Outlook on Common U.S. Health Care Occupations: Benefits, Costs and Future Trends

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Abstract

Students anticipating a career in specific popular health professions need to balance salary, availability of training, enrollment, and predicted job growth against costs of tuition, training time and levels of degree requirements. Comparative data on these variables are also an important resource for undergraduate guidance counselors, yet this information is widely scattered through different professional associations, government and private databases. The research aim of this report is to compile data from public and private databases and professional association websites, and use this data to describe median salaries, job growth, tuition, training levels and opportunities for eleven health practitioner professions from vocational to professional doctorate. Although primary care physicians hold the highest levels of compensation, nursing and physician assistants hold the greatest ratio of compensation for time in training and per tuition dollar. Training programs available in these fields are readily accessible and are accommodating increased enrollment. There is a significant positive correlation between predicted future employment needs and enrollment for health professional programs. Baccalaureate nursing, nurse practitioners, and physician assistants are growing health careers with high predicted earnings, moderate time to training and tuition. Other doctoral professions offer similar compensation but require longer training. These current data serve as a useful guide to assist students and undergraduate counselors in identifying health carriers that best align student goals and finances.

1. Introduction

The U.S. Bureau of Labor Statistics predicts that healthcare job openings will in-

crease 13 percent in the next 10 years, a figure that exceeds average predicted growth for other occupations. This new growth is in addition to the approximate 10% rate of replacement for healthcare workers (U.S. Bureau of Labor Statistics, 2022). Of the healthcare occupations, practitioner positions such as physicians, nurses, and physician assistants carry a much greater level of compensation (U.S. Bureau of Labor Statistics, 2022), but also require extended times in training and costs associated with this advanced training. Practitioner positions in health occupations offer diverse levels of training, compensation, responsibilities and practice focus giving career seekers many options, but also many factors to consider.

Health care occupations career seekers need to identify those trainings that best balance opportunity in wages, early career entry and tuition (HealthCare-Pathway, n.d.; Karagir et al., 2021; Mohos et al., 2021). However, an obstacle exists for comparing different health training programs because there is little available data that balances the benefits that may accompany health careers such as compensation and positive employment outlook against cost inputs such as training-specific tuition and training period length. These comparisons are highly relevant to potential students, but also to professional training programs themselves that compete for these students and to the undergraduate or other preparatory programs that prepare applicants for health careers. At the level of undergraduate or vocational education, advisors need to appreciate the opportunities as well as costs of health professions programs to individualize guidance of students to careers that best match with their aptitude, interests, prerequisites, desired time to earnings and finances.

Health practitioners are highly sought in many environments and data suggest that shortages of primary care practitioner will worsen due to increased aging patient populations and retirement among the current physicians (DePriest et al., 2020). One notable need and trend for practitioners are in regions designated as Health Professional Shortage Areas (HPSAs; Schlak et al., 2022). There are almost 100 million people in the U.S. in over 8100 HPSAs. HPSAs serve low income and Medicaid eligible populations (Health Resources and Services Administration, 2022). They often lack physician level providers, including primary care, dental and mental. Data point to a growing number of nurse practitioners and physician assistants filling roles in rural HPSAs (Gruca et al., 2018; Schlak et al., 2022). Both nurse practitioners and physician assistants provide patient care rated as equivalent to physicians (Schlak et al., 2022; Hooker et al., 2019), with nurse practitioners serving more specialized roles and physician assistant providing more general medical roles. For nurse practitioners, those working in HRSAs that allow full practice authority opportunities (defined permitting nurse practitioners to evaluate patients, diagnose, order testing, and treat medical conditions with full prescriptive authority) attract greater numbers of these primary care providers (DePriest et al., 2020).

Available health occupations range in future salary, anticipated future growth, training period and tuition. Length of training increases future earnings (Ad-

ministration for Children and Families, 2022) but also increases not only tuition costs but also potentially childcare and lost wages. Thus, selection of careers involves balancing benefits of salary and career opportunity against the costs of entry such as tuition and time spent earning the training. The objective of this report is to compare opportunities and costs between eleven popular health career options—primary care physician internal medicine, primary care physician family medicine, registered nurse, nurse practitioner, licensed vocational nurse, physician assistant, pharmacist, veterinarian, optometrist, dentist, and nurse anesthetist. These options range from less than bachelor's degree to professional doctorate and negative to strongly positive predicted needs. Collectively, these data can offer guidance for academic planning for optimal career benefit considering compensation, time to earnings, tuition, and available programmatic options.

2. Methods

Publicly available data bases including the U.S. Department of Education College Scorecard, U.S. Department of Labor, the Health and Human Services (HHS) Administration for Children and Families and Collegetuitioncompare.com as well as the professional and educational societies and associations representing specific health occupations were researched to obtain descriptive data and statistics on health profession salaries, admissions, and predicted employment increases.

To analyze the data, practitioner health occupations were compared for predicted employment increase between 2020 and 2030. The number of health professional schools or programs in the U.S. were compared using data from professional societies, the U.S. Dept. of Education and publications. To determine recent enrollment, data was researched using information published by occupational professional education and other societies and publications. Employment change characteristics were researched using the U.S. Department of Education and U.S. Dept. Labor databases. The Correlation coefficient between enrollment and predicted 10-year employment change was calculated through Microsoft Excel (version 2210).

Median salary for health occupation degrees was researched from the U.S. Dept. of Labor (U.S. Department of Labor, n.d.) and were grouped by degree level usually needed for each profession. For establishing the time necessary for professional education, the time typically required for curricular completion was researched from colleges offering the health occupation and professional education bodies representing the occupation. The Level of Diploma (Baccalaureate, Masters, Professional Doctorate) were determined using the level reached by the majority of practitioners in the occupation (U.S. Department of Labor, n.d.). To express the salary as a function of time-in-training, the median salary for each health occupation was divided by the years spent in that professional school. This data did not include an earned bachelor's degree nor post-professional training such as residencies. For physicians, only data for primary care areas

were used. These areas were family medicine and internal medicine and included no specialties such as orthopedics, surgery, cardiology, etc. To establish the total tuition costs for the health occupations, data was researched from professional education societies and other student health education sources. To express the median salary per dollars of tuition, the median salary was divided by the total tuition cost for the duration of each health occupation training program.

No Institutional Review Board (IRB) approval was required due to the public nature of all databases.

3. Results

The majority of health professions examined have a projected increase in employment by 2030; however, there is variability in this projected employment between the health professions (Figure 1). This analysis does not include specialty areas for physicians; it only includes primary care areas of General Internal Medicine and Family Medicine. Of these two, General Internal Medicine physicians
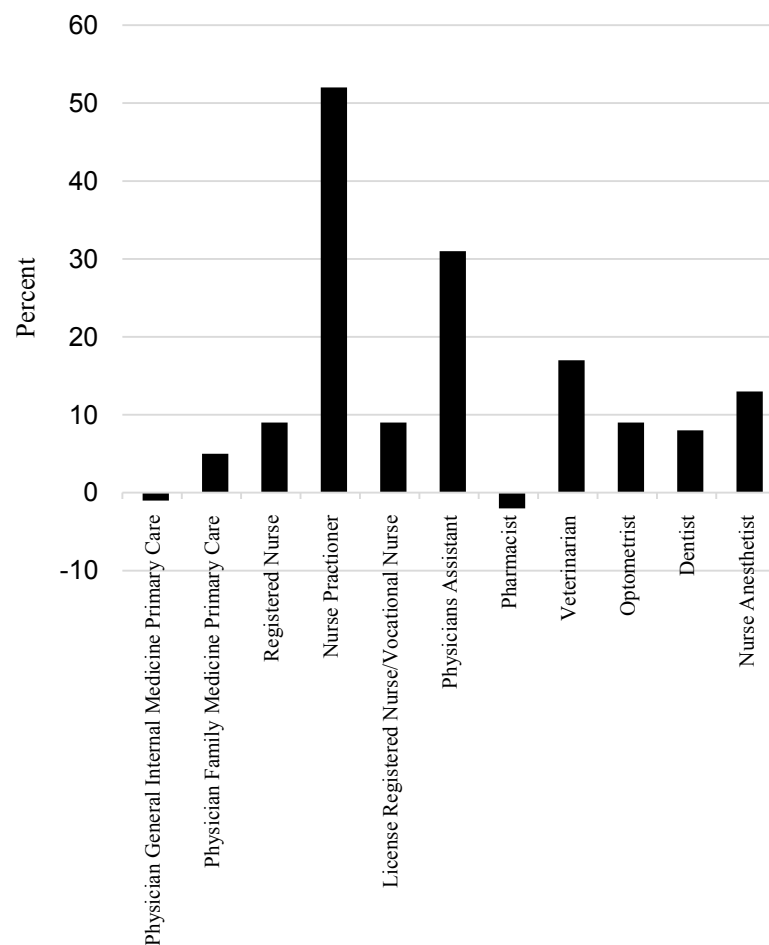

Figure 1. Estimated 10-year demand for health profession occupations. Data show the expected number of needed providers in 2030/number of providers in 2020) × 100, expressed as percent. Data taken from U.S. Dept of Labor (U.S. Department of Labor, n.d.).

have a projected decrease of 1.0% while Family Medicine Primary Care Physician shows a needed increase of 5.0%. Additional data also indicate a decrease of 2.0% for the primary care physician occupations of obstetricians, gynecologists, and pediatricians (U.S. Department of Labor, n.d.; not shown in Figure). The greatest projected needs are for nurse practitioners (52.0%), physician assistants 31.0%) and veterinarians (17.0%). Only pharmacists and the Internal Medicine Physicians have a decreased projection.

To fulfill the projected need for health providers, adequate numbers and availabilities of training programs are necessary. Figure 2 shows current numbers of health professional schools in the U.S. by type. The current numbers of training programs for nursing far exceed those opportunities in other programs, with nursing programs available in all states (AACN, 2022). Arrows point to numbers of schools for licensed RN and Bachelor of Nursing.

To understand the relationship between projected demand in health occupations and their enrollment trend, the percent change in enrollment from 2020 to 2021 was plotted against the percent projected demand (Figure 3). Although enrollment changes were not available for some types of health professions, the available data show that nurse practitioners, registered nurses, veterinarians, dentists, and optometrists have enrollment increasing along with anticipated future needs. Pharmacy education shows decreased enrollment along with decreased demand. Total entry level physician training increased 1.7%; however, since physician specialties of family medicine and internal medicine are not defined until after the medical degree is obtained, these data do not associate how
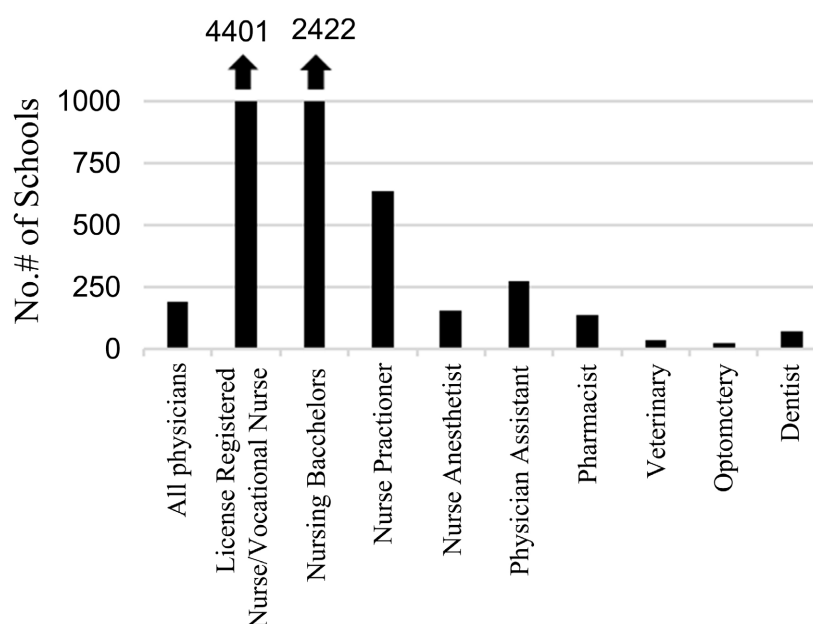

Figure 2. Numbers of health professions schools in U.S. Data taken from U.S. Department of Education, n.d.; AACN, 2022; Kaiser Family Foundation, 2021; AANP (American Association of Nurse Practitioners, 2022); Hooker & Cawley, 2021; World Population Review (World Population Review, 2022); AACP (AACP, n.d.); AAVMC, 2022; ASCO, 2022b; CODA, 2022; AANA, n.d.
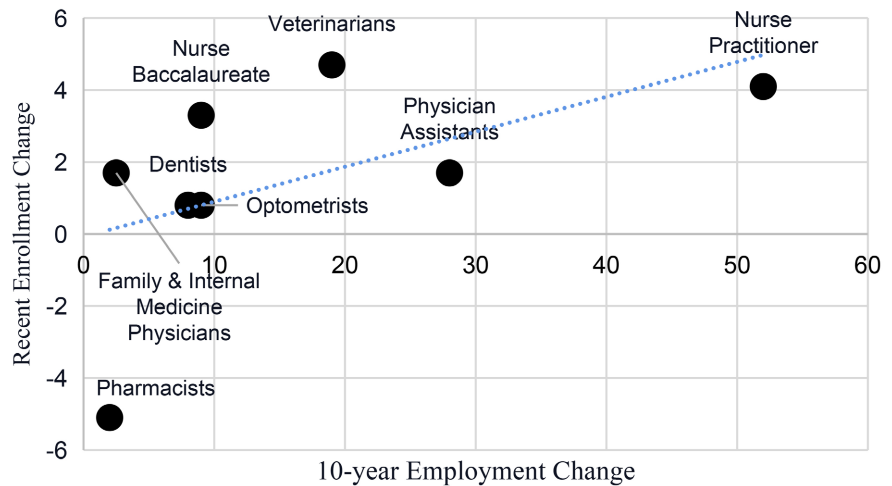
Figure 3. Relation between health care school enrollment and expected demand. Schools are plotted to indicate relative degree of recent enrollment change vs. projected 10-year employment change (2020-2030). Schools in the upper right quadrant are positive in both areas. Data for 10-year employment change (U.S. Department of Labor, n.d.) and recent enrollment (AACN, 2022; AACP, n.d.; Veterinary Practice News, 2022; PAEA, 2020; ADA, 2022a; ASCO, 2022a) were correlated to generate a coefficient indicating a relation between current enrollments and future employment changes.

the total increase in enrollees at U.S. medical schools will fill these areas. The recent (2021-2022 or 2020-2021) enrollment changes for Medical School Physicians, Pharmacists, Dentists, Veterinarians, Optometrists, Nurse Practitioners, Registered Nurses and Physician Assistants were strongly positively correlated (correlation coefficient = 0.63) with the 10 Year predicted employment change.

Compensation plays a strong role influencing the choice of health profession (Karagir et al., 2021; Mohos et al., 2021) and as with projected future employment, there is broad variability in the compensation levels for the different health occupations. There is also variability in the education level required to reach these levels of compensation, with doctoral, masters, bachelors or certificate/no degree needed. Median compensation was assessed by education level and this comparison shows that physicians (family medicine and internal medicine) earn the greatest of the doctoral level practitioners, followed by dental, then pharmacy and optometry/veterinary (**Figure 4**). Nurse anesthetists (master's level) had a greater median salary than all doctoral professions except family medicine and internal medicine physicians. Physician Assistants (master's level) and nurse practitioners (master's level) had median salaries within 10% of pharmacists, veterinarians, and optometrists.

Different health occupations have different lengths of time in the training and this training length increases the students' time to earnings. Doctoral degrees, which have highest earnings, require undergraduate education followed by 4 years of entry-level professional training and potentially additional training (Learn.org, n.d.a, n.d.b). For other professions such as physician assistant, a shorter approximately 27-month period is required post baccalaureate (Hooker & Cawley, 2021).
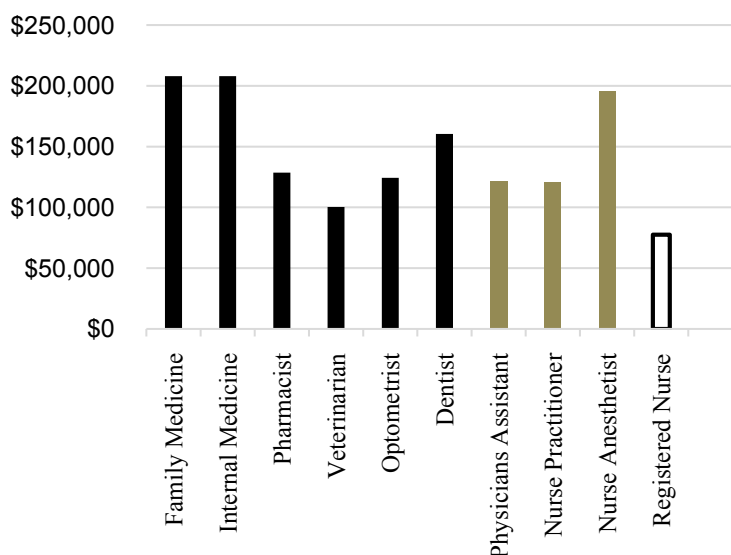
Figure 4. Median Salary (U.S. Department of Labor, n.d.) by Degree level for Health Profession. Salary data is grouped according to the levels of degrees usually needed for each profession are categorized ordinally. They are categorized as Doctoral (Black bar), Masters (Gray bar), Bachelors, and B.S./certificate levels (White bar). Although not all nurse anesthesiologists and physician assistants require a master's degree, data is organized based on levels education most people in this career obtain.

In order to compare earnings between these health occupations while accounting for their various lengths of practitioner-level training, the median salaries were adjusted for the time necessary to achieve practitioner training. This adjustment showed that the salaries for occupations of nurse anesthetist and physician assistant match or exceed the adjusted compensation for family and internal medicine physicians (**Figure 5**).

The tuition payment needed to afford health professional training is significant, with ranges from approximately $50,000 to over $200,000 total (**Table 1**). This expense also dictates decision making in choosing a health occupation (Thomas, 2019). To rate the health practitioner occupations by output of median salary per input of total tuition spent, the median salary of each occupation was divided by the tuition (not including fees and living costs). These data (**Figure 6**) show that while total salary is highest for primary care physicians, the nursing fields (registered, vocational, nurse anesthesia) and physician assistants have greater compensation per tuition dollar input. These occupations also had the greatest future demand.

In summary, these results identify that nurse practitioners, nurse anesthetists and physician assistants are growing health careers with high predicted earnings, moderate time to training and tuition. Careers as primary care physicians, optometrists, dentists and veterinarians show moderately increased 10-year growth that correlates with enrollment trends. Primary care physicians offer the greatest salaries, but these salaries must be balanced against training time and tuition.
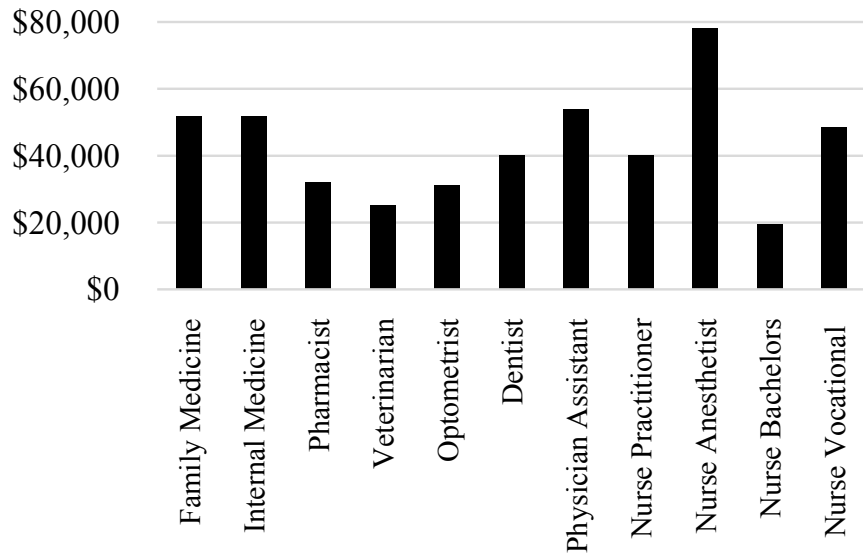
Figure 5. Salary relative to the time necessary for professional education. The median salary for each health occupation (U.S. Department of Labor, n.d.) was divided by the years spent in that professional school (for post-baccalaureate trainings, this data did not include an earned bachelor's degree nor post-professional training such as residencies). Data for typical training lengths from HealthCarePathway, n.d.; AACN, 2022; Learn.org, n.d.a, n.d.b; Team, Indeed Editorial, n.d.; AANA, n.d. and Birt, 2020.
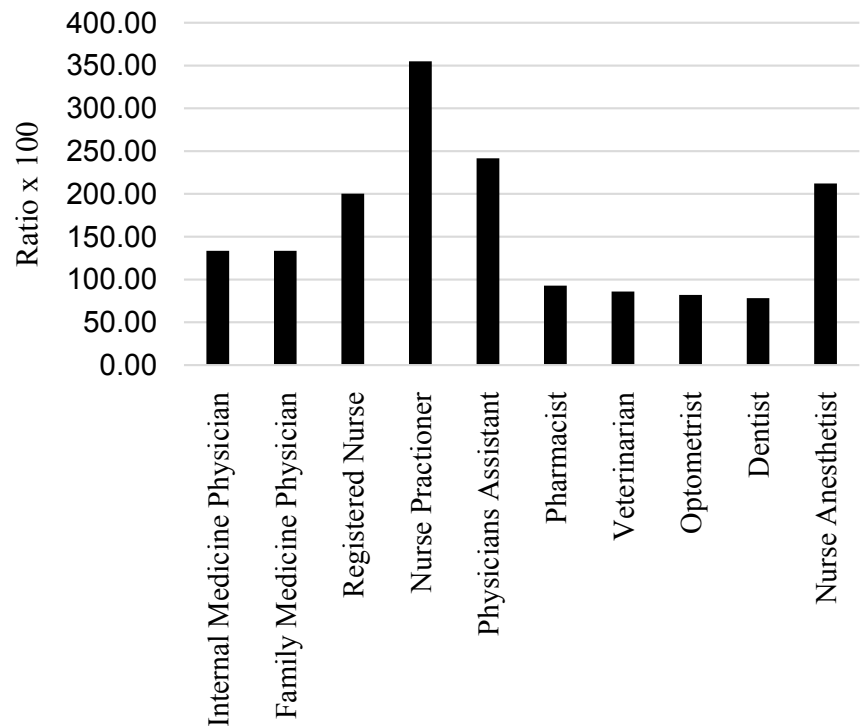

Figure 6. Median salary as a function of total tuition. Data reflects the relative median annual salary (U.S. Department of Labor, n.d.) after adjusting for the amount total costs of tuition to attend the training (Hooker & Cawley, 2021; CODA, 2022; Office of Institutional Research & Effectiveness, AACP, n.d.; College Tuition Compare, 2022; SimpleNursing, 2022; Lake, 2022; ADA, 2022b; all-crna-schools, n.d.). Family and Internal medicine are primary care physician categories.

Table 1. Total tuition costs of health occupations.

Health Occupation	Total Tuition ($)
Physician	155,788
Registered Nurse	38,748
Nurse Practitioner	34,000
License Registered Nurse/Vocational Nurse	6000
Physician Assistant	50,289
Pharmacist	138,616
Veterinarian	116,716
Optometrist	151,680
Dentist	205,019
Nurse Anesthetist	92,147

Total Tuition of Health Professions not counting fees and living costs (Hooker & Cawley, 2021; CODA, 2022; Office of Institutional Research & Effectiveness, AACP, n.d.; College Tuition Compare, 2022; SimpleNursing, 2022; Lake, 2022; ADA, 2022b; all-crna-schools, n.d.).

4. Discussion

There is little data identifying the specific factors most influencing practitioner health career choices in the U.S. However, in general, undergraduates make careers decisions based upon intrinsic factors such as interests, personality and background and extrinsic factors including the availability of training, finances, and required level of education (Sharif et al., 2019). This report determines and provides median salary, future demand, number of schools, salary and tuition for 11 specific health professions. It adjusts salary by tuition and time-to-degree to further compare health fields. Nursing fields and physician assistants are identified as practitioner occupations with high growth and earnings that are reached with less than 4 years training.

Of the extrinsic factors, affordability is a basic and essential criterion for most students selecting a career (Manavrachna.edu, n.d.). In-demand health education occupations should attract students as long as the students perceive that the costs of training are affordable. The tuition costs of various health occupations varied widely; however, since the salary compensation post-graduation offsets up-front tuition, we assessed median salary by tuition dollar. These data show that after making this correction, doctoral-level training falls behind master's level occasions associated with nursing and physician assistants. This aligns well with the expected increase in demand for these occupations.

A second critical factor in occupation decision making and in career satisfaction is the compensation (Karagir et al., 2021; Mohos et al., 2021; Leigh et al., 2009; Savage et al., 2009). The time spent away from reaching earnings increases with the length of training. Of the primary care occupations in this report, physicians and dentists held the greatest compensation levels. These are doctoral

level schools that are at least 4-year training programs. Shorter education length programs offer the attraction of sooner careers (Savage et al., 2009; Monroe, n.d.). When median salaries were adjusted for the time necessary for achieve professional education, high doctoral salaries leveled out and were equaled or exceeded by nurse anesthetists, physician assistants and nurse practitioners; again, these are occupation with the greatest predicted increase in need over the next decade (U.S. Department of Labor, n.d.).

Compared with other healthcare courses, nursing courses have the largest recruitment target in order to meet the ever-growing demand for a nursing workforce (Wu et al., 2015), yet nursing shortages are a major concern across U.S. and international health care (AACN, 2020). Future nursing providers are needed for an aging demographic with increased life expectancy (Thor & Siegfried, 2021). As data in this report show, nursing has the largest number of training programs. Practitioner training in other growth in programs appears to be expanding to meet anticipated growth.

As the population in the United States ages, access to healthcare practitioners will increase and will require multiple levels of training. These careers offer meaningful interactions and learning between teams of health care workers that ultimately benefit patients. These data profile a panorama of practitioner level occupations that can be helpful for career seekers as they compare advantages against costs of these fields.

Author Contribution

I.S. conceived, researched and authored the manuscript.

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Conflicts of Interest

The author declares no conflict of interest.

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