of a qualified employer (federal, state, local, or tribal government or an approved nonprofit organization) and have at least 10 years' employment at an eligible organization. A loan can be eligible for repayment if the participant has made at least 120 qualifying payments on the loan and has worked for 10 years of eligible service. The value of the loan forgiven will depend on the amount of loan outstanding at the time of program participation.

Site Support

HRSA-Administered Programs

HRSA offers support to organizations providing training through the Primary Care Training and Enhancement Program, Area Health Education Centers Program, and Health Careers Opportunity Program.

To strengthen the primary care workforce, the Primary Care Training and Enhancement Program provides funding for faculty and curriculum development, research, and clinical training experiences in primary care. At least 15% of the program funds are earmarked for PA programs, which works out to over $7.3 million per year for PA programs.

The Area Health Education Centers (AHEC) Program is administered through HRSA's Division of Diversity and Interdisciplinary Education, Bureau of Health Professions. AHECs are designed to establish and enhance education and training networks between communities, academic institutions, and community-based organizations to improve the capacity and distribution of the health workforce with a particular aim of increasing retention of clinicians in rural and underserved areas. Funding for AHECs go to public or private nonprofit accredited schools of medicine. Training through AHEC sites is provided to a broad array of health professions students, including PA students.

The Health Careers Opportunity Program funds accredited health professions schools and other public and private nonprofit health or educational institutions to facilitate access to health professions education for students from economically and educationally disadvantaged backgrounds. The program funds support resources such as counseling and mentoring, financial assistance, financial planning, and health careers information.

Data Availability

Perhaps the most salient finding of this research is the disparity in data collection across the different non-physician clinician groups. A 2016 brief by the HRSA-funded Health Workforce Technical Assistance Center reported that half the states collect health workforce supply data. However, discussions with key informants about the availability of data on PAs and NPs indicate that information is not collected uniformly or consistently for both categories of licensure.

Despite the fact that there are multiple nursing academies, associations, councils, and certifying bodies, including several focused only on nurse practitioners (e.g., American Association of Nurse Practitioners, and American Academy of Nurse Practitioners), there does not appear to be any regular collection of data related to the awareness, utilization, and outcomes of funding for training California's nurse practitioner and physician assistant workforce. The California Board of Registered Nurses does collect some data, as described below.

California Board of Registered Nurses

The California Board of Registered Nurses (BRN) has a legislative obligation to conduct surveys on nursing training programs and licensees. The BRN Annual School Survey collects data from pre-licensure (i.e., leading to LVN or RN license) and post-licensure nursing training programs about faculty and student demographics, admission and completion rates, and training program details. In 2014, an

amendment to the business and professional code related to the healing arts added a requirement to collect data directly from applicants at the time of licensure and license renewal, including demographics, location of practice, educational background (pre-matriculation), gender, race/ethnicity (optional), and languages spoken. These data are reported to OSHPD to facilitate workforce planning and monitoring of service access.

The BRN contracted with UCSF to conduct two surveys of nurse practitioners and certified nurse midwives. The 2010 Survey of Nurse Practitioners and Certified Nurse Midwives was used to assess the roles these clinicians could play in the delivery of health care and the potential of this workforce to meet the future health needs of Californians. The 2017 Survey of Nurse Practitioners and Certified Nurse Midwives was conducted to identify trends in some areas and expanded the survey to include certified nurse anesthetists and certified nurse specialists, build on the 2010 National Sample Survey of Nurse Practitioners conducted by the federal Bureau of Health Workforce, and importantly, to capture information about demographics, education, and employment. As of this writing, there are no plans to replicate these surveys or to include them as a consistent undertaking of the BRN. Data elements from these surveys that may be of interest to the Commission include but are not limited to those listed in Appendix 2.

Other Data Sources for Nurse Practitioners

Training programs (such as the two interviewed for this report) may periodically collect data on their graduates. Data collection and analysis are often driven by the need to demonstrate performance along defined parameters that position those programs to receive training program funds in the future. Competitive programs such as the Song-Brown Healthcare Workforce Training Program are able to demonstrate a high certification rate, underrepresented minority enrollment, and persistence of licensed graduates working in primary care in underserved areas. The frequency and content of these graduate surveys is inconsistent at best.

Despite the overall low level of data collection, at least two national physician assistant organizations engage in systematic data collection that reveals at least some useful information about education funding for non-physician clinicians. While these programs do not collect the full spectrum of data that interested stakeholders might desire, they represent both a foundational starting point for information about educational debt burden and intent to access loan repayment options, as well as a potential opportunity for exploring data partnerships for future data collection needs.

National Commission on the Certification of Physician Assistants

The National Commission on the Certification of Physician Assistants (NCCPA) is the only national certifying organization for PAs in the United States. NCCPA was established as a nonprofit organization in 1974 and is responsible for establishing standards for clinical knowledge and reasoning, and for the testing program used to establish PA certification. The organization was established by medical professional organizations that wanted to establish more rigorous PA training standards and an objective approach ensuring trainees are qualified to enter the profession. NCCPA contracts with the National Board of Medical Examiners to construct the PA National Certifying Examination (PANCE). NCCPA establishes eligibility requirements for and administers the examination, sets the standards for passing both the PANCE and the PA National Recertifying Exam (PANRE), and is the primary verification

source for certification. All states, U.S. territories, and the District of Columbia recognize NCCPA certification and utilize that certification in determining licensure status and for regulation of PAs.

The NCCPA has been collecting data on PA certification and continuing medical education credits since 1974. Commission data gathering efforts were greatly enhanced in 2012 with the integration of routine data collection into the NCCPA secure portal as part of the registration process for certification and recertification exams, as well as tracking of continuing medical education (an additional service provided by NCCPA). NCCPA presents three data collection "modules" to PAs through the online PA Professional Profile on the NCCPA website.

The three modules are About Me, MyPractice, and Recently Certified. "Recently Certified" is for PAs who have been certified for less than six months. NCCPA allows access to this data for research purposes with approval from the Commission's Research Advisory Policy Council. A partial list of data elements that could inform future data collection efforts in California is shown in the section *Clinician Workforce Numbers and Demographics and Characteristics,* which is included in the "Other Data Sources" section of this report.

Physician Assistant Education Association

The Physician Assistant Education Association (PAEA) is the only national organization that represents PA training programs in the United States. Currently, all 254 accredited PA programs in the country are members of the association. PAEA supports faculty at its member programs, applicants wishing to establish new programs, students, and other stakeholders through the provision of professional development, research, policy, and advocacy. The association was founded in 1972 as the Association of Physician Assistant Programs, an affiliate of the American Academy of Physician Assistants (AAPA). It branched off from AAPA to focus on training programs and was renamed PAEA in 2005. While PA training programs are their formal members (PA training program directors are the voting members), students and faculty are considered members as well but do not pay dues.

PAEA conducts several research initiatives related to PA training, including annual surveys of member programs, faculty, and students. The point-in-time nature of this data means there are no accurate outcome data included. Data elements potentially of interest to stakeholders are listed in Appendix 2.

The Program Survey, formerly the "Annual Report," is PAEA's longest-running survey endeavor. The Program Survey collects information about program structure, program and student financial information, student and faculty characteristics, and much more. This survey is administered annually in May, and full completion is mandatory for all PAEA member training programs. Reports are released in the fall of the following year. The PAEA makes data available to members for use in benchmarking and program-specific analysis, and offers training programs the ability to insert up to 10 questions in the annual program survey as part of the Support to Advance Research (STAR) program.

PAEA partners with the AAPA and independently provides grant funding and opportunities for PA faculty in the context of high-quality research focused on learning more about the issues facing PA education and the profession. In addition to the training program–related data, this survey includes data on

students as collected and reported by the programs. Pertinent data from this survey includes student demographics, percentage receiving financial aid, tuition, fees, and student out-of-pocket expenses.

In 2011, the PAEA research department began conducting Student Surveys and Reports and compiling statistics through two separate surveys at two points in their PA training: at the time they begin matriculating (the Matriculating Student Survey, or MSS) and at the end of their program (the End of Program Survey or EOPS). Since the first report was released in 2014, the surveys have been administered annually, and reports on the data collected from the surveys are generally published the following year. The MSS collects student demographics, academic and employment background, factors related to choice of the PA profession and program, educational financing, intended specialty and practice environment, and student health and well-being. The EOPS collects information from graduating students on demographics, program and curriculum experiences, career plans, and educational financing. The Student Report compiles and reports data from both of these surveys.

An additional survey, the PAEA Mid-Program Student Survey (MPSS), was administered in 2015 to a self-selected sample of students who participated in the previous year's MSS. The MPSS collected data on health and well-being, leadership and service experience, interprofessional education, program experience, and intended specialty and practice environments. This is not expected to become a routine survey, and as of the writing of this report, data are available only for research purposes.

Other Data Sources

The HRSA National Center for Health Workforce Analysis (NCHWA) assesses health surveys and data on the supply, use, access, need, and demand for health workers. NCHWA developed the Minimum Data Set (MDS), a standard set of basic questions for collecting data on the supply of health workers, including nurses and physician assistants. The questions focus on health professionals' demographic, educational, and practice characteristics and are intended to support thoughtful workforce planning.

In 2016, the National Forum of State Nursing Workforce Centers found that more than half the states collect workforce supply data, often at licensure and re-licensure.[14] However, the information collected does not consistently identify scholarship, repayment, or other financial support information that could allow outcomes analysis for these programs.

The National Council of State Boards of Nursing and National Forum of State Nursing Workforce Centers conduct a biennial survey of the U.S. nursing workforce.[15] The study is focused on RNs, LPN/VNs and LPNs and provides information on the supply of these nurses in the country. The national, randomized survey conducted between August 2017 and January 2018 included 148,684 RNs and 151,928 LPN/VNs. The 2020 survey is underway, with results expected to be disseminated through the Journal of Nursing Regulation at the end of the year.

Available Data on Research Questions of Interest

This section provides an overview of data on training programs, clinician demographics, and practice characteristics as well as research topics of interest from several of the sources mentioned in the prior section. When possible, we have tried to include data at both the national level and for California.

Training Programs

According to the NCCPA and the PAEA there are now 238 PA training programs in the United States, 34 of which are in the Western Region (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming). California has 16 programs.

Because there are so many different paths to obtain an NP certificate, it is difficult to know with certainty how many NP training programs there are in the U.S.[16] The American Academy of Nurse Practitioners indicates there are "approximately 400 institutions" with NP programs, and at least 13 NP specialties.

Clinician Workforce Numbers, and Demographics and Characteristics

The available data on workforce numbers in these categories are relatively reliable within the definitions provided. The 2018 Statistical Profile of the NCCPA — the only national certifying body for PAs — indicates there were 131,125 unique PA licensees in the U.S., representing a 6.6% increase over 2017 (and a 37.2% increase since 2013). In California, there were 10,078 PAs in 2018. While 7.7% of the nation's PAs are in California, the state ranks 45th in PAs per capita (25.5 per 100,000).

Understanding the workforce numbers for nurse practitioners is more complicated because at least six bodies certify NPs in the U.S. Nurses with NP certificates may also have other clinical certificates (e.g., certified nurse midwives, women's health care NPs, psychiatric and mental health NPs, etc.), and the survey procedures for NPs are less consistent than for RNs. The AANP 2010 Survey indicated there were 290,000 "licensed nurse practitioners." It is unclear how individuals who are licensed in more than one state were counted. More recently, the HRSA Bureau of Health Workforce 2012 National Sample Survey of Nurse Practitioners indicated there are 154,057 licensed NPs, 132,368 of whom were working in an "NP role," and 127,000 of whom were engaged in patient care delivery. The BRN's 2017 Survey of Nurse Practitioners and Certified Nurse Midwives indicates there were 20,337 NPs in California (an increase of 41% over the 2010 survey figure):

- 19,768 were certified only as NPs (an increase of 48% over 2010)
- 569 were certified as both an NP and a CNM (a decrease of 10.9% over 2010)
- 528 were certified as CNMs only (an increase of 5.7% over 2010)

Comparing PA data to the 2012 Sample Survey of NPs, the number of NPs and PAs in the U.S. are roughly equivalent (132,368 in NP roles versus 131,125 unique PA licensees). However, there are approximately twice as many NPs in California as there are PAs (20,337 versus 10,078).

Table 1. Physician Assistant and Nurse Practitioner Licensees in the United States and California[17]

	United States		California	
	Physician Assistant	Nurse Practitioner	Physician Assistant	Nurse Practitioner
Total licensees	131,125	154,057	10,078	20,337
Female[18]	69%–77%	>90%	66%	>90%
Hispanic	6.3%	4.0%	16.2%	8.4%
White	85.9%	85.0%	66.3%	61.1%
Speak a language other than English	22.7%	Unknown	52.7%	42%–53%

Although organizations across and even within disciplines do not collect the same demographic information, some data are comparable. Between 69% and 77% of PAs identify as female according to the NCCPA and PAEA (the latter are from the PAEA End of Program Survey data). State-specific data from the NCCPA indicate 66% of PAs identify as female. Over 90% of NPs in the country and in California identify as female.

As each survey defines race somewhat differently, comparisons across surveys are challenging. With this in mind, it is worth noting that compared to their counterparts nationally, more of California's PAs and NPs are Hispanic and/or speak a language other than English. Among PAs, 6.3% nationally identify as Hispanic (16.2% in California), while 4.0% of NPs nationally (8.4% in California) identify as Hispanic. Nationally, 22.7% of PAs are able to communicate with patients in a language other than English, versus 52.7% in California. In California, between 42% and 53% of NPs communicate in a language other than English (CNMs have higher rates of second language than do those certified only as NPs).

Practice Patterns

Both PA and NP organizations collect information about some aspects of clinical practice, but the characterization of that data is not entirely comparable. This lack of consistency makes reliable comparisons across geography or program hard to achieve. For example, PAs define primary care as family practice, pediatrics, internal medicine, gerontology, and women's health, while nursing considers women's health a specialty (including care provided by women's health care NPs and CNMs). Similarly, practice setting is defined for PAs to include hospital, urgent care, office-based, federal/government, and community health center/FQHC, while nurses include hospital, ambulatory, long-term care, public health and corrections, and academia as the options for settings.

Table 2. Physician Assistants and Nurse Practitioners by Practice Patterns, U.S. and California

	United States		California	
	Physician Assistant	Nurse Practitioner	Physician Assistant	Nurse Practitioner
Primary care clinicians	25.8%	76% (47.6%)	31.3%	75%[19]
Hospital or urgent care setting	45%	32%	>48%	38.9%
Rural setting	18%	—[20]	—	—
Serve underserved population	—	—	—	48.1%
Plan to leave current position	5.6% (w/in 12 mos.)	12.9% (w/in 5 years)	—	12.9%

The 2018 NCCPA survey indicates that 25.8% of PAs in the U.S. are primary care clinicians. This represents a 6.8% decline from 2013 and confirms an ongoing trend away from primary care and toward more specialization in the PA profession. In California, 31.3% of PAs practice in primary care. Among NPs, 76% are certified in primary care, but the 2020 National Sample Survey of NPs indicates that only 47.6% actually deliver primary care services most of the time (the National Sample Survey includes information about the percentage of work effort dedicated to primary care). The BRN's 2017 Survey of NPs and CNMs indicates that over 75% graduated with a primary care specialty, but there are no data indicating how many NPs in California actually deliver primary care services.

Nearly 45% of PAs nationwide and over 48% in California practice in a hospital or urgent care setting. By contrast, only 32% of NPs across the country practice in a hospital setting. That figure is higher in California (38.9%), but that is down from 43.4% in the 2010 survey of NPs and CNMs. The PA survey includes a large list of options for number and type of practice location, so the numbers in each practice location are very small in both national and state surveys. The 2017 survey of California NPs and CNMs indicated that 48.1% of NPs always served the underserved.

Nationally, about 5.6% of PAs will be leaving their current positions in the next 12 months, with close to a third leaving for each of the following reasons: to pursue a new clinical position due to insufficient wages; or because they are relocating. State data are not readily available on job change for PAs. About 12.9% of NPs in California will be leaving their current position in five years. No data were collected on the factors influencing that decision.

Finances

According to the Vice President of Research and Examination Programs at the NCCPA, 2019–20 tuition for PA training programs across the country ranges from a low of $25,000/year to $90,000/year. In California and several western states, the range is from $30,000/year (at Oregon Health Sciences University) to over $90,900 (Dominican University of California).[21] Prior to the COVID-19 pandemic, all PA training programs were full-time, onsite programs (i.e., offering no significant distance learning).

Yearly tuition for these western institutions is included in Appendix 3. Securing detail about tuitions for NP training programs is complicated by the multiple pathways available for achieving NP certification, and by the numerous online training options. Consequently, the range in tuition costs for NP programs is from $12,000 to nearly $90,000.

Salary information is more readily available for PAs than for NPs. According to the NCCPA 2018 survey, the mean salary for PAs was $110,599 (median $105,000), representing an increase of 15.7% from salaries in 2017–18. California salaries are higher than the national average — the average salary is $124,189 (median is $125,000). Not surprisingly, primary care salaries are lower than the average at both the state and national level. Data from the 2012 National Sample Survey of NPs indicate the median salary across the nation was $87,500. According to the BRN's 2017 Survey of NPs and CNMs, the mean salary was $117,629 (and increase of 31.2% from 2010 salaries). Like the salaries for PAs in primary care, NPs practicing more than 50% of their time in primary care settings have lower salaries (mean salary = $100,000).

We found little information on the demographics of education financing for NPs or PAs. Knowing who is currently supported through grants, scholarships, and LRPs would be useful for identifying gaps and opportunities for change. Specific information on the recipients of funding programs and their career outcomes would be particularly beneficial for understanding whether such programs are achieving their intended outcomes.

To assess program success would require collecting data from scholarship and grant recipients and LRP participants (and ideally, non-awardees) at graduation and at multiple points along their careers. Getting information over time on the same individuals would help identify whether their career choices are motivated by the same or varying factors at different career stages. Additional data collection could be tied to license application/renewal as it is currently, although relying on licensing loses the ability to get information on people who leave the profession.

Data collection should be paired with increased definition of what constitutes success. For example, analysis of the data requires a shared understanding of the expectations regarding whether and how long after fulfilling their commitments clinicians will remain in an HPSA or MUA or practice in primary care versus specialty.

Table 3. Physician Assistant and Nurse Practitioner Training Costs, Salary, and Debt, U.S. and California

	United States		California	
	Physician Assistant	Nurse Practitioner	Physician Assistant	Nurse Practitioner
Cost of training (per year)	$25,000–$90,000	$12,000–$90,000	$30,000–$90,900[22]	—
Average salary	$110,599	—	$124,189	$117,629
Median salary	$105,000	$87,500	$125,000	—
Graduated with educational debt	50%	—	—	—
Average debt at graduation	$43,565	—	—	—

NCCPA data indicate PAs have mean debt of $116,705 ($112,000 median), with the California average being $129,786 ($125,000 median). The PAEA survey, which collects more detailed information on debt, surveys students on:

- The importance of paying off debt in choosing a career path
- Anticipated total debt from attending PA school
- Type of service indebtedness and loan forgiveness program participation
- Matriculating students' non-educational consumer debt (amount and types)

There are very little available data on NP educational debt.

Data on motivations for training and factors that influence decisions about job, practice setting and location, specialty, and other factors indicate that 50.4% of PA graduates in the 2018 cohort had educational debt (the mean amount of PA training debt in this group was $43,565). According to an analysis of the PAEA EOPS data from 2016, those who were married and had educational debt were more likely to choose/accept jobs in primary care, while those who were influenced more by specific rotations and income potential were more likely to choose jobs in a specialty.

Supplemental Data from NCCPA

After interviewing staff at NCCPA, we submitted a data request aimed at enhancing our understanding of PA educational debt and the factors that influence PA job selection decisions. NCCPA provided us with aggregated data derived from routine surveys of recently certified PAs from 2014 through 2018 (the sample includes 2,706 PAs in California and 41,309 PAs across the U.S.). The NCCPA data show:

Educational Debt
In California, 63.5% of recently certified PAs indicated they had educational debt in excess of $100,000 and 14% had educational debt of $200,000 or more. The California rates were higher than the national rates; across the country 58.9% of PAs reported educational debt over $100,000 and 8.6% had debt of $200,000 or more. Similar percentages of recently certified PAs reported having no educational debt at the time of their graduation (9.8% in California and 9.9% nationally). Debt at graduation in California is consistent with the national figure in Table 3 (50%), reflecting the growth of educational debt among more recently certified PAs (results in the table above are from all PAs, regardless of date of certification or recertification).

NHSC and State or Federal Loan Repayment Participants
Among graduates recently certified in California seeking NHSC positions, 22.5% of those who accepted positions at the time of graduation reported they experienced problems finding an NHSC site, and of those who had not yet accepted but were still seeking a position, 32.4% reported challenges. Only 3.7% of recently certified PAs in California reported participating in the NHSC program (2.8% of PAs nationwide participate in the NHSC program).

Factors Influencing Job Decisions
In general, only 21.1% of recently certified PAs in California who had already accepted a position and 28% of those who had not yet accepted a position identified educational debt as a factor motivating their decision (the national figures are 18% and 23.8%, respectively). And of those who accepted a

position in an HPSA or MUA, 50.7% of recently certified PAs in California reported debt repayment obligations as the top factor motivating them to seek a position in an HPSA/MUA, while 49.3% indicated that personal preference was the most important factor in their decision to work in an HPSA/MUA. Nationally, the figures are 59.3% and 40.7%, respectively.

Data Gaps

We identified both high-level and specific data gaps that impact attempts to better understand the awareness, utilization, and outcomes of financial support to offset the cost of training non-physician clinicians. The high-level gap is, of course, what appears to be limited and inconsistent efforts to gather data on nurse practitioners. The only information regularly produced at the national level about training funding for NPs is primarily available from training programs sponsored by the state and federal governments, and from loan repayment program reports. In both instances, the data are generally aggregated, yielding limited information about specific license groups (i.e., NPs and PAs). Even less detail is available at the state or local level. Moreover, there are rarely enough data or funding to pursue the more detailed research questions of interest to California stakeholders, such as non-physician clinician outcomes over time (e.g., whether clinicians remain in primary care over time, if they stay in underserved areas after loan repayment has ended, or how long they remain in their original practice setting). Some state licensing boards, including the California Board of Registered Nursing, do collect limited information about nurse practitioners, primarily focused on licensure, education, demographics, and some practice characteristics of licensed NPs. As described above, however, even the BRN collects information only on an infrequent basis. To date, BRN surveys have not focused on the training funding and outcome questions of interest to California stakeholders in the context of this specific project.

A number of specific data gaps were identified, in part by key informants and in part through analysis of the research conducted by the authors. These are listed and explained in Table 4.

Table 4. Identified Data Gaps

Data Element	Definition	Justification
Clinical specialty	Identifies areas of clinical practice (definitions vary between PA and NP data gathering organizations)	Tracking trends toward or away from primary care N.B. For practical purposes, it is important to track the specialty in which a clinician is actively practicing and not just an area of training or certification.
Current practice setting	Hospital, private practice, FQHC, etc.	Some practice settings may serve as a proxy for whether a clinician is actively serving in a primary care capacity (e.g., hospital is not a usual location for primary care)
Current practice location	Urban, rural, HPSA, etc.	Tracking distribution of health care delivery

Data Element	Definition	Justification
Educational debt burden	Amount of debt at graduation Separated into undergraduate and postgraduate debt	Demonstrates the cost of training (and pre-training) and may elucidate its importance as a factor in job decisions
How educational debt burden was funded and by whom	Scholarship, grant, loan (personal, gov't, private), loan forgiveness, loan repayment	Elucidates the nature and potential impact of funding to offset debt burden
Duration of debt payment	Years of payment or of service in exchange for loan repayment	Elucidates the term of service as a feature of the potential impact of funding to offset debt burden
Data on longer-term outcomes after graduation	Includes specialty, practice setting, and location more than 3 years out	Relationships between work in desired practice locations and other factors can inform policy, program decisions
Data on awareness of various mechanisms for funding educational costs	Awareness of scholarships, loan forgiveness, loan repayment, etc.	Could elucidate need to adjust strategies to promote educational funding options
Factors influencing the above		Could elucidate need for and targeting related to alternative strategies to promote debt funding options
How practice role has changed over time	Especially movement between specialties and moves away from primary care	Could indirectly elucidate factors affecting practice specialty
Factors influencing educational path		Potentially related to educational funding to the degree that cost is a significant factor
Interest in pursuing advanced training post licensure		May be an indirect or direct indicator of trends toward or away from primary care
Movement between states	Interstate moves at graduation and during career	Could provide information on students leaving the state in which they are trained to pursue higher salary opportunities elsewhere

Best Practices

National Commission on the Certification of Physician Assistants

Because it is the only organization that certifies PAs in the U.S., the NCCPA has unique access to information on the entire national PA workforce. As described above, the NCCPA created a secure online portal for capturing data through an online survey option as PAs certify or recertify. Three separate survey modules are accessible online, including a generic module ("About Me"), a module focused on specialty and practice patterns ("MyPractice"), and a module for recently certified PAs ("Recently

Certified"). For ease of management and operations, the surveys are organized in a rolling manner by quarters:

- Quarter 1: generic survey is released (i.e., made available on the PA Profile portal)
- Quarter 2: specialty survey is released
- Quarter 3: survey of recently certified PAs is released
- Quarter 4: the state program survey is released

Whenever a PA logs into their personal record on the NCCPA website, their professional profile is brought up and they are prompted to update the profile. They are also prompted periodically to update and respond to survey items on their profile. After they receive certification, new PAs receive a notice asking them to complete a profile on the NCCPA website (the New PA profile is open for six months after the date of original certification). The NCCPA PA Professional Profile allows PAs to compare their individual-level data to PAs in their state and across the country.

NCCPA's website security, easy portal availability, data comparison feature, and link to the certification process have resulted in high response rates for most of the surveys it fields. Data quality and maintenance procedures are in place, as are strict guidelines regarding data access and use agreements establishing this data source as one of if not the premier data source for information about the PA workforce.

California Department of Consumer Affairs

The California Department of Consumer Affairs (DCA) is the best source for consistent, California-specific data from across professional licensure boards from a number of disciplines (e.g., chiropractic, dentistry, medical, nursing, osteopathy, physician assistant). DCA's Open Data Portal allows the public to access nonconfidential aggregated data, including information on licensing, renewals, and applications for any entities under DCA's purview. Data can be downloaded or used online. The DCA website includes visualization tools that users can manipulate to get information by license type, Board/Commission, county, region, and year. Users can also see change over time. Figures 1 and 2 provide some examples of data visualizations offered by the department's website. The data are useful for understanding geographic trends, but do not provide information on the licensed population beyond county.

Figure 1. DCA Online Data Visualization: Physician Assistant License Data on County and Change over Time
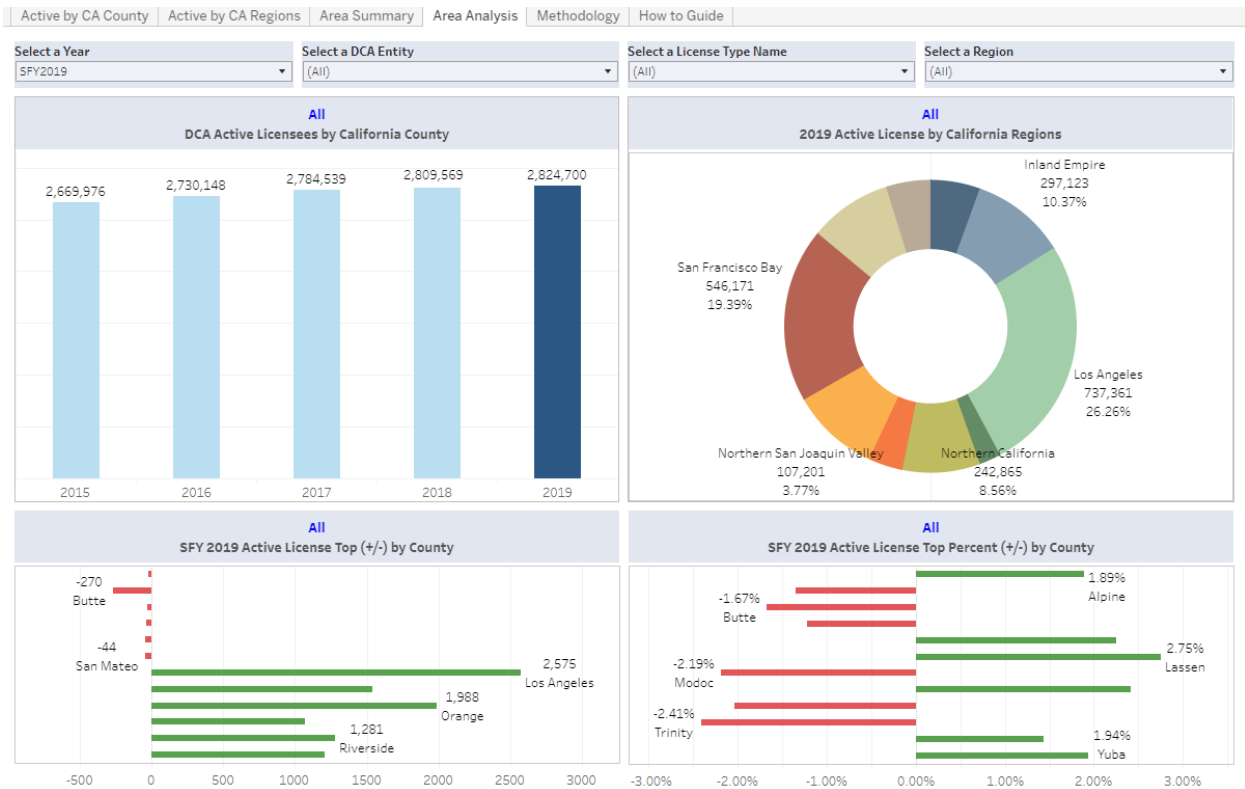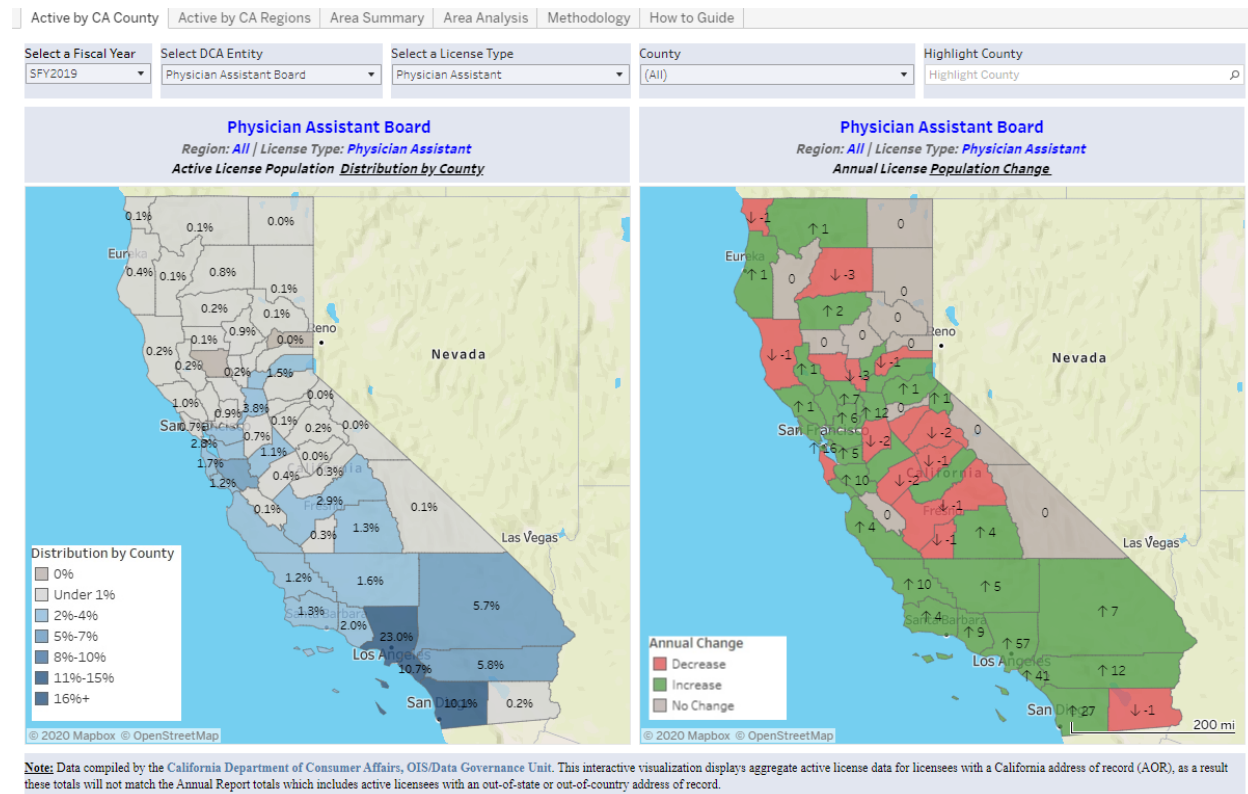
Figure 2. DCA Online Data Visualization: Active Physician Assistant Licenses by County and Change over Time

Recommendations

National and California Recommendations

Establish a more standardized approach to data collection related to non-physician providers with consideration of the measures noted in the findings above

Our analysis of the available data finds both variability of data capture between PA and NP organizations and among organizations representing the same profession. Data gathering organizations that represent PAs and NPs could collaborate to identify and define key data elements such as:

- What constitutes primary care practice
- Practice setting
- Practice location
- Demographic data elements

Similarly, given the need for meaningful data about barriers and incentives to primary care practice, agreements could be reached about the type and definition of financial data to be gathered, such as pre-training and post-training debt burden, awareness of and use of various debt relief options (e.g., scholarships, grants, loans, loan repayments, and the outcomes after accessing those options), and factors that influence decision-making about job acceptance.

There are ongoing efforts to establish standardized survey data across state boards of nursing, but it is not clear how many state boards have adopted these standards. California has not yet done so, which may be in part due to legislative data requirements that are not fully consistent with those recommendations, and in part because of leadership challenges in the BRN.

Data collection about NPs, in particular, is both limited and intermittent. To date, there has been only one national survey of NPs, the 2012 National Sample Survey of Nurse Practitioners. The BRN has only surveyed NPs and CNMs twice in the past two decades (in 2010 and 2017), and according to the prime survey contractor at the University of San Francisco, there are no current plans for the survey to be conducted again. Standardized survey data should be collected systematically for PAs and NPs at both the national and state level.

Real standardization will require that federal funders adopt consistent definitions and collect data that promote assessment across funders and programs. Recognizing that this process may be slow to advance at the federal level, steps can be taken in California as well. To achieve a standardized data collection approach in California, we recommend:

- OSHPD and data gathering entities for PAs and NPs collaborate to establish common definitions for key data elements
- Licensure boards consider specific licensee workforce surveys for non-physician clinicians (or have legislatures consider establishing surveys)
- OSHPD, data gathering entities, and licensing boards establish data sharing policies and protocols and regular intervals at which data and data collection methodologies are reviewed

Create opportunities to collect data at different stages of practice

To better understand the factors that influence job choices, such as specialty, location, and population, requires more consistent collection of data related to practice site and location, including where non-physician providers practice after they discharge their service obligations.

Results from PA data collection efforts demonstrate that survey responses on the same or similar items differ at various stages of professional life. Both the NCCPA and the PAEA collect survey data about practice patterns, debt, and finances at different points in the professional PA trajectory. Students just starting PA training programs have different responses to questions about their intended specialty, setting and location of practice, and the existence of and plans for addressing educational debt than they do at graduation and later in their careers. These differences should be accounted for through regular surveying of NPs in California and nationally. They can elucidate important information about the needs and potential incentives that might influence the decision to practice in primary care or in settings for the medically underserved. We recommend:

- Increase and standardize data collection about practice site, specialty, and location at multiple points across providers' careers
- Use licensing as a platform for data collection

Reconsider the structure and criteria for mechanisms to offset educational debt

Federal educational funding programs and many state or private programs incorporate service requirements. Our recommendation to reconsider service and location obligations that may be barriers for some clinicians is based in part on our analysis of the data and the observations of key informants. While there is some indication in the data that social and personal factors influence decisions about practice specialty, setting, and location, nearly all the key informants interviewed, and all of those involved in training programs, commented that service and more importantly location obligations adversely affect decisions about job acceptance. Our key informants suggested this may be because professionals completing these training programs have family and other obligations (e.g., mortgages) that render them less able to move to a new location. Although the increase is more prominent among PAs, women constitute an increasingly large portion of this non-physician workforce and may be less likely to move. Whether or not this conjecture is borne out by the data, it is not clear that service and location obligations have more influence on long-term practice specialty and location than other factors, such as early exposure and salary.

We recommend:

- Collect and analyze data to understand the role that service and location obligations play in clinicians' career decisions.
- If data suggest that specific requirements are a barrier to primary care, rural practice, or other desired criteria for NPs or PAs, identify ways to adjust funding requirements to facilitate greater participation without losing provider diversity or the ability to target shortage areas.

California-Focused Recommendations

Expand California's state-level opportunities for financing educational debt for primary care non-physician providers, including reassessing the global amounts available for offsetting educational debt

Although opportunities for financing educational debt for primary care non-physician providers do exist, these opportunities are limited, often not targeted to this population, difficult to identify. Further, distribution of these opportunities is not aligned with the most current data about the supply of or demand for PAs or NPs or the demographics of the workforce and patient populations. For example, many of the federal and state loan repayment options are available to both physicians and non-physicians. At the federal level, the allocations to loan repayment programs are discretionary and therefore unpredictable (e.g., HRSA programs). In many instances the amounts allocated for these scholarship or loan programs have not kept up with the numbers of perspective applicants. Where the amount of total funding is static but the number of applicants has grown, either a smaller percentage of students get funding, the funding per student is less, or both. Educational debt influences early job decisions, and reduced access to educational funding support may explain, in part, the continued decline in the percentage of PAs pursuing work in primary care.

The authors of a 2019 Government Accountability Office (GAO) report on the health workforce conducted literature reviews and key informant interviews to assess whether to expand current Medicare Graduate Medical Education (GME), which finances residency training for much of the physician workforce, to fund non-physician clinicians such as PAs and NPs. The GAO report underscores the discrepancy in financing for physician residencies (over $10.3 billion in 2015) versus just Title VII and VIII funding for PAs and NPs from HRSA ($136 million). GAO concludes that while adopting an approach similar to or expanding the current GME program to include PAs and NPs would certainly provide more stable funding, because the training structure and requirements are so different, allocating funding to these clinicians would require significant changes to the GME program. Whether we are considering existing scholarships, grants, loans, and loan repayment opportunities or something more radical, such as expanding Medicare GME, any major change should be informed by an analysis of the available funding dedicated to this population to better delineate recommendations for more appropriate allocation amounts.

We recommend:

- Identifying opportunities to increase non-physician education funding to ensure funding keeps pace with the increase of non-physician clinicians-in-training, including working to have a set percentage of awards go to non-physician providers[23]
- Working with the state to expand and direct GME or similar funding to support non-physician education

Make primary care more appealing to offset trends toward specialization

Two key strategies for promoting primary care practice are to provide better and earlier exposure to primary care practice sites and to make salaries more competitive. As California seeks to increase the number and percentage of primary care providers to meet the increasing demand, we lack

demonstrations of the value of primary care at all levels, including during training. Key informants described how clinical opportunities for registered nurses must be approved by the BRN. Practice sites are almost exclusively hospital-based rather than primary care sites. One key informant opined that there are only two primary care sites approved for clinical rotations in California. The relative absence of non-hospital clinical rotations is a common experience across the country. This creates a significant opportunity to expose nurses to primary care at this very early stage in their careers.

It is well known that salaries of primary care providers are not at all competitive with those of specialty providers. This is true for physicians, PAs, and NPs. Despite those lower salaries, non-physician primary care providers have comparable educational debt to their specialty care colleagues. According to our key informants, this salary-debt dynamic is one of the most, if not the most, significant factors undermining the growth of primary care. Interested California stakeholders may consider whether discussion with larger health systems and facilities, all of which need primary care providers, should be had to identify their role in supporting the growth of primary care.

California's changing demographics, including geographic distribution, race and ethnic makeup, and aging population are not reflected in the health care workforce, including non-physician providers such as PAs and NPs. Currently, some data are available on these clinicians, but more is needed to understand the career choices they are making, their debt burden at graduation and over time, and the impact that scholarships, loan forgiveness, and other financial support could make to align patient demographics and care needs with provider availability in the state. California has made the health care workforce a priority, and we hope that it will support improved data collection and analysis of non-physician providers as part of the state's continuing efforts to meet the health care needs of Californians.

To respond to these issues, we recommend:

- Collecting standardized data on access to educational funding, debt burden, practice specialty and setting, and clinician demographics to identify the impact of funding on practice choices and to identify where changes in funding amounts and allocation are needed
- Pairing education funding for non-physician trainees with increased exposure to and rotation opportunities in primary care settings
- Aligning non-physician primary care salaries with specialty salaries

Appendix 1. Key Informants Interviewed

Organization	Key Informant(s)	Date(s) Conducted
California Association of Physician Assistants	Teresa Chien Executive Director, CAPA teresa@capanet.org	April 20, 2020
	Roy Guizado, MS, PA-C, DFAAPA Chair, Associate Professor, and Program Director, Department of PA Education Western University of Health Sciences	April 30, 3020
National Commission on Certification of Physician Assistants	Sheila Mauldin, MNM Vice President, Research and Examination Programs sheilam@nccpa.net	May 8, 2020
	Dawn Morton-Rias, EdD, PA-C President and CEO dawnmr@nccpa.net	May 12, 2020
Physician Assistant Education Association	David Keahey, MSPH, PA-C Chief Policy and Research Officer dkeahey@paeaonline.org	April 22, 2020
	Michael De Rosa, PhD, MPH, PA-C Chair of Government Relations Steering Committee, PAEA, and Chair, Physician Assistant Department, Samuel Merritt University mderosa@samuelmerritt.edu	
	Tyler Smith, MPH Director, Government Relations, PAEA tsmith@paeaonline.org	
UCLA School of Nursing	Lynn Doering, PhD, FAAN Assoc. Dean Academic and Student Affairs, Professor ldoering@sonnet.ucla.edu	
	Mary Ann Lewis, DrPH, RN, FAAN Professor Emerita mlewis@sonnet.ucla.edu	
University of San Francisco School of Nursing and Health Professions: Family Nurse Practitioner Program	Alexa Curtis, PhD, MPH, FNP-BC Director, Nurse Practitioner Programs accurtis@usfca.edu	April 29, 2020
Healthforce Center at UC San Francisco	Joanne Spetz, PhD, FAAN Associate Director joanne.spetz@ucsf.edu	May 18, 2020

Appendix 2. Data Elements That May Be Useful to Stakeholders

Partial List of Data Collected by the California Board of Registered Nurses

- Basic demographic data (age, gender, race/ethnicity)
- Education (degrees, years completed)
- Language(s) in which they have medical fluency
- Salary
- Employment (hours worked, clinical field, payer sources, etc.)
- Work in primary care
- Changes in employment (recent past or future)
- Satisfaction
- Practice setting (hospital, clinic, office practice, etc.)
- Work setting (rural, urban, etc.)
- Work with underserved populations
- Whether or not they are working in a clinical position
- Reasons for not working in advanced practice position
- Other roles (e.g., precepting, volunteer, non-clinical)
- Barriers to precepting

Partial List of Data Collected by the NCCPA in the About Me, My Practice, and Recently Certified Modules

- Basic demographic data (age, gender, race/ethnicity, state of residence, and practice location)
- Degree or certificate upon completion of PA training
- Specialty (current specialty of practice and specialty throughout career)
- Practice setting (primary and secondary clinical and non-clinical)
- Whether or not they are working in a clinical position
- Reasons for not working in a clinical position
- Working in >1 clinical position
- Reasons for working in >1 clinical or non-clinical position
- Panel management (whether assigned a panel of patients and size of panel)
- Salary
- Educational debt
- Language(s) in which they can communicate with patients
- Leaving current position in next 12 months
- Reasons for leaving current position in next 12 months
- Number of licensees (data from the Federation of State Medical Boards)
- Unique elements from Recently Certified module
  - Number of offers received
  - Challenges in job search
  - Whether offered position at training site of clinical rotation
  - Incentives offered and whether important in job choice
  - Geographic location of position accepted

- o Actively searched and did not accept position (geographic location, practice setting, preferred specialty, minimum salary you would have accepted)
- o Attributes of future practice environment
- o Educational debt (undergraduate + graduate)
- o Level of influence of educational debt on job choice
- o NHSC, state of other federal loan repayment obligation (and motivation for job choice)

Partial List of Data Collected by PAEA from the Matriculating Student Survey and End of Program Surveys[24]

- Basic demographic data (age, gender, sexual orientation, race/ ethnicity incl. underrepresented minority status, state of residence, and practice location)
- Current or past military service (and branch)
- Expected salary for full-time PA position
- Reasons for becoming a PA
- Influences on decision to become a PA (and %)
- Cost of applying to PA school
- Likelihood of working in MUA
- Amount of outstanding PA educational loans (educational debt)
- Sources of financing for PA educational costs (and percentage paid for by each source)
- Received grants, scholarships, and stipends for graduate PA education (source, amount, and percentage of PA education costs paid for by each source)
- Educational loans for PA graduate education (source and amount)
- Sources of financing for PA graduate education costs (amount, and percentage of PA education costs paid for by each source)
- Anticipated total debt from attending PA school
- Service indebtedness (type and amount of loan forgiveness program pre-PA and anticipated post-PA training)
- Non-educational consumer debt
- Desirability of practice environment (e.g., urban, inner city, suburban, rural, VA, Indian reservation, military base)
- Interest in practice settings (e.g., group, solo, CHC/FQHC, HMO, ACO)
- Intent to pursue loan repayment program
- Plans to work in same state as training program
- Employment status (accepted full- or part-time job, salary of accepted job)
- Desirability of specialties
- Residency specialties
- Factors that influenced specialty choice
- Geographic distribution of accepted positions
- Importance of considerations for career path after PA school
- Social-emotional measures (fatigue, financial concerns, overall well-being, stress)

Appendix 3. Physician Assistant Programs — Yearly Tuition (2019–20)

School	Yearly Tuition
California Programs	
California Baptist University	$48,690
California State University, Monterey Bay	$45,150
Chapman University	$57,038
Charles R. Drew University	$46,662
Dominican University of California	$90,900
Loma Linda University	$54,796
Marshal B. Ketchum University	$50,985
Samuel Merritt University	$53,522
Southern California University of Health Sciences	$43,770
Stanford University	$52,479
Touro University California	$45,706
University of California, Davis	$45,386
University of La Verne	$44,848
University of Southern California	$55,320
University of the Pacific	$53,000
Western University of Health Sciences	$44,105
Arizona Programs	
Arizona School of Health Sciences	$46,862
Midwestern University	$51,583
Northern Arizona University	$32,091
Nevada Programs	
Touro University Nevada	$42,300
University of Nevada, Reno	$35,520
Oregon Programs	
Oregon Health and Sciences University	$30,024
Pacific University	$58,423
Washington Programs	
Heritage University	$58,423
University of Washington	$40,806

Endnotes

[1] Commission priority #7: "maximize the role of nurse practitioners as part of the care team to help fill gaps in primary care."

[2] Interview conducted for this project.

[3] P.L. 101-527.

[4] HRSA, BHW, Division of Health Careers and Financial Support, *Scholarships for Disadvantaged Students: Notice of Funding Opportunity (Fiscal Year 2020)*. The notice defines "disadvantaged background" based on educational/environmental or economic factors. "Economically disadvantaged" is defined as the individual's family income being below federal low-income thresholds, as displayed in the HRSA Poverty Guidelines. An individual is considered "educationally disadvantaged" when they come from an environment that inhibited them from "obtaining the knowledge, skills, and abilities required to enroll in and graduate from a health professions school." Examples include attending a high school with a low average SAT score, low percentage of seniors awarded diplomas, low percentage of graduates attending college, low per capita funding of the school, or high percentage of students eligible for free/reduced-price lunch.

[5] DHPS also administers the American Indians Into Psychology Program (INPSYCH), which targets AI/AN students pursuing a clinical psychology degree. The 2014 to 2019 grantees were Oklahoma State University, the University of North Dakota, and the University of Montana, but the IHS website has not been updated to show 2019-on program information. The PAEA reported that 17 PA students are recipients of scholarships through this program.

[6] Applicant organizations can apply in the Navajo Area (NM, AZ), Billings Area (MT, WY), Great Plains Area (SD, ND, NE), Albuquerque Area (CO, NM, NV), or Phoenix Area (NV, UT, AZ).

[7] Requirements differ for National Guard and reserve soldiers.

[8] In addition to the programs that target nurses, HPEF also funds LRPs for allied health care professionals, Licensed Mental Health Services Providers, and vocational nurses.

[9] The HPEF website instructs awardees whose grant is impacted by COVID-19 to notify their HPEF grant officer of changes that may impact the terms of the grant agreement (e.g., disruption of program activities, site closures or reassignments, disruption due to illness), noting that HPEF will support grantees during this time.

[10] Full-time is defined as 40 or more hours/week, at least 45 weeks per year. At least 32 hours per week must be direct patient care in an outpatient setting.

[11] Extension years 2 and 3 are funded at $20,000 for full-time participants ($10,000 for part-time). Extension year 3 and beyond is funded at $10,000 for full-time participants ($5,000 for part-time).

[12] Eligible provider types: nurse practitioner, physician assistant, certified nurse midwife, clinical nurse specialist, dentist, occupational therapist, pharmacist, physical therapist, speech therapist. Eligible specialties: primary care, general dentistry, family medicine, general internal medicine, general psychiatry, obstetrics and gynecology.

[13] A list of approved facilities is available at: https://oshpd.ca.gov/ml/v1/resources/document?rs:path=/Loan-Repayments-Scholarships-Grants/Documents/CMSPLRP/CMSP-Contracted-Provider-Roster-01302019.xlsx. A list of CMSP counties can be found at: https://oshpd.ca.gov/ml/v1/resources/document?rs:path=/Loan-Repayments-Scholarships-Grants/Documents/CMSPLRP/Participating-CMSP-Counties.pdf.

[14] "Nursing Minimum Dataset Surveys Available for Download," National Forum of State Nursing Workforce Centers, http://www.nursingworkforcecenters.org/minimum-datasets/.

[15] The National Council of State Boards of Nursing and The National Forum of State Nursing Workforce Centers conduct the biennial National Nursing Workforce Survey, https://www.ncsbn.org/workforce.htm.

[16] There are at least 6 paths to achieving an NP certificate, depending upon the degree desired and education prior to entering the NP program:
- *Applicant has a BSN and is pursuing an MSN and an NP certificate. This is the traditional path and is also referred to as a "stop out" program (i.e., training short of a DNP).*
- *Applicant has a BSN and is pursuing a DNP and NP certificate.*
- *Applicant is licensed RN with an AND and is pursuing an MSN and NP certificate.*

- *Applicant with an MSN (without NP certificate) is pursuing a DNP and NP certificate.*
- *Masters entry path 1: applicant has a non-nursing BA and is pursuing an MSN and RN licensure, later pursues an NP program.*
- *Masters entry path 2: applicant has a non-nursing BA and is pursuing a MSN, RN licensure, and NP certificate.*
- *Applicant has a doctorate and is pursuing an NP certificate.*

[17] In Tables 1–3, all PA data are from the NCCPA 2018 Statistical Profile; national NP data are from the Bureau of Health Workforce, 2012 Sample Survey of Nurse Practitioners; California NP data are from California Board of Registered Nurses 2017 Survey of Nurse Practitioners and Certified Nurse Midwives.

[18] Demographic information is self-identified.

[19] Specialty at graduation.

[20] In this and other tables, where a cell is blank, data were not collected or not otherwise available.

[21] As of August 2020, Oregon Health Sciences University's PA program now costs $10,503 per quarter for both in-state and out-of-state students. The total program cost is $94,527 over nine quarters, or approximately $42,000/year.

[22] California and other western states. Data are from the California Academy of Physician Assistants.

[23] A good example of similar work for physicians is Diane Rittenhouse et al., *Training Tomorrow's Physicians: Recommendations for Expanding Graduate Medical Education Funding in California*, CHCF, February 2019, https://www.chcf.org/publication/guide-graduate-medical-education-funding-california/.

[24] Survey instruments are available to PAEA member or through research requests.