Long Overdue: Full Practice Authority for Nurse Practitioners Increases Access and Controls Costs

December 2019

BAY AREA COUNCIL ECONOMIC INSTITUTE

About this Report

This report serves as an update to a report titled "Full Practice Authority for Nurse Practitioners Increases Access and Controls Cost", which was released by the Economic Insititute in 2014. In this report, we developed a methodological model that quantified the increase in access, quality of healthcare services, and potential cost savings by having nurse practitioners practice without physician oversight. Granting full practice authority to nurse practitioners can increase access to healthcare services, provide the same degree of quality care as physicians, and lower the cost of healthcare services overall by eliminating additional visits and other healthcare providers. Through an extensive review of the literature and a quantitative analysis of three measures, this report explores how allowing nurse practitioners full scope of practice can increase access, maintain quality care, and lower costs in the healthcare industry.

Acknowledgments

This report was prepared by the Bay Area Council Economic Institute with support from the California Health Care Foundation (CHCF) It is the product of extensive analysis by the Economic Institute as a follow up to the nurse practioner report released in 2014. This report was authored by Patrick Kallerman and Isabel Monteleone and was designed by Estevan Lopez.

About the Institute

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Executive Summary

Employment in the U.S. healthcare industry is comprised of multiple different healthcare professions, all of which help fulfill the medical needs of the U.S. population. Given the complexity of healthcare in the U.S., there is a need to clearly understand the roles that our healthcare professionals provide, how they differ, and how they can be leveraged to provide the best possible patient care.

This is particularly true for the role of the nurse practitioner—an advanced practice registered nurse that has varying degrees of practice rights depending on a given state's laws. In 22 states and in the District of Columbia, nurse practitioners are able to practice at their "full scope", meaning that they are able to make certain medical decisions, such as diagnose patients, order drugs, and manage treatment plans without the supervision of a physician.

In states like California, nurse practitioners are restricted in their practice, signaling that one or more of their abilities to practice requires physician oversight in order to be approved. This has serious implications for the state's ability to meet its healthcare demands, leads to an inefficient use of valuable healthcare resources, and can increase healthcare costs for the industry at large. In just the last decade alone, several states have passed legislation that has expanded the scope of practice for nurse practitioners, citing its favorability in increasing healthcare access, maintaining healthcare quality, and lowering healthcare costs. No state has reversed its scope of practice laws to make nurse practitioners' roles more stringent.

Making the Case for Full Practice Authority

Expanding the scope of practice for nurse practitioners in California is supported by extensive research. This report finds three areas where increasing the scope of practice for nurse practitioners can be beneficial:

1. **Expanding the scope of practice for nurse practitioners can increase access to patient care** — According to the Association of American Medical Colleges[1], the United States will have a shortage of up to 122,000 physicians by 2032. This shortage will be particularly noticeable in California, where shortages of physicians are already significantly higher than shortages in other states. Much of this national shortage can be attributed to the increase in the U.S.'s aging population and the 2010 implementation of the Affordable Care Act, which expanded the number of insured individuals across the country.

   Nurse practitioners can help in tackling this physician shortage, if they are allowed to practice at their full scope, especially in California. In contrast to physicians, the U.S. has seen an increase in the number of nurse practitioners, other advanced practice registered nurses, and physician assistants. As the supply of nurse practitioners grows, exploring ways to better utilize these healthcare professionals can potentially help offset the supply-demand mismatch that exists for physicians.

2. **While nurse practitioners and physicians fulfill different roles in the healthcare industry, previous studies have shown that increasing the scope of practice for nurse practitioners does not lower the quality of care that nurse practitioners can administer** — In many ways, physicians and nurse practitioners work in tandem to support a variety of patients across many patient settings. While increasing the scope of practice for nurse practitioners will not cancel out the demand for physicians, providing full practice authority to nurse practitioners can help maintain quality of care in the industry.

   Studies have shown that nurse practitioners provide high quality of care, and in many settings, are actually preferred to physicians by patients given the more patient-centric model of practice that nurse practitioners provide.

3. **Granting full practice authority to nurse practitioners can also lower healthcare costs for both patients and the healthcare industry overall** — Today, each time a patient requires a medication prescription, treatment plan, or drug order in California, he or she must first be seen by a physician or wait for physician approval in order to pursue proper treatment.

   These countless situations where nurse practitioners in California are not able to fulfill roles that are a part of their scope of practice in other states can add costs to patients and increase visit times and frequencies. In addition to increasing patient costs, not allowing nurse practitioners to practice at their full scope adds costs onto the hospital, clinic, and industry overall—many of which are then passed down to the patient.

Reforming the Scope of Practice for California's Nurse Practitioners

The state of California has just under 40 million people, making it the most populous state in the country. Despite the state's growing need for healthcare professionals, the National Center for Health Workforce Analysis[2] estimates that there will be a shortage of nearly 23,640 primary care physicians by 2025 as fewer students enroll in medical school or choose to specialize in primary care fields.[3] By contrast, in 2017, over 26,000 nurse practitioners graduated from academic programs in the U.S., compared to a little over 23,000 in 2016.[4]

California's needs for a robust healthcare network to support its growing population is increasingly more necessary, especially as California's elderly population grows. By 2030, California's over-65 population will nearly double.[5] However, California's restricted scope of practice laws for nurse practitioners keeps nurse practitioners from helping to fill gaps in physician availability.

To address the supply and demand mismatch of their own healthcare professional shortages, several states across the country have expanded the scope of practice for nurse practitioners—an Advanced Practice Registered Nurse that fulfills several roles, such as assessing and diagnosing patients. In many ways, nurse practitioners serve a similar, if not complementary role to a physician, but what services they can perform is strongly influenced by the practice laws of a nurse practitioner's practicing state.

Currently, 22 states and the District of Columbia allow nurse practitioners to practice independently of physicians, while 16 states allow reduced practice and 12 states have restricted practice. California is the only state on the West Coast with restricted practice for nurse practitioners—a legal binding that prevents nurse practitioners in the state to perform a scope of work that is allowed in other states across the country.[6] Alongside California, states such as Texas, Michigan, Georgia, and Virginia are among the 12 states in the country with a restricted scope of practice.

For decades, the scope of practice laws across the country have been debated and discussed, with many states choosing to expand their scope of practice laws. In recent years, states such as Oklahoma and South Dakota have expanded the scope of practice for nurse practitioners. Many more (such as Florida, Pennsylvania, North Carolina, and California) have introduced bills that would expand the scope of practice for nurse practitioners. This year, bill AB 890, which would have expanded the scope of practice for nurse practitioners in California, failed to pass in the appropriations committee, and was turned into a two-year bill to be re-heard in 2020. This report serves to educate policymakers on the healthcare and economic benefits of passing such a bill, ultimately giving nurse practitioners in California the same rights they have to practice in 22 states across the country.

This report also provides an update to our 2014 report, "Full Practice Authority for Nurse Practitioners Increases Access and Controls Costs", which showcased the impacts of removing physician oversight. Expanding scope of practice for nurse practitioners can increase access to healthcare services, provide the same degree of quality care as physicians, and lower the cost of healthcare services overall by eliminating additional visits and other healthcare providers. Through an extensive review of the literature and a quantitative analysis of three measures, this report explores how allowing nurse practitioners full scope of practice can increase access, maintain quality care, and lower costs in the healthcare industry.

An Update to the 2014 Report

The Bay Area Council Economic Institute began contributing to the research on nurse practitioners' scope of practice laws in 2014, when it released its first report on the issue. In this report, we developed a methodological model that quantified the increase in access, quality of healthcare services, and potential costs saved by having nurse practitioners practice without physician oversight.

In 2014, and as it still stands today, California's scope of practice for nurse practitioners is the most restrictive in the country. The report was supported by peer-reviewed, scholarly academic literature such as Reagan and Salsberry (2013)[7], Traczynski and Udalova (2013)[8], DesRoches et al (2012)[9], and Kleiner et al (2014)[10]. The analyses in these articles found that expanding the scope of practice for nurse practitioners in California from a restricted scope of practice to full practice authority has the ability to increase access and quality of healthcare services and lower costs. More specifically, the report found:

1. **California's number of primary care physicians (the largest in the country) is not large enough to serve its population;** removing physician oversight of nurse practitioners can help improve access to healthcare services. This is particularly important as nurse practitioners are historically more likely to serve younger individuals, females, and vulnerable populations.
2. **Increasing the scope of practice for nurse practitioners will increase access to care without compromising quality;** evidence has shown that the quality of care provided by nurse practitioners is well-received by patients and that increasing the scope of practice for nurse practitioners does not lower standards of care.
3. **While nurse practitioners and physicians receive different training, nurse practitioners are well equipped with the skills necessary to serve several roles without physician oversight.** Thus, allowing nurse practitioners to operate without physician oversight where they are able to, can be more cost-effective for the patient and the healthcare system overall.

The 2014 report also provided several policy recommendations that can help advance patient care, access, and lower costs:

- **Grant Full Practice Authority to Nurse Practitioners**
- **Remove Other Regulatory Barriers to Practice and Care**
- **Continue to Advance the Education of our Health Care Workforce**
- **Ensure Financial Incentives Support Quality Care**
- **Extend Hospital Privileges for Nurse Practitioners**

In this 2019 update, the Bay Area Council Economic Institute will update the methodological model used in our 2014 report that focused on three areas where full practice authority will have a significant affect: access, quality, and costs. This update includes the latest relevant studies pertaining to our original three measures. Lastly, this report reinforces the policy recommendations listed above.

Nurse Practitioner's History and Current Practice

History

A nurse practitioner is one of four advanced practice nursing professions: nurse mid-wives, nurse anesthetists, clinical nurse specialists, and nurse practitioners. In some states, nurse practitioners work side-by-side physicians; in others, nurse practitioners are given the authority to perform certain roles without physician oversight—showcasing the varying degree to which nurse practitioners are viewed and regarded in their professions from state to state.

This section outlines the history of nurse practitioners in the United States, and the state practice laws for nurse practitioners in California. In particular, this section describes how nurse practitioners differ from physicians but how in some states, they serve similar purposes. This is important to note as distinctions between professions in the healthcare industry are not well understood by the broader public, which can largely impact the decisions made in the legislature regarding the nurse practitioner scope of practice laws.

The role of the nurse practitioner first emerged for the very reason states have chosen to amend scope of practice laws: physician shortages. In 1965, under the direction of Loretta Ford, a nurse, and Henry Silver, a physician, the role of the nurse practitioner was born. The 1960s were characterized by the need to assist underserved populations in the United States, coupled with a shortage of physicians and a general lack of access to healthcare services. The population had changed remarkably—becoming more aged, with an increase in the number of ill children and adults. As medical programs became more tailored to specialized practice areas, nurses sought practical training in clinics, which would allow them to expand their educational training.[11]

Nurse practitioners spearheaded their own growth in this way, taking on the challenge of the physician shortages by focusing primarily on underserved populations in rural and urban communities. Since then, nurse practitioners have become a critical piece of the healthcare industry, providing necessary care to millions of insured and uninsured individuals. The shortage of physicians offered a leadership role for nurse practitioners, who over the years required increased educational requirements and practical training. Today, as the United States faces a similar shortage, nurse practitioners are again fighting for more leadership opportunities through expansion of practice rights in states where restrictions remain.

The first official nurse practitioner program began at the University of Colorado, helping to expand the role of registered nurses and giving them the skills to examine and diagnose patients, prescribe medication, and provide treatment. By the 1980s, most states required nurse practitioners to obtain a graduate degree. Today, some universities across the U.S. have created nurse practitioner residency programs, but residencies are currently not a required component for nurse practitioner certification.

In 1985, the American Association of Nurse Practitioners was formed, a membership organization that continues to give nurse practitioners a voice and a national network. In 1983, between 22,000 and 24,000 nurse practitioners practiced in the United States. By 2007, approximately 120,000 nurse practitioners were licensed to practice. Between March 2018 and January 2019 alone, the number of nurse practitioners jumped by 22,000. Today, there are over 270,000 nurse practitioners in the United States, and there are more than 1 billion visits to nurse practitioners each year.[12] According to the Bureau of Labor Statistics, the number of nurse practitioners will grow by 36% by 2026, whereas the number of physicians will only grow by 13%.

Current Practice

While the growth of nurse practitioners over time has been astonishing, little is known to the public how the role of the nurse practitioner compares to that of a physician. Understanding their roles is key to understanding the debate surrounding scope of practice, and how nurse practitioners can be instrumental in aiding the physician shortage, much like they did in the 1960s.

In order to be certified, nurse practitioners are required to obtain a masters or doctoral degree and pass a certification board based on the state they choose to practice in. Nurse practitioners receive advanced training beyond that of registered nurses in areas such as primary care, acute care, gerontology, and women's health. Much like physicians, nurse practitioners receive national certifications, have clinical evaluations, and follow a code of ethics.

Nurse practitioners are licensed in every state, as well as the District of Columbia, and they can be found practicing in clinics, hospitals, emergency rooms, urgent care sites, private practice, nursing homes, schools, and public health departments within urban and suburban environments. According to the AANP, the average nurse practitioner is 49 years old, a female, and practices in a non-urban environment. Nurse practitioners are also more likely than physicians to be found treating vulnerable populations.

The most prominent distinction between nurse practitioners and physicians (as well as physicians assistants) is in their respective program models. While medical school programs are rooted in a disease-centered model, which trains physicians to focus on a patient's given disease/physiological conditions, nurse practitioner programs, as well as the nursing model in general, takes a more patient-centric approach, where nurses and nurse practitioners are trained to tackle a patient's needs holistically by taking into account their mental, physical, and emotional needs. The high patient satisfaction that nurse practitioners receive can be attributed to this.

Nurse Practitioners in California

In California, nurse practitioners are restricted in their ability to practice. According to the California Scope of Practice Policy[13] and the Department of California Department of Consumer Affairs[14], nurse practitioners in the state must be guided by a standardized procedure that is approved and designed by a supervising physician. Nurse practitioners are required to order drugs and devices, provide patients with controlled substances, dispense medication, and sign for pharmaceutical samples and devices only under the supervision of a physician.

However, the state does not specify the level to which physicians must supervise nurse practitioners, aside from the law regarding the distribution of drugs and devices.

Supervision requirements are developed on an ad hoc basis between the physician and nurse practitioner and can be different depending on the task or situation at hand. Ultimately, nurse practitioners are regarded as a patient's primary care provider, responsible for providing and coordinating care according to the limitations of his or her practice.

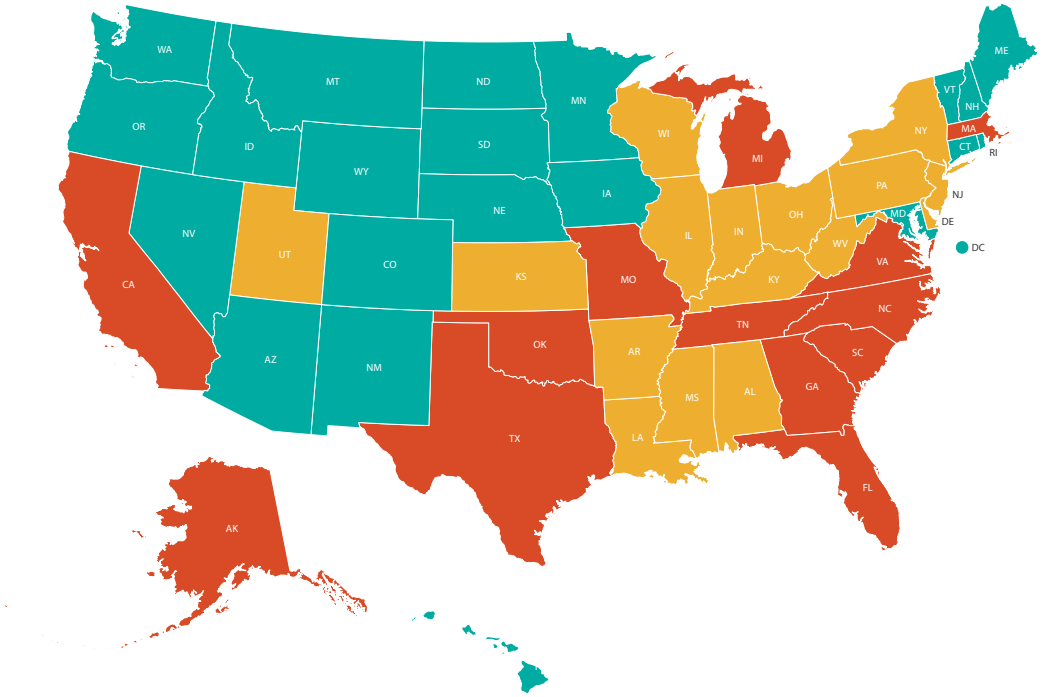
Nurse Practitioners in the United States

The scope of practice for nurse practitioners is dictated by state law. As is demonstrated in **Figure 1**, states are divided in how they view the role of nurse practitioners, and therefore how they set guidelines. An overwhelming majority of the Western states allow nurse practitioners to practice at their full scope. Since 2014, some states have expanded their scope of practice laws, particularly in the Midwest and on the East Coast.

In 1984, Montana became the first state to allow full practice authority for nurse practitioners. Since then, several states have followed. In 2014, states such as South Dakota, Nebraska, and Maryland changed their practice laws to allow nurse practitioners to practice at a reduced level; however, no state has reversed its actions to expand scope of practice—signaling the gradual expansion of scope of practice across the country.

FIGURE 1

Nurse Practitioner State Practice Environment



FULL PRACTICE
State practice and licensure laws provide for nurse practitioners to evaluate patients, diagnose, order and interpret diagnostic tests, initiate and manage treatments - including prescribe medications - under the exclusive licensure authority of the state board of nursing. This is the model recommended by the institute of Medicine and National Council of State Boards of Nursing.

REDUCED PRACTICE
State practice and licensure laws reduce the ability for nurse practitioners to engage in at least one element of NP practice. State requires a regulated collaborative agreement with an outside health discipline in order for the NP to provide patient care.

RESTRICTED PRACTICE
State practice and licensure laws restricts the ability for nurse practitioners to engage in at least one element of NP practice. State requires supervision, delegation or team-management by an outside health discipline in order for the NP to provide patient care.

Source: American Association of Nurse Practitioners
Note: As of November 2019

Literature Review

Several studies to date have provided evidence that expanding the scope of practice for nurse practitioners in states where their roles are restricted in part or in full can have varying positive effects for patients and the healthcare industry. The 2014 Bay Area Council Economic Institute report primarily relied on the methodologies constructed in Reagan and Salsberry (2013), Traczynski and Udalova (2013), DesRoches et al (2012), and Kleiner et al (2014). Since our 2014 report, several more reports and analyses have been conducted that further support the notion that nurse practitioners are instrumental to reducing the shortage of physicians and in providing quality care. The section below surveys the literature as it pertains to the three areas being measured in this report. In cases where more recent literature was not available, the primary article from the 2014 report was used to replicate the analysis in this report, with updated 2017-2018 Area Health Resources Files (AHRF) data.

Increasing Access to Care

The most recognizable way in which increasing the scope of practice for nurse practitioners can address the state's shortage of healthcare professionals is by increasing access to care for residents in California. Several studies have shown a correlation between scope of work practice laws and the supply of nurse practitioners, impacting access to care[15]. In a cross-sectional analysis using 2008 data from the AHRF and the Pearson Report, Reagan and Salsberry found that restrictive scope of work practices reduce the supply of nurse practitioners by about 10 per 100,000 people.

Restrictive scope of work practice also reduces the growth rate of nurse practitioners by about 25%. Between 2001 and 2008, the growth rate of nurse practitioners in states with the least restrictive practice exceeded 100% compared to a growth rate of 73% in the most restrictive states. This demonstrates the importance that scope of practice has on nurse practitioners' decisions to choose where they become licensed.

The findings in this study are also supported when observing rural and primary care health professional shortages within counties. Using 2009-2013 county-level data, an analysis found that on average, rural counties with the least restrictive scope of work practice had the largest supply of nurse practitioners (the supply of nurse practitioners grew by 31.7 per 100,000 people in 2009 to 40.93 per 100,000 people in 2013). In rural counties with the most restrictive scope of work practice, the 2009 supply of nurse practitioners was 23.94 in 2009 and grew to 32.12 in 2013.[16] Nurse practitioners are most commonly found in geographies with the greatest need, but scope of work practice can deter their ability to practice in states with partial or full restriction.

Buerhaus et al (2014)[17] further elevates the important work of nurse practitioners in the results gathered in a national postal mail survey, which found that in addition to a majority of nurse practitioners practicing in rural environments, nurse practitioners are more commonly found treating vulnerable populations, such as racial and ethnic minorities, uninsured patients, and Medicaid recipients. The analysis by DesRoches et al., which utilized 2008 Medicare administrative data identified that unlike physicians, nurse practitioners were more likely to serve younger, female, and non-white beneficiaries.

Increasing Quality of Care

Studies have also shown that lowering the barriers to scope of practice for nurse practitioners does not impede on quality of care that patients receive, meaning that health care quality does not decrease when nurse practitioners' scope of practice is expanded[18]. Nurse practitioners produce comparable health outcomes to medical doctors, according to some scholars, and increasing scope of practice laws can also increase checkup frequency for patients. The Traczynski and Udalova study used a confidential survey called the Medical Expenditure Panel Survey (MEPS) to understand the role of preventative care. The study surveyed the practice laws present in states across the country, comparing the number of routine checkups. The data, which was bolstered by age, race, health care insurance, ethnicity, gender, and several other indicators, was analyzed to find that health care utilization and health outcomes increase when the supply of nurse practitioners increases. Traczynski and Udalova's study was updated in 2018.

Other studies have focused on patient outcomes of older rural adults based on states' practice laws for nurse practitioners.[19] The report studied Alabama, Kentucky, Missouri, Florida, Georgia, North Carolina, South Carolina, and Tennessee, and looked at variables such as the 30-day re-admission rate and risk-adjusted rates of Ambulatory Care Sensitive Conditions for four diagnoses types—adjusting for gender, age, race, and the presence of two diseases in a patient. Ultimately, the study determined that there was no significant difference between treatment.

Controlling Healthcare Costs

Lastly, expanding the scope of practice for nurse practitioners could serve as a cost-effective solution to dealing with the shortage of physicians in the state, lowering administrative costs and other indirect

costs to medical care access. As discussed earlier, nurse practitioners are typically found practicing in areas where medical doctors are not, such as treating vulnerable populations. Granting more autonomy to nurse practitioners can help alleviate healthcare pressures and allow nurse practitioners to substitute for medical doctors, particularly in areas where medical doctors are not as commonly found.

Using insurance claims for child well care exams, a routine set of tests and evaluations performed annually by both physicians and nurse practitioners in the United States at approximately $100 each, Kleiner et al (2014) showed that there is a strong relationship between price and occupational licensing when there is a change in regulation. In particular, the study found that restrictive practice laws on nurse practitioners increased the price of well care examinations by $6 when nurse practitioners require supervision or delegation of prescription authority and $16 when nurse practitioners have a limited prescription authority.

When observing the cost of care for Medicare beneficiaries, a similar result was found. Using administrative data from Medicare beneficiaries assigned to nurse practitioners and physicians over a 12-month period, cost of care is found to be higher for physicians than for nurse practitioners in both inpatient and office-based settings; in particular, evaluation and management services, where payments for nurse practitioners were 29% less than for physicians.[20]

Another area where nurse practitioners are commonly found practicing in are retail clinics.[21] Retail clinics can help lower the cost of healthcare services, are open on weekends or weekday hours when physician offices are closed and can eliminate a patient's need to visit an emergency department for low-acuity care.

Data and Methodology

The framework of this report is supported by the peer-reviewed literature that was used in the 2014 report, as well as with several studies that have emerged since 2014—highlighted in the section above. Aside from a qualitative review of the literature, this report also replicates the quantitative analysis used in our previous report, which uses a methodology that determines how granting full practice authority to nurse practitioners could benefit the state of California.

As emphasized in the literature, the analysis is focused on three areas that can be significantly impacted by nurse practitioners' scope of practice. These areas are access to care, the quality of care, and the cost of care; these measures were also used in our 2014 and in the literature since 2014, and they continue to be the primary measurements used in support of increased scope of practice.

Limitations

The qualitative and quantitative analysis in this report has several limitations. The results in this report are derived from three main pieces of literature used: Reagan and Salsberry (2013); Traczynski and Udalova (2018); and Kleiner et al (2014) to support the expansion of nurse practitioners' scope of law practice by showing what can happen to access to health care, quality of health care, and costs of health care with expansion. Given this, it is important to note that each report used its own methodology and data set and that this report is attempting to create a holistic analysis using all three reports; therefore, this report's limitation begins with the limitations present in each of these reports.

Another limitation is the lack of available literature on this topic. Aside from the Traczynski and Udalovac report, which is a 2018 updated article, the primary peer-reviewed literature used in this report is identical to the literature used in our 2014 report. Although these articles were peer-reviewed and provide a reliable analysis related to our three measures, continued research in this area is needed.

Thirdly, there are limitations on the data used. The data in this report is at the national-level, rather than state-level data, which would provide a more accurate picture of our measures' impact on nurse practitioners in California. This, again, is due to the lack of abundant literature on this topic.

In addition to this, there are limitations on our own manipulations, which are estimations from cross-sectional analyses being applied to the state of California. These estimations are static numbers, and thus do not take into account other potential interfering factors. The application of regression coefficients from these analyses, however, is a widely used and accepted method and does provide a general picture of the average expected change in California, holding all other variables constant.

Access to Care

Access to healthcare is understood as the ability for an individual to receive care or health services when needed. In the United States, there is a growing shortage of physicians which directly translates to a shortage in access to care. As is echoed in Reagan and Salsberry, the shortage of physicians has grown even more with the implementation of the Affordable Care Act (ACA), which provided millions of Americans with insurance. According to the Kaiser Family Foundation,[22] the number of uninsured people in the country dropped by 10% in 2016 after major ACA provisions went into effect.

While the number of primary care providers is declining, the number of nurse practitioners is instead growing rapidly. In addition to growing, nurse practitioners are also predominantly practicing in vital geographies and providing patient care for vulnerable populations.

In order to uncover where nurse practitioners practice and in which areas their supply has increased, we used Reagan and Salsberry's analysis, which takes consolidated data from individual counties and places them into health service areas (HSAs), a county or

contiguous counties that are self-contained in how they provide routine hospital care. For the United States overall, the analysis found that although the increase in supply of nurse practitioners was strong overall, the states with the least restrictive scope of practice had the largest growth in number of nurse practitioners between 2001 and 2008. The growth of nurse practitioners in states with the most restrictive practices was 73%, while the growth of nurse practitioners in states with the least restrictive practices was over 100%.

Their analysis also found that practice restrictions reduced the number of nurse practitioners per 100,000 residents by 25%. The negative effect of primary care physicians on nurse practitioners indicates that in some cases, physicians and nurse practitioners serve a duplicative role. Reagan and Salsberry's study also took into account other factors that can pose a barrier to increasing the supply of nurse practitioners, namely poverty, uninsurance rates, and low population density. This was particularly prevalent in southern states, which had 28% less primary care physicians and 38% less specialists than the northeast. The northeast and the west had the first and second greatest per capita rates of physicians and nurse practitioners.

In order to depict this breakdown, we use 2017-2018 AHRF data from the Department of Health and Human Services in **Table 1** to showcase the type of geography in which nurse practitioners and primary care physicians practice. In California, on average, significantly more primary care physicians practice in urban county environments, with 77 physicians per 100,000 residents compared to 51 nurse practitioners per 100,000 residents. Overall, in both urban and rural counties, there are more primary care physicians than nurse practitioners practicing with 69 physicians per 100,000 residents compared to 52 nurse practitioners per 100,000 residents on average.

Compared to our findings in the 2014 report (shown in **Table 2**), the average count of nurse practitioners and primary care physicians is almost the same for rural counties, with nurse practitioners having a slightly higher rate of practicing in rural counties on average. In our 2014 report, we found that there was a considerably higher difference in the presence of clinicians in rural counties, with the average number of nurse practitioners per 100,000 residents being seven points higher than the average number of primary care physicians per 100,000 residents. The overall county average has stayed fairly consistent.

TABLE 1

Clinicians per 100,000 Residents in California in 2018

	Primary Care Physicians	Nurse Practitioners	Total
County Average	69	52	121
Urban-County Average	77	51	128
Rural-County Average	56	57	113

Note: Rural and urban county designations were made using the U.S. Department of Agriculture Rural-Urban Continuum Codes. See Resources section for details. Health Professional Shortage Area (HPSA) county designations are made each year by the U.S. Department of Health & Human Services.
Source: 2017-2018 Area Health Resource File
Analysis: Bay Area Council Economic Institute

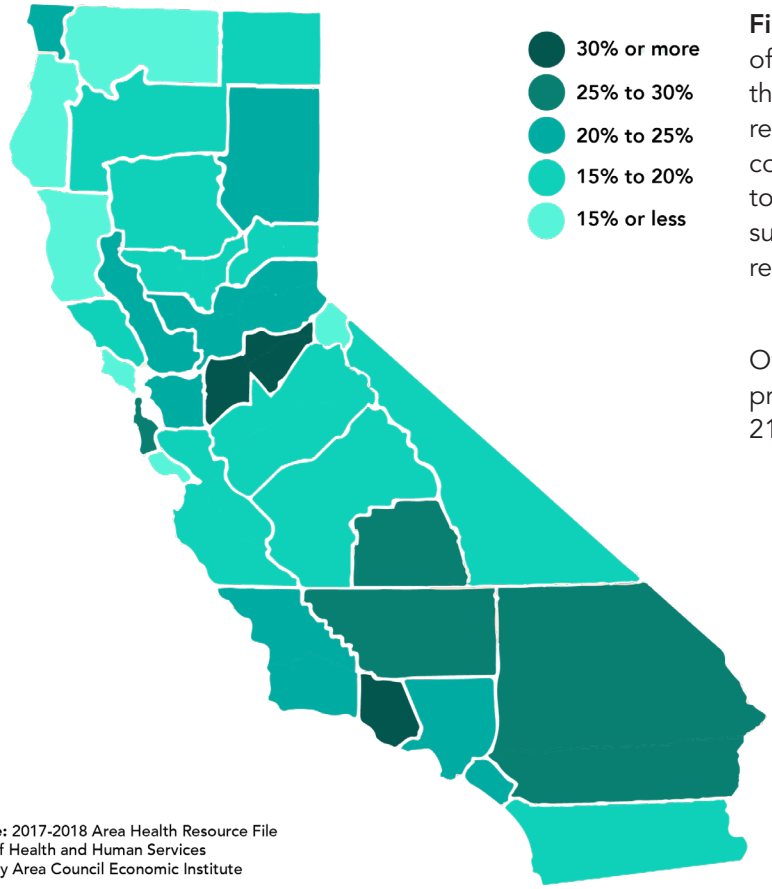
TABLE 2

Clinicians per 100,000 Residents in California in 2011			
	Primary Care Physicians	Nurse Practitioners	Total
County Average	67	52	119
Urban-County Average	74	47	121
Rural-County Average	55	62	117

Note: Rural and urban county designations were made using the U.S. Department of Agriculture Rural-Urban Continuum Codes. See Resources section for details. Health Professional Shortage Area (HPSA) county designations are made each year by the U.S. Department of Health & Human Services.
Source: 2012-2013 Area Health Resource File
Analysis: Bay Area Council Economic Institute

FIGURE 2

Increase in the Supply of Nurse Practitioners by HSA as a Result of Reform



Data Source: 2017-2018 Area Health Resource File
U.S. Dept. of Health and Human Services
Analysis: Bay Area Council Economic Institute

Figure 2 presents a more detailed depiction of our findings in the table. The map utilizes the coefficients from Reagan and Salsberry's results and combines them withthe county level data provided in the AHRF to vshowcase the potential increase in the supply of nurse practitioners if all practice restrictions were lifted in California.

Overall, granting nurse practitioners full practice authority will result in an increase of 21% more nurse practitioners in California.

Quality of Care

With increased demand for medical services comes a strain on quality of care. Granting full practice authority to nurse practitioners could help bolster the quality of healthcare services and help ensure that all individuals are provided with quality care in their healthcare experiences. Some studies have shown that nurse practitioners administer a greater level of care quality in terms of health outcomes, patient compliance with treatments, patient satisfaction, resolution of conditions, patient risks, and neonatal outcomes.

In an analysis by Tracynski and Udalova, which focuses on routine checkups, researchers found that increasing the scope of practice for nurse practitioners directly results in increases in the frequencies of routine checkups and decreases emergency room use, as well as improves quality of care for patients.

Utilizing a data set containing the practice regulations for nurse practitioners by state from 1970 to the present and MEPs data from 1996-2012, this study looks at short-and long-term effects of practice authority reform, controlling for age, race, health insurance status, ethnicity, gender, employment status, marital status, education, income, and whether or not an individual lives in an urban area. In regard to care quality, the study found that the probability that an adult has a routine checkup in the last year increases by 3.3% in the two years directly following nurse practitioner scope of practice reform. In terms of health outcomes, this study also utilized a self-reported patient health status form to look at patients' health outcomes after the expansion of nurse practitioner scope of practice, finding that more adults reported being in "excellent" health after the expansion.

In **Table 3**, we take Tracynski and Udalova's analysis and apply it to the state of California in order to understand how increasing the scope of practice for nurse practitioners could affect the probability that an individual has a routine checkup in the last 12 months and the number of visits that occur at an annual basis. For both of these estimates, we use the population of California estimated for 2018. Our results show that directly following reform of nurse practitioners' scope of practice, the percentage of preventative care visits and number of visits increases annually.

Table 3

Yearly Adult Preventative Care Visits in California in 2018

	Present	Years 1-2 Following Reform	After Year 10 Following Reform	Increase
Individuals 18 and over:				
Preventative Care Visit in the Past 12 Months	66%	70%	72.8%	10.3%
Number of Visits Yearly	20,363,967	21,598,147	22,462,072	2,098,105

Note: California's population was estimated at 39,557,045. The population 18 years and over was 30,854,495; the population under 18 years was 8,702,550.
Source: U.S. Census Bureau
Analysis: Bay Area Council Economic Institute

Controlling Costs of Care

Lastly, granting full practice authority to nurse practitioners has also been found to help control healthcare costs and expenses. This was also noted in the Tracynski and Udalova study, which stated that allowing nurse practitioners to practice at their full scope can increase checkup frequency by creating an indirect reduction in travel costs and allowing for more convenient appointment scheduling.

To examine the potential costs saved with increasing scope of practice, we use Kleiner et al's study to show that states that require direct supervision and have no prescriptive authority have higher costs for well child visits than in states that allow nurse practitioners to practice at their full scope. This study uses the Fair Health database, which is comprised of 30 million well child visits from 2005-2010 to model the price of a well child visit based on each state's laws regarding nurse practitioner scope of practice. In the study, Kleiner et al found that the price of a well child visit increases by approximately $16 in states with strict scope of practice regulations. Conversely, the price of a well child visit only increases by $6 in states with limited prescriptive authority. These numbers are based off the price of an average well care visit, which is $100.

We then replicated this in **Table 4** for California, which showed that the price of a preventative care visit would be $17.58–in 2018–less if nurse practitioners did not require supervision and had full practice authority.

We assume that a well child visit in this case is interchangeable with an adult preventative care visit, given that both of these visits are routine annual services and are visits in which both physicians and nurse practitioners are trained to provide service.

Table 4

Average Price of a Preventative Care Visit			
State NP Regulations	**Supervision Requirements and No Prescriptive Authority**	**Supervision Requirements and Limited Prescriptive Authority**	**No Supervision Requirements and Full Prescriptive Authority**
Price of a Preventative Care Visit	$113.02	$103.24	$96.59

Source: Relaxing Occupational Licensing Requirements: Analyzing Wage and Prices for a Medical Service, Morris M. Kleiner, Allison Marier, Kyoung Won Park, Coady Wing. NBER Working Paper No. 19906, 2014.
Analysis: Bay Area Council Economic Institute

We then took these findings and our results from Table 3, where we show the effects after year 10 following reform, to determine the cost savings on preventative care visits in California in the years following a reform. Our results in **Table 5** show that there is a large potential for significant cost savings following the increase in nurse practitioners' scope of practice, with over $394 million saved after year 10 following reform.

Table 5

Cost Savings on Preventative Care Visits in California		
	Year 1	After Year 10 Following Reform
Visits	21,598,147	22,462,072
Yearly Savings	$379,695,415	$394,883,232

Note: Baseline number of preventative care visits includes both adults and children and are based on 2018 U.S. Census Bureau state population estimates. Estimates for subsequent years do no account for population growth.
Source: U.S. Census Bureau
Analysis: Bay Area Council Economic Institute

Conclusion

In 2040, California's population will have grown by 14%, adding an additional 6.3 million residents. As the population increases, it is crucial that we plan ahead for the future of our state's healthcare. While continuing to pilot new ways to relieve the current and future shortage of physicians through residency program expansion and encouraging students to enter the medical field are important advances to consider, leveraging the healthcare industry's existing stock of healthcare professionals can also be beneficial overall.

Allowing nurse practitioners to practice at their full scope is a start. Continuing to educate and train healthcare professionals to work with physicians can empower nurse practitioners and strengthen the entire medical profession by creating more cohesion across the industry. As more states find that increasing the scope of practice for nurse practitioners can provide benefits to the way they can deliver and administer care, this study shows that California can recognize considerable benefits if it were to amend its scope of practice laws for nurse practitioners—a small but powerful step in advancing better access, providing quality care, and lowering costs in California.

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