

Nurse practitioner race and ethnicity and interest in independent primary care practice and serving Medicaid enrollees

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Abstract

Nurse practitioners (NPs) are important providers of primary care to underserved populations, particularly in areas with lower physician supply. In 2023, California implemented new regulations aimed at improving access to care, especially primary care services, by providing a pathway for NPs to practice without formal supervision after 3 years of practice and without any physician relationship after 5 years of practice. This study used data from a representative survey of California-licensed NPs fielded in late 2022 to examine NPs' current practice and intentions following implementation of the new regulations. Results indicated notable differences in the characteristics of NPs who are considering establishing an independent primary care practice and who are considering changing their practice to serve more Medicaid enrollees at the advent of expanded scope of practice. The strong association between racial/ethnic identity and greater interest in practice change suggests that after the elimination of physician collaboration requirements, increasing the diversity of the NP workforce may be one of the most important strategies for increasing access to care for Californians and especially for people receiving Medicaid.

Key words: nurse practitioners; primary care; access to care; regulation; diversity; workforce.

Introduction

Millions of people in the United States face significant challenges accessing healthcare services due to ongoing and worsening shortages of healthcare professionals.¹ Primary care is among the specialties with the most significant shortfall; the Association of American Medical Colleges (AAMC) projects a shortage of up to 40 400 primary care physicians by 2036.² The U.S. Health Resources and Services Administration (HRSA) estimates that 75 million Americans live in federally designated primary care shortage areas,³ a disproportionate share of whom identify as Hispanic/Latino, Black/African-American, and Native American.⁴

Nurse practitioners (NPs), the largest group of nonphysician primary care providers, have played a growing role in filling gaps in primary care provision since the inception of the profession.^{5,6} NPs are nurses who have completed education beyond their initial registered nurse (RN) education to work in a specialized role in healthcare delivery. The training completed is either a Master's degree or Doctorate of Nursing Practice (DNP). The NP workforce in the United States reached 385 000 licensed NPs in 2023, increasing 4-fold from 91 000 in 2010, and is projected to grow by 38% in the next decade.⁷ Nationwide, the percentage of Medicare enrollees for whom an NP was their predominant provider rose from 4.4% in 2012 to 8% in 2017, and among clinicians prescribing medications for Medicare enrollees, the share of NPs rose from

approximately 17% in 2013 to more than 35% in 2021.⁸ The presence of NPs in physician practices is positively associated with the likelihood of the practice accepting Medicaid and, between 2009 and 2015, the addition of an NP to a practice was associated with Medicaid participation.⁹ Nurse practitioners comprise a relatively larger share of the primary care workforce in rural areas, lower-income communities, community health centers, and health professional shortage areas, and they are more likely to serve Medicaid enrollees.¹⁰⁻¹²

Many states have recognized NPs' contributions to healthcare delivery and relaxed scope-of-practice restrictions, including requirements that NPs maintain formal collaboration with or supervision by physicians. California is among those states, implementing new regulations in 2023 via Assembly Bill (AB) 890 that provide a pathway for NPs to practice without formal supervision after 3 years of practice and without any physician relationship after 5 years of practice. The expectation of this and similar legislation passed in other states is that the elimination of physician oversight requirements will improve access to care, especially primary care services. However, there have been few studies of whether and how NPs shift their employment, the services they provide, and the populations they serve after such regulatory changes. This article examines unique survey data collected in California at the advent of AB 890's implementation to understand the practice patterns of NPs before the pathway

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to independence was implemented and their plans for practice after AB 890's implementation.

Our research question and analytical approach were guided by conceptual underpinnings of social identity theory,¹³ which stipulates that an individual's sense of self is partly derived from their social group memberships (eg, race, education, and practice setting). To this end, an individual identifying with certain group characteristics may be more inclined to serve patients with similar characteristics based on shared identity and solidarity with patients of similar backgrounds.

Methods

Data

A survey was fielded to a stratified random sample of 3300 NPs and 300 dually-certified NP-Nurse Midwives (NP-NMs) with California licenses and mailing addresses in late 2022. The survey questionnaire was developed based on a 2017 survey of California NPs conducted by the state's Board of Registered Nursing, the 2018 National Sample Survey of Registered Nurses, and input from an Advisory Group that included representatives of professional and provider organizations. The questionnaire underwent cognitive testing and multiple revisions before being finalized for both email and paper distribution.

The survey sample was drawn from the publicly-available mailing list of NPs available from the California Department of Consumer Affairs website, which is the agency that houses the Board of Registered Nursing. The downloadable file includes names and addresses; addresses were verified using the National Change of Address database and assigned to 9 regions. The survey sample was stratified by region to ensure an adequate number of responses for regional analyses. After selecting the sample, the research team shared the names and addresses of those sampled with the California Association of Nurse Practitioners and the California Nurse Midwife Association to match email addresses in their databases to the survey sample. Email addresses were matched for 432 NPs (approximately 13% of the NP sample) and 60 NP-NMs (approximately 20% of the NP-NM sample).

A combination of email and paper mail was used to field the survey to maximize the response rate,¹⁴ beginning with email distribution in July and moving to paper distribution in August 2022. Multiple reminders were sent to non-respondents. Approximately 45.7% of the respondents completed the survey online. Paper survey responses were entered into a database using double data entry to ensure accuracy.

By the end of the data collection period, there were 997 responses available for data analysis. A total of 96 cases were determined to be ineligible for the survey due to the survey packet being returned for lack of a current mailing address (95) or reported death (1). Thus, there was a total of 3504 eligible NPs and a 28.3% response rate for the eligible population.

In addition, we used county-level data from the Area Health Resource File, the California Medical Board, and the California Department of Finance.

Measures

We constructed 2 dependent variables from the survey data to examine primary care practice and patient panel characteristics: respondents who reported that they provided primary care at least 75% of the time, and respondents who reported

that at least 50% of their patient panel was insured by Medicaid. We tested whether our results were sensitive to cut-points of 50% for primary care and 30% for Medicaid patient panel.

In addition, we constructed 2 dependent variables that ascertained whether and to what extent clinicians were considering changing their practice in response to the implementation of AB 890, based on responses to the following question: "California regulations will soon be established to allow NPs to practice without physician supervision. To what degree are you interested in making each of these types of changes in your employment or practice due to this change?" Response options to this question included a series of potential employment and practice-related changes that were measured using a 4-point Likert scale of "no interest in this," "somewhat interested in this," "seriously considering this," and "definitely planning to make this change." We created binary measures for 2 of the response items: (1) "Establish my own primary care NP practice" and (2) "Change my practice to serve more Medicaid patients." Using these binary measures, we compared NPs who were seriously considering or definitely planning to make the change relative to NPs who were not considering or only somewhat considering the change. We tested the sensitivity of our results to adding "somewhat interested in this" responses to the positive outcome.

The explanatory variables in the analysis were selected using the framework of social identity theory, as noted above, as well as human capital theory, which links the skills of workers with their employment decisions and outcomes.¹⁵ Variables associated with social identity include gender (male, female), age (categorized into under 40 years, 40-49 years, 50-59 years, and 60 years and older to capture potential cohort effects), race/ethnicity (White, Black/African-American/African, Hispanic/Latino, Asian/Pacific Islander, Mixed and other), and employment setting (out-patient clinic, community health centers (CHC)/federally qualified health centers (FQHCs), urgent/acute care, private physician-led clinic, HMO practice, other setting). Variables associated with human capital include highest NP education (master's, doctorate), license type (NP only, NP-NM combined), years since licensure, and years between RN and advanced practice registered nurse (APRN) degree. We also included marital status (married, not married) and presence of children at home (yes, no) to measure household factors that might facilitate or constrain employment decisions, and rural vs urban location which may reflect both social identity and employment opportunities. We also included variables that measured the county-level primary care physician supply per 10 000 population, the percentage of the population in rural areas, and the percentage of the population enrolled in Medicaid sourced from the U.S. Area Health Resource File, as variables that may affect the demand for NP services and for Medicaid acceptance.

Statistical analysis

We used descriptive statistics to examine the number of NPs providing patient care overall, the number and characteristics of those providing primary care at least 75% of their time, and the number and characteristics of those with at least 50% of their patient panel insured by Medicaid. We also described the characteristics of NPs who reported they are considering or planning to change their practice in response to AB 890

compared to those who are not considering changing their practice.

Next, we used multivariable logistic regression to estimate the importance of NPs' characteristics in predicting their providing primary care at least 75% of the time, having at least 50% of their patients insured by Medicaid, planning to establish an independent primary care practice, and planning to increase the proportion of Medicaid enrollees in their patient population. All regression models controlled for NPs' demographic and education characteristics and the county characteristics described above. We report marginal probabilities calculated from the regression coefficients.

To address differential response rates by age group and region, analyses were weighted per the sample design (regional stratification) and raked to match the respective age distributions of NPs and NP-NMs based on BRN reports.^{16,17} Stata MP 15.1 was used to prepare and analyze the data. We considered $P = 0.05$ to indicate statistical significance, although we discuss some differences that were close to this cutoff.

Limitations

This study has several limitations. First, the survey data were self-reported and thus might contain errors. We conducted multiple checks for consistency and outlier values when preparing the data, and values that were inconsistent or outside a plausible range were converted to "missing." However, some errors might remain. Second, responses about future practice intentions may not reflect the behavior that will be observed in the future. Third, analyses were cross-sectional, so associations between variables cannot be interpreted as indicating causal relationships. Fourth, some racial/ethnic categories, such as Native American, had too few responses to disaggregate, and there were too few non-binary gender respondents to include an indicator for this group. Fifth, while the survey obtained a good response rate, weighting might not fully compensate for response bias, especially since our analytic sample consisted of respondents with complete data in covariates. We conducted a sensitivity analysis of covariate differences comparing respondents with missing data ($n = 393$) to our analytic sample with complete data ($n = 604$) and found higher proportions of individuals from African-American or Black, Hispanic, Asian, or mixed-race backgrounds in our analytic sample. In addition, we noted higher proportion of individuals with a DNP/PhD (compared to Master education, higher proportion of men, and fewer years since initial licensure for individuals with no missing data. This suggest that our analytic sample represented the views of a diverse group of clinicians but may have overrepresented views of individuals with DNPs/PhDs, men, and fewer years in the workforce; and thus, may not fully represent the population of NPs in California. Finally, our data are for California only and may not be generalizable to the primary care practice patterns of NPs in other states or the intentions of NPs to change practice in other states.

Results

The dataset included 997 NPs (weighted $N = 27\,649$), of whom 77.1% reported that they were currently providing patient care (unweighted $N = 670$; weighted $N = 21\,326$). Analyses were conducted for the population of NPs for whom all outcome and explanatory variables were available,

resulting in between 592 and 604 observations depending on the outcome examined (weighted $N = 19\,142$ to $19\,230$).

Primary care practice and Medicaid panel characteristics

Among employed NPs, 47.2% reported that they provided primary care in their principal position. Descriptive characteristics of NPs who provided primary care at least 75% of the time were similar compared to those who provided primary care less than 75% of the time or not at all. Compared to dually-certified NP-MNs, a larger percentage of NPs provided primary care at least 75% of the time (29.5% vs 7.4%, $P < 0.001$) (Table 1). Nurse practitioners who identified as Black/African-American/African had the largest percentage of clinicians practicing primary care at least 75% of the time (51.2%) and Hispanic/Latino NPs had the smallest percentage (22.2%), although race/ethnicity groups were not statistically significantly different from one another ($P = 0.19$). On average, the number of primary care physicians per 10 000 population was lower in counties where NPs provided primary care at least 75% of the time compared to counties where NPs provided primary care less than 75% of the time (7.28 vs 7.93, $P = 0.004$). Nurse practitioners who provided primary care at least 75% of the time resided in counties with a higher percentage of residents in rural areas compared to NPs who provided primary care less than 75% of the time ($P < 0.001$).

Overall, 8.8% of NPs reported that at least 50% of their patients were enrolled in Medicaid. Nurse practitioners who reported having 50% or more patients insured by Medicaid reported fewer years since initial licensure (8.5 vs 11.7 years, $P = 0.026$) compared with NPs who reported less than 50% of their patients were insured by Medicaid. The percentage of NPs reporting a majority Medicaid panel ranged between 6.2% for White NPs to 17.4% for NPs of mixed or other race/ethnicity but, overall, race and ethnicity differences were not statistically significant ($P = 0.12$) (Table 1).

Multivariable regression results from the models predicting provision of primary care at least 75% of the time and having a patient panel of at least 50% Medicaid-insured patients are reported in Table 2. Nurse practitioners employed in CHCs or FQHCs were 43.6 percentage points ($P < 0.001$) more likely than NPs in outpatient clinics to provide primary care least 75% of the time. Similarly, NPs in private physician-led practices were 30.1 percentage points more likely to provide primary care 75% of the time than NPs in outpatient clinics ($P < 0.001$). Nurse practitioners, as compared to dually-certified NP-NM, were 24.3 percentage points more likely to provide primary care 75% of the time. Nurse practitioners with a Medicaid patient panel of 50% or greater were 9.6 percentage points more likely than NPs in outpatient clinics to be practicing in CHCs/FQHCs, but this difference fell outside traditional significance levels ($P = 0.079$). Other predictors of having a Medicaid patient panel of 50% or greater were not statistically significant. The results were similar for outcomes of providing primary care at least 50% of the time and for 30% Medicaid patient panel (Appendix Table A [to access the Appendix, click on the Details tab of the article online]).

Plans for practice change following AB 890

Overall, 21.7% of NPs indicated that they were seriously considering or definitely planning to establish an independent primary care practice in response to the passage of AB 890. In

Table 1. Characteristics of California NPs who provided primary care at least 75% of the time and had at least a 50% Medicaid patient panel, 2023.

	Primary care less than 75% of the time	Primary care at least 75% of the time	P-value	Less than 50% Medicaid patients	At least 50% Medicaid patients	P-value
Gender			0.668			0.704
Male	70.47	29.53		92.77	7.23	
Female	73.49	26.51		91.21	8.79	
Age			0.876			0.097
Under 40	71.31	28.69		87.91	12.09	
40-49	72.9	27.1		91.12	8.88	
50-59	69.49	30.51		94.1	5.9	
Over 60	67.55	32.45		96.44	3.56	
Race/ethnicity			0.194			0.123
White	72.22	27.78		93.85	6.15	
Black/African-American/ African	48.81	51.19		87.75	12.25	
Hispanic/Latino	77.78	22.22		86.09	13.91	
Asian/Pacific Islander	69.63	30.37		91.97	8.03	
Mixed/other	75.53	24.47		82.64	17.36	
Marital status			0.117			0.798
Not married	76.58	23.42		91.96	8.04	
Married	68.49	31.51		91.16	8.84	
Children at home			0.192			0.802
No children at home	73.69	26.31		91.74	8.26	
Children	67.63	32.37		91.01	8.99	
Education			0.305			0.559
No DNP or PhD	70.02	29.98		91.68	8.32	
DNP or PhD	77.17	22.83		89.11	10.89	
Clinician type			<0.001			0.120
NP-NM	92.6	7.4		83.59	16.41	
NP	70.54	29.46		91.49	8.51	
Setting			<0.001			0.073
CHC/FQHC	38.05	61.95		90.1	9.9	
Urgent care/acute care	88.1	11.9		93.83	6.17	
Outpatient	83.45	16.55		97.76	2.24	
Private physician led	50.12	49.88		95.67	4.33	
HMO practice	77.28	22.72		90.94	9.06	
Other	73.45	26.55		82.07	17.93	
Years since licensure	11.48	11.53	0.946	11.76	8.5	0.026
Rurality			0.825			0.995
Urban	70.81	29.19		91.39	8.61	
Rural	74.22	25.78		91.34	8.66	
Primary care physicians per 10 000 pop	7.93	7.28	0.004	7.77	7.28	0.193
% rural pop in county	0.05	0.07	<0.001	0.05	0.07	0.067
% enrolled in Medicaid	0.36	0.38	0.062	0.36	0.38	0.315

Source: Authors' analysis of the California Survey of Nurse Practitioners and Nurse Midwives, 2023. Statistical differences between groups were assessed with a *t*-test for continuous variables and chi-square tests for dichotomous and categorical variables.

Abbreviations: CHC, community health clinic; DNP, Doctor of Nursing Practice; FQHC, federally qualified health center; pp, percentage point.

addition, 28.3% indicated that they were seriously considering or definitely planning to serve more Medicaid enrollees following implementation of AB 890.

Table 3 presents descriptive statistics comparing characteristics of NPs who were seriously considering or definitely planning to establish an independent practice relative to those who were not considering or only somewhat considering this change, and also for NPs who were seriously considering or definitely planning to serve more Medicaid patients relative to those NPs who were not considering or only somewhat considering making such a change. The percentage of NPs reporting plans to establish an independent practice ranged between 14.6% for White NPs to nearly half of Black/African-American/African NPs (46.3%); racial and ethnic differences in this interest were statistically significant ($P = 0.003$). Nearly half of all NPs (44.6%) who had completed a DNP or PhD were seriously or definitely planning to establish their own practice compared to

18.8% of NPs who had a Master's degree ($P < 0.001$). Interest in establishing an independent primary care practice was significantly associated with a lower number of primary care physicians per 10 000 ($P = 0.047$) and with a higher percentage of county residents enrolled in Medicaid ($P = 0.014$).

Descriptive statistics showed notable differences in race/ethnicity and education comparing NPs who expressed serious or definite plans to serve more Medicaid patients vs those who did not. More than half of Hispanic/Latino NPs (55.9%) and 42.3% of Black/African-American/African NPs expressed a serious or definite interest in serving more Medicaid patients, in contrast with less than a quarter (20.3%) of White NPs ($P = 0.004$). More than half of all NPs (53.7%) who had completed a DNP or PhD were seriously or definitely planning on serving more Medicaid patients, compared to 24.7% of NPs who had a Master's degree ($P < 0.001$). There was a higher percentage of county residents enrolled in Medicaid for NPs

Table 2. Predictors of NPs' current practice, 2023.

	Primary care at least 75% of the time		At least 50% Medicaid patients	
	Marginal effects (pp)	P-value	Marginal effects (pp)	P-value
Female	0.020	0.772	0.025	0.474
Under 40 (Ref)				
40-49	-0.051	0.388	-0.024	0.544
50-59	-0.032	0.62	-0.041	0.343
Over 60	0.008	0.931	-0.066	0.221
White (Ref)				
Black/African-American/African	0.15	0.268	0.025	0.613
Hispanic/Latino	-0.075	0.250	0.067	0.276
Asian/Pacific Islander	0.064	0.232	0.013	0.698
Mixed/other	0.022	0.762	0.111	0.071
Married	0.074	0.136	0.019	0.597
Children at home	0.044	0.377	-0.01	0.766
DNP or PhD	-0.074	0.223	0.019	0.692
NP (not NP-NM)	0.243	<0.001	-0.09	0.24
Outpatient clinic (Ref)				
CHC/FQHC	0.436	<0.001	0.096	0.079
Urgent care/acute care	-0.045	0.453	0.025	0.579
Private physician led	0.309	<0.001	-0.037	0.255
HMP practice	0.083	0.454	-0.002	0.976
Other	0.098	0.091	0.036	0.368
Years since licensure	0.001	0.818	-0.002	0.475
% rural pop in county	0.232	0.141	0.116	0.236
Primary care physicians supply per 10 000	-0.013	0.319	-0.004	0.701
% Medicaid in county	-0.029	0.916	0.042	0.845
Number of observations		593		604

Source: Authors' analysis of the California Survey of Nurse Practitioners and Nurse Midwives, 2023.

Abbreviations: CHC, community health clinic; DNP, Doctor of Nursing Practice; FQHC, federally qualified health center; pp, percentage point.

who were seriously considering or definitely planning to serve more Medicaid patients compared with other NPs (38% vs 36%, $P = 0.037$).

Predictors of interest in opening an independent primary care practice

Marginal probabilities from the multivariable logistic regression models predicting serious or definite plans to pursue an independent practice are shown in [Table 4](#). Nurse practitioners who identified as Black/African-American/African were 27.4 percentage points more likely than White NPs to report at least serious interest in establishing an independent primary care practice ($P = 0.015$). Hispanic/Latino NPs were also more likely to be seriously considering establishing an independent practice (22.3 percentage points), although this difference fell just outside our cutoff for statistical significance ($P = 0.052$). Educational differences were also predictive of interest in establishing an independent practice. Nurse practitioners who completed a DNP or PhD were 25.9 percentage points more likely to express interest in establishing an independent practice compared to a Master's degree ($P < 0.001$). Other significant predictors of serious interest or definite plans to establish an independent practice were age cohorts of 50-59 years of age and over 60, with a 13.1 ($P = 0.031$) and a 18.9 ($P = 0.017$) percentage point increase respectively, compared to younger cohorts of under 40 years of age. Lastly, years since licensure was negatively associated with a serious interest to establish an independent practice, with a -0.6 percentage point decrease for each year ($P = 0.034$). Results were similar when we added "somewhat considering" independent primary care practice to the outcome ([Appendix Table B](#) [to access the Appendix, click on the Details tab of the article online]).

Predictors of intent to serve more Medicaid patients

Hispanic/Latino NPs were 32.1 percentage points more likely than White NPs ($P = 0.003$) to have at least serious interest in serving more Medicaid patients. Black/African-American/African NPs and NPs of mixed race were 17.6 and 14.9 percentage points more likely than White NPs to have a serious interest in serving more Medicaid patients, though both results did not reach statistical significance ($P = 0.078$ for both). Completion of a DNP or PhD compared to a Master's degree was also a significant predictor (28.6 percentage points, $P < 0.001$). A couple of other predictors that were close to reaching statistical significance were years since licensure (a -0.6 percentage point decrease, $P = 0.057$), and being a woman (a -11.8 percentage point decrease compared to men, $P = 0.077$). Results were similar when we added "somewhat interested" in serving more Medicaid patients to the outcome, but all predictors mentioned above that fell outside statistical significance were below the $P < 0.05$ cutoff ([Appendix Table B¹⁵](#)).

Discussion

Rapid growth of the NP workforce has provided an opportunity to mitigate ongoing shortages of primary care physicians. The NP workforce has been growing rapidly in California, more than doubling from 14 000 in 2010 to 30 000 in 2023.¹⁸ Results from this survey indicate that NPs often serve as primary care providers, with 47.2% of NPs indicating that they provide at least some primary care. Physicians in family medicine, internal medicine, and other primary care-related specialties account for only 27% of California's physician workforce,¹⁹ and the extent to which these physicians are actually providing primary care services is unknown.

Table 3. Characteristics of NPs who are seriously considering or definitely planning practice changes compared to NPs not or somewhat considering practice change, 2023.

	Not seriously considering independent primary care practice	At least seriously considering independent primary care practice	P-value	Not seriously considering serving more Medicaid patients	At least seriously considering serving more Medicaid patients	P-value
Gender			0.363			0.035
Male	72.54	27.46		57.57	42.43	
Female	79.06	20.94		73.84	26.16	
Age			0.426			0.678
Under 40	79.94	20.06		68.86	31.14	
40-49	81.92	18.08		75.15	24.85	
50-59	73.52	26.48		73.37	26.63	
Over 60	75.35	24.65		71.22	28.78	
Race/ethnicity			0.003			0.004
White	85.38	14.62		79.47	20.53	
Black/ African-American/ African	53.72	46.28		57.75	42.25	
Hispanic/Latino	60.42	39.58		44.11	55.89	
Asian/Pacific Islander	74.44	25.56		69.7	30.3	
Mixed/other	76.98	23.02		63.83	36.17	
Marital status			0.862			0.522
Not married	77.73	22.27		74.33	25.67	
Married	78.56	21.44		71.04	28.96	
Children at home			0.481			0.312
No children at home	79.79	20.21		74.3	25.7	
Children	76.71	23.29		69.46	30.54	
Education			<0.001			<0.001
No DNP or PhD	81.22	18.78		75.24	24.76	
DNP or PhD	55.34	44.66		46.32	53.68	
Clinician type			0.514			0.953
NP-NM	82.83	17.17		71.53	28.47	
NP	78.26	21.74		72.00	28.00	
Setting			0.650			0.199
CHC/FQHC	82.9	17.1		64.98	35.02	
Urgent care/acute care	81.45	18.55		71.32	28.68	
Outpatient	75.29	24.71		78.68	21.32	
Private physician led	82.88	17.12		82.26	17.74	
HMO practice	77.53	22.47		77.11	22.89	
Other	74.73	25.27		67.33	32.67	
Years since licensure	11.72	10.6	0.330	11.98	10.2	0.075
Rurality			0.825			0.241
Urban	70.81	29.19		72.07	27.93	
Rural	74.22	25.78		53.47	46.53	
Primary care physicians per 10 000 pop	7.83	7.39	0.047	7.76	7.67	0.785
% rural pop in county	0.06	0.04	0.064	0.05	0.05	0.921
% enrolled in Medicaid	0.36	0.38	0.014	0.36	0.38	0.037

Source: Authors' analysis of the California Survey of Nurse Practitioners and Nurse Midwives, 2023. Statistical differences between groups were assessed with a *t*-test for continuous variables and chi-square tests for dichotomous and categorical variables.

Abbreviations: CHC, community health clinic; DNP, Doctor of Nursing Practice; FQHC, federally qualified health center; pp, percentage point.

The passage of AB 890, which provided California's NPs with a pathway to practice without formal physician collaboration, has spurred interest among many NPs to establish independent primary care practices and to serve more Medicaid enrollees. Our results revealed notable differences in the characteristics of NPs who are considering establishing an independent primary care practice and who are considering changing their practice to serve more Medicaid enrollees. The strongest predictors of serious interest or definite plans to establish an independent primary care practice or increasing the percentage of Medicaid enrollees were identifying as Black/African-American/African or Hispanic/Latino, and

having completed a DNP or PhD. The association between race/ethnicity and practice change intentions is aligned with social identity theory. The association with having a doctoral degree may be consistent with both social identity theory and human capital theory, while the association with older age cohorts observed for the intention to establish an independent practice outcome is likely due to experience gained in the field and is aligned with human capital theory. DNPs comprise the largest proportion of doctorally-prepared NPs; the DNP is a practice-focused doctorate that can be obtained to enter the profession or after an initial Master's-level NP education. The DNP was initially envisioned in the late 1990s as a

Table 4. Predictors of NPs seriously considering or definitely planning practice changes compared to NPs not or somewhat considering practice change, 2023.

	At least seriously interested in independent primary care practice		At least seriously interested in serving more Medicaid patients	
	Marginal effects (pp)	P-value	Marginal effects (pp)	P-value
Female	-0.046	0.46	-0.118	0.077
Under 40 (Ref)				
40-49	0.017	0.732	-0.039	0.488
50-59	0.131	0.031	0.029	0.646
Over 60	0.189	0.017	0.129	0.161
White (Ref)				
Black/African-American/African	0.274	0.015	0.176	0.078
Hispanic/Latino	0.223	0.052	0.321	0.003
Asian/Pacific Islander	0.077	0.118	0.07	0.159
Mixed/other	0.06	0.356	0.149	0.078
Married	0.003	0.948	0.04	0.417
Children at Home	0.026	0.592	0.045	0.383
DNP or PhD	0.259	<0.001	0.286	<0.001
NP (not NP-NM)	0.04	0.618	-0.009	0.916
Outpatient clinic (Ref)				
CHC/FQHC	-0.13	0.058	0.072	0.384
Urgent care/Acute Care	-0.08	0.284	0.035	0.645
Private physician led	-0.099	0.153	-0.039	0.597
HMP practice	-0.032	0.749	0.007	0.949
Other	-0.032	0.644	0.088	0.185
Years since licensure	-0.006	0.034	-0.006	0.057
% rural pop in county	-0.198	0.347	0.233	0.147
Primary care physicians supply per 10 000	-0.006	0.657	0.017	0.24
% Medicaid in county	0.17	0.529	0.361	0.211
Number of observations		593		604

Source: Authors' analysis of the California Survey of Nurse Practitioners and Nurse Midwives, 2023.

Abbreviations: CHC, community health clinic; DNP, Doctor of Nursing Practice; FQHC, federally qualified health center; pp, percentage point.

clinical doctorate to reflect the expanded diagnostic and management skills that had been incorporated into NP curricula and better prepare NPs for increasingly complex clinical care. However, in 2019, approximately 85% of programs were focused on administration and leadership²⁰ and only 15% on clinical care. The knowledge thus obtained in most DNP programs is well-aligned to the establishment of an independent practice. Moreover, DNP competencies include cultural competency and population health knowledge, which are well-matched to working with Medicaid beneficiaries. Whether the pursuit of a DNP increases interest in independent primary care practice or reflects a pre-existing interest is unknown. Research to date has not documented a significant relationship between the DNP and practice leadership, favorable NP-physician relationships, or quality of primary care.^{21,22}

The strong interest among many California NPs to pursue establishing an independent primary care practice and to expand their service to Medicaid enrollees is consistent with the goal of AB 890 to expand access to care, particularly for people in underserved communities and populations. The strong association between racial/ethnic identity and greater interest in practice change suggests that increasing the diversity of the NP workforce may be an important strategy for increasing services to Medicaid enrollees. Future research should examine whether NPs follow through with their intentions to establish independent primary care practices and serve more Medicaid enrollees, as well as to assess whether the association with race/ethnicity observed in this study translates into a causal relationship between greater workforce diversity and expanded services to Medicaid beneficiaries.

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Supplementary material

Supplementary material is available at *Health Affairs Scholar* online.

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Conflicts of interest

Please see ICMJE form(s) for author conflicts of interest. These have been provided as supplementary materials.

Notes

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