

# The Impact of the COVID-19 Pandemic on California's Registered Nurse Workforce: Preliminary Data

by Joanne Spetz, Lela Chu, and Lisel Blash

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## Overview

This study used data from two surveys conducted in California to assess the current and future supply and demand of RNs and to learn how the coronavirus pandemic is affecting this essential workforce. We find that many older RNs have left nursing, and a large number intend to retire or quit within the next two years. A shortage of RNs is estimated to exist in 2021 but will diminish as RN education enrollments return to and surpass pre-pandemic levels.

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## Executive Summary

### Background

During the COVID-19 pandemic, numerous concerns about the nursing workforce have been reported. This study used data from two surveys conducted in California to assess the current and future supply and demand of RNs and to learn how the coronavirus pandemic is affecting this essential workforce.

### Methods

Preliminary data from the 2020 Survey of California Registered Nurses and final data from the 2019-20 Annual Schools Survey were analyzed. These surveys provided data that were used to produce a preliminary update to the forecasts of RN supply and demand in California. The supply projections are based on a stock-and-flow model and the demand projections are based on historic RN employment and rates of hospital utilization by population age group.

### Results

The preliminary data from the 2020 Survey of Registered Nurses indicate that many older RNs have left nursing, and a large number intend to retire or quit within the next two years. At the same time, unemployment among younger RNs increased and there were (small) decreases in new enrollments in RN education programs during the 2019-20 and 2020-21 academic years. Together, these changes have led to a reduction in the supply of RNs compared with previous projections. A shortage of RNs is estimated to exist in 2021. RN education enrollments are projected to surpass pre-pandemic levels during the 2022-23 academic year, which will lead to a closing of the shortage by 2026.

### Discussion

With a shortage of RNs likely underway now, employers need to redouble their efforts to retain RNs and develop career paths for newly-graduated RNs. They also need to rapidly develop and implement strategies to mitigate the potential harm of shortages over the next five years.

## Background

Since the start of the COVID-19 pandemic, numerous concerns about the nursing workforce have been reported. As states prepared for surges of patients as each wave of the pandemic emerged, there were fears of [shortages of registered nurses](#) (RNs) prepared to work in intensive care units. In addition, in spring 2020 nursing education programs reported that their students were not able to continue their clinical education due to worries about infection risks within hospitals. Education programs adopted clinical simulation training and shifted didactic courses to online platforms but ultimately [struggled to modify their programs](#) amidst the limitations caused by the pandemic. Some programs deferred starting a new cohort of nursing students in the 2020-2021 academic year, while others reduced new fall enrollments to ensure classrooms had adequate physical distance between students and faculty. In addition, some accepted students may have deferred their admission because they did not want to engage in remote education. At the same time, anecdotal reports suggested that [some RNs decided to quit working](#) to reduce the risk of infection with SARS-Cov2 and to recover emotionally from the [high stress of working during the pandemic](#). These changes could undermine the progress made over the past 20 years toward a balanced nursing labor market in California and lead to shortages of RNs in the near future.

This study used data from two surveys conducted in California to assess the current and future supply and demand of RNs and to learn how the coronavirus pandemic is affecting this essential workforce. Two sources of data were analyzed to provide a rapid assessment of the workforce: (1) preliminary data from the biennial Survey of California Registered Nurses and (2) the 2019-2020 Board of Registered Nursing Annual Schools Survey. These surveys are conducted under a contract with the California Board of Registered Nursing. This preliminary analysis, supported by the UCSF Health Workforce Research Center on Long-Term Care, provides early information about the pandemic's impact on the nursing workforce in the nation's most populous state.

## Methods

Data from two statewide surveys were analyzed and used to generate updated projections of future supply and demand for RNs in California. These preliminary analyses provide an early view of the impact of the pandemic on current RN education, employment, and demand and future supply and demand.

The [biennial Survey of California Registered Nurses](#) has been conducted every two years since 2014. The survey is sent to a sample of 8,000 to 10,000 RNs who have active California licenses. The survey questionnaire includes items about employment, education, intention to retire or quit, and demographics. The survey is sent first via email and then sent to non-respondents by postal mail six weeks after the email. The 2020 survey added an open-ended question about how the COVID-19 pandemic has affected the respondent's nursing work. The analysis presented in this report is based on 1,917 survey respondents with California addresses who received the email invitation in July, 2020 or a subsequent postal invitation and responded online by the end of October, 2020. An additional 426 respondents had addresses outside California and are not included in this analysis. The paper surveys are being processed and will be merged with the online data for a final publication in fall 2021. All analyses presented in this report are weighted to represent the total population of RNs with California addresses.

The [California Annual Schools Survey](#) is a comprehensive survey of all RN education programs in California and was revised to include questions about how schools have adjusted in response to the coronavirus pandemic. This survey went into the field in early October, 2020, and the final report was published in July, 2021. All nursing education programs responded to the survey, although one program did not report its new or projected enrollments. For this one school, we estimated enrollments based on its historic data.

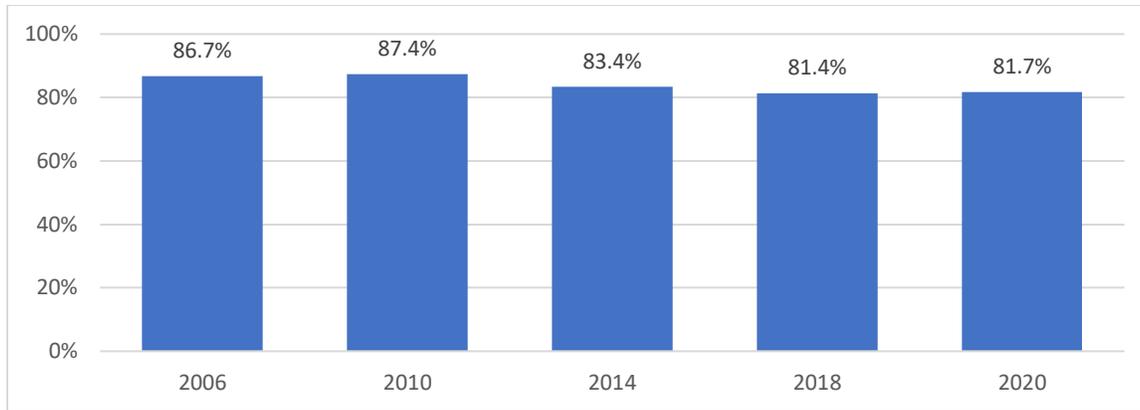
These two surveys provided data that were used to produce a preliminary update to the [forecasts of RN supply and demand in California](#), which are normally published after the biennial Survey of Registered Nurses is completed. The supply projections are based on a stock-and-flow model and the demand projections are based on historic RN employment and rates of hospital utilization by population age group. More information about the model can be obtained in the [forecasting reports published by the Board of Registered Nursing](#).

## Results

### Registered Nurse Employment

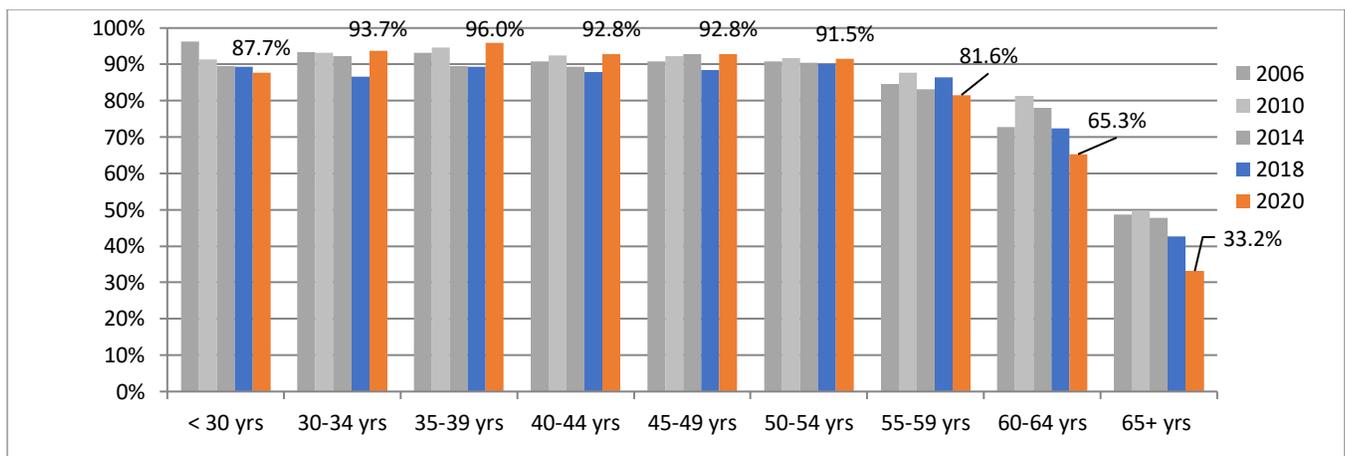
Based on preliminary survey data, we estimate that 81.7% of California-resident RNs were employed in nursing in July through October, 2020 (Figure 1). There has been a trend toward lower employment rates since 2006, with overall employment rates being five percentage points lower in 2020 than in 2006. However, there was essentially no change in the overall employment rate between 2018 and 2020.

**Figure 1. Percentage of California-resident RNs employed in nursing, 2006-2020**



Although there was not an overall change in the RN employment rate for the responses received from July to October, 2020, compared with 2018, there were notable changes for some age groups (Figure 2). The employment rate for nurses between the ages of 30 and 54 years were higher in 2020 compared with 2018, with larger increases among nurses 30 to 39 years old (from 89.4% to 96%). However, the employment rates of nurses 55 years and older were lower in 2020 than in 2018, as was the employment rate for nurses under 30 years old. The decrease was largest among nurses 65 years and older, dropping from 42.6% in 2018 to 33.2% in 2020. There was a seven percentage-point decrease in employment for nurses 60 to 64 years old, and a five percentage-point drop for nurses 55 to 59 years old.

**Figure 2. Percentage of California-resident RNs employed in nursing, 2006-2020**



There also were changes in the average number of hours worked per week by RNs, as seen in Table 1. The average number of hours worked per week by all employed RNs was 36.8 hours in 2018 but only 33.6 hours in 2020. Decreases of similar magnitude were reported among RNs employed in acute care hospitals, home health, and clinics/offices. However, average hours per week for RNs employed in skilled nursing facilities rose from 36.3

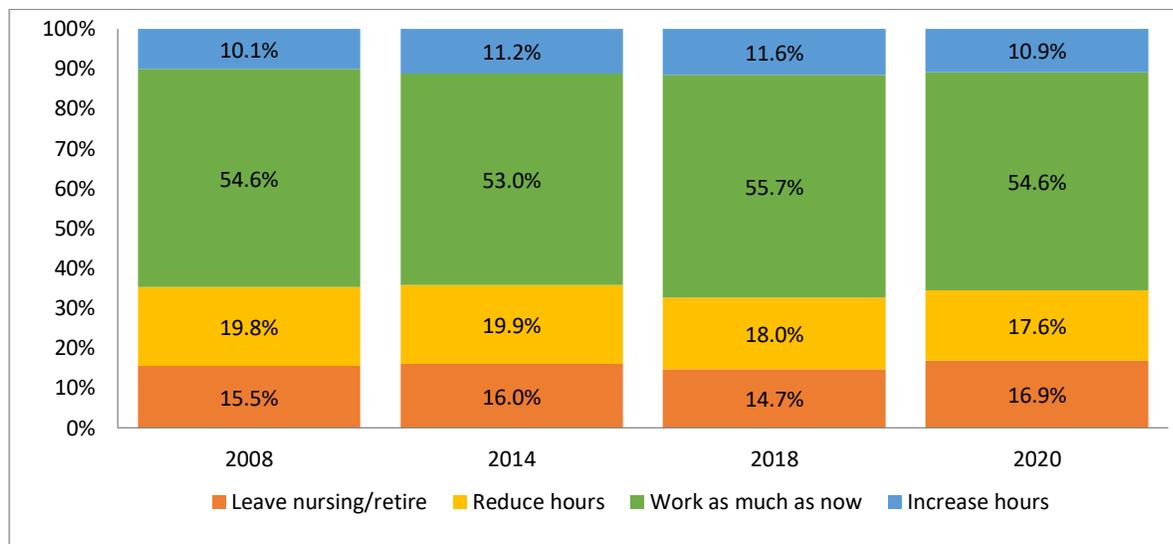
hours in 2018 to 37.1 hours in 2020. Overall, there was a seven percentage-point decrease in the percent of RNs who reported they worked full-time.

**Table 1. Average hours worked per week and full-time versus part-time employment for California-resident RNs, 2018 and 2020**

	2018	2020
<b>Average number of hours per week, all settings</b>	<b>36.8</b>	<b>33.6</b>
Average hours per week, acute care hospital	36.5	32.7
Average hours per week, skilled nursing facility	36.3	37.1
Average hours per week, home health	41.0	37.5
Average hours per week, clinic/office	38.5	34.0
<b>Employment status</b>		
Working full-time	60.2%	53.0%
Working part-time	18.4%	26.8%
Working, unknown hours	2.8%	1.7%
Not working	18.6%	18.5%

It is clear that many RNs reduced their hours of work or stopped working based on comparisons of employment and hours in 2018 versus 2020. Figure 3 explores the employment intentions of employed RNs for the next five years. The data indicate that nurses’ plans were similar in 2020 compared with past years, although there was a two percentage-point increase in the proportion planning to leave nursing or retire in 2020 compared to 2018.

**Figure 3. Employment plans for the next 5 years for employed California-resident RNs, 2008-2020**



To gain more insight into the extent to which more nurses plan to leave nursing or retire, Figure 4 reports the percentage of employed RNs who plan to retire or leave nursing in the next two years, by age group. As seen in this figure, there was a large increase in the percentage of RNs aged 55 to 64 years who plan to retire or quit in the next two years, from 11.4% in 2018 to 25.2% in 2020. At the same time, the percentage of RNs 65 years and older who plan to quit or retire in the next two years was similar in 2020 compared with 2018. However, it is important to remember that the employment rate for this age group dropped notably between 2018 and 2020, suggesting that many RNs in this age group who might have been planning to retire already did so.

**Figure 4. Percentage of employed California-resident RNs who plan to retire or leave nursing in the next 2 years, 2018 and 2020**

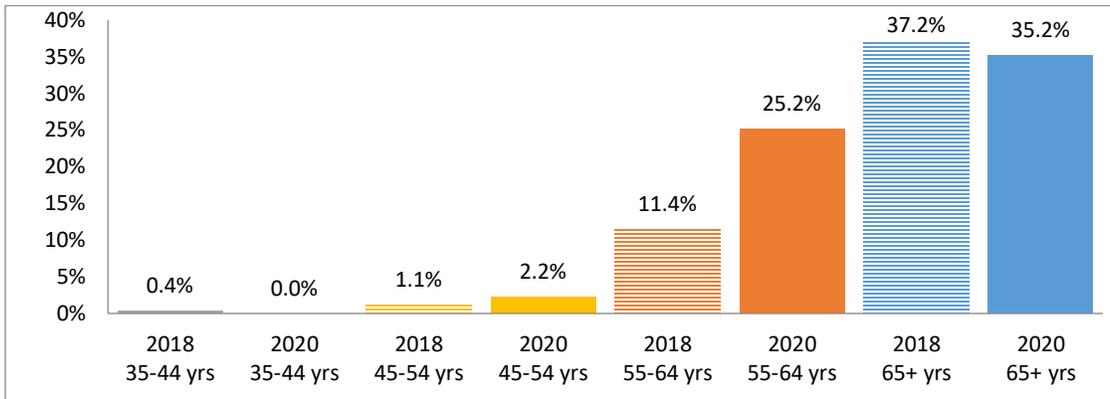
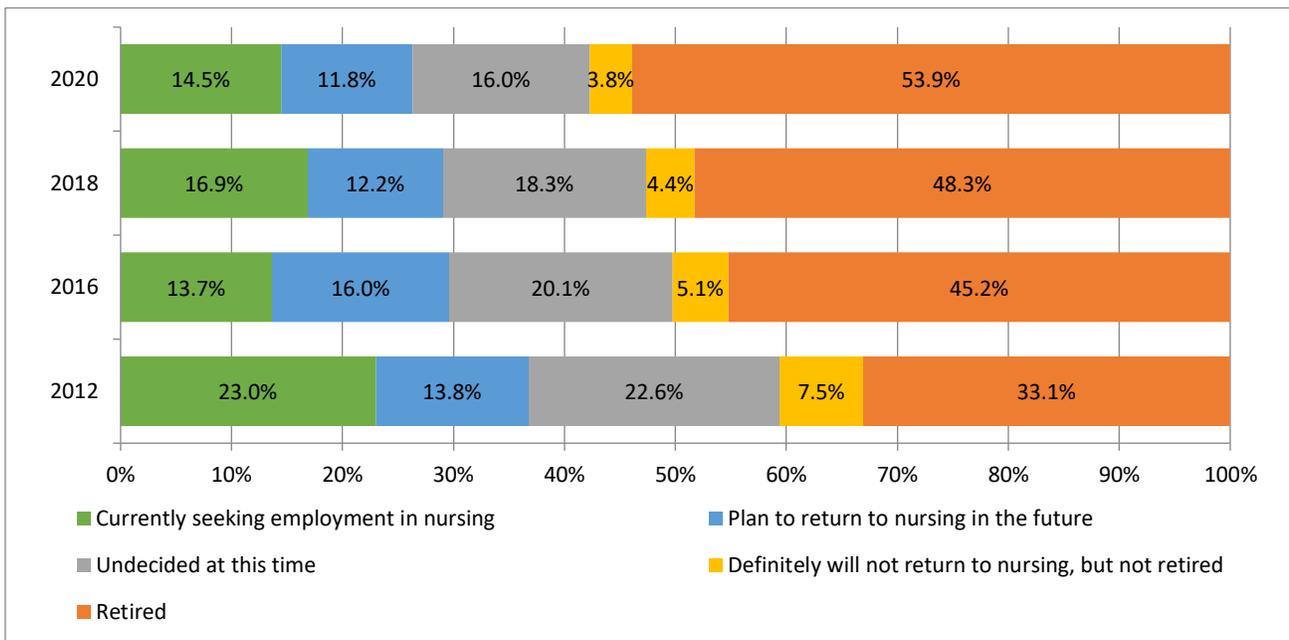


Figure 5 presents the employment intentions of RNs who are not currently working in nursing. Between 2012 and 2020, there was a notable increase in the percentage of non-working RNs who reported that they were retired, accompanied by a decrease in the percentage who reported they were looking for work or intending to return to nursing work. Note that the high percentage of nurses seeking work in 2012 was likely associated with the recession that began in late 2007; the RN labor market was in the early stages of recovery in 2012.

**Figure 5. Employment intentions of California-resident RNs who are not working in nursing, 2012-2020**



### Registered Nurse Education

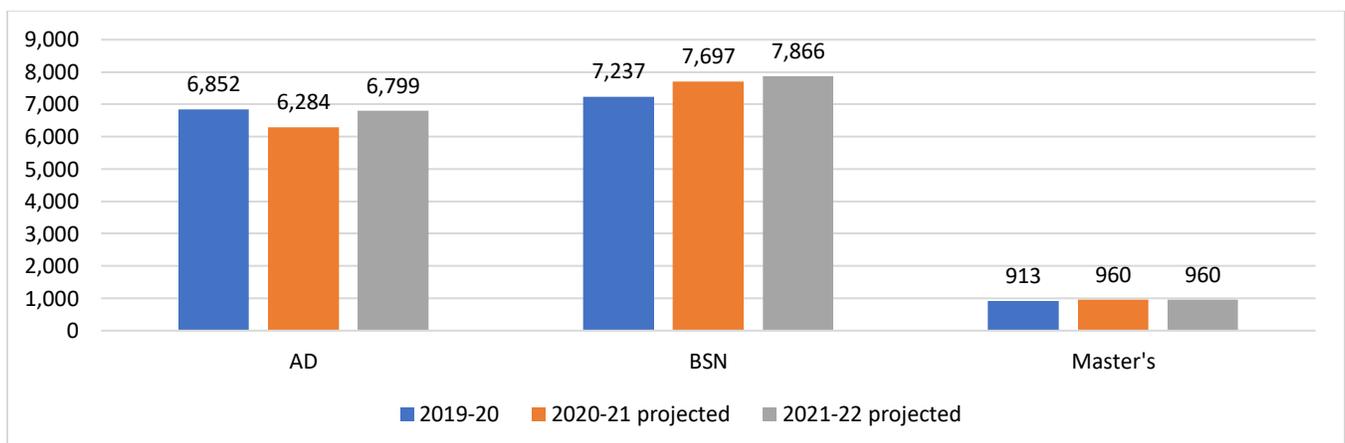
California’s nursing schools provided information about their enrollments and graduations for the 2019-20 academic year in a survey that was fielded in fall 2020. (Note that one private bachelor’s degree program did not report data; the prior year’s enrollments were used as an estimate for the 2019-20 year.) The 2019-20 academic year included several months of the pandemic, when schools were impacted by the loss of access to clinical sites and shifted instruction to online modalities to reduce virus transmission. Six education programs indicated that they skipped an admissions cohort in the 2019-20 academic year due to the pandemic. As seen in Table 2, there was a small decrease (-1%) in new enrollments from 15,150 in the 2018-19 academic year to 15,002 in 2019-20. Reductions in new enrollments were greater for associate degree (AD) programs and were negligible for bachelor’s degree (BSN) programs. All of the reduction in new enrollments occurred in public college and university RN programs, while private programs grew. The main reasons for reductions in enrollment were difficulty securing clinical placements, concerns about safety in clinical rotations, and challenges in converting to virtual instructional modalities.

**Table 2. Change in new enrollments in California RN education programs between 2018-19 and 2019-20 academic years**

	2018-19 new enrollment	2019-20 new enrollment	Percentage change
<b>Total enrollments</b>	<b>15,150</b>	<b>15,002</b>	<b>-1.0%</b>
Associate degree enrollments	7,014	6,852	-2.3%
Bachelor’s degree enrollments	7,266	7,237	-0.4%
Master’s degree enrollments	870	913	+4.9%
Public college/university enrollments	8,103	7,754	-4.3%
Private college/university enrollments	7,047	7,450	+5.7%

Figure 6 presents new enrollments in RN education programs in the 2019-20 academic year and schools’ projections of their enrollments for the 2020-21 and 2021-22 academic years. AD program directors estimated that their new 2020-21 enrollments will be 568 fewer than in the prior year (-8.3%). However, BSN program directors anticipated growth of 460 new enrollments (+6.4%) and entry-level master’s programs projected growth of 47 students (+5.1%). Thus, statewide new enrollments are projected to be only 61 students fewer in 2020-21 compared with the prior year. Enrollments are projected to increase in 2021-22 compared with the prior year, making up for the decreases observed and projected in 2019-20 and 2020-21.

**Figure 6. New and projected enrollments in RN education programs, 2019-20 through 2021-22**

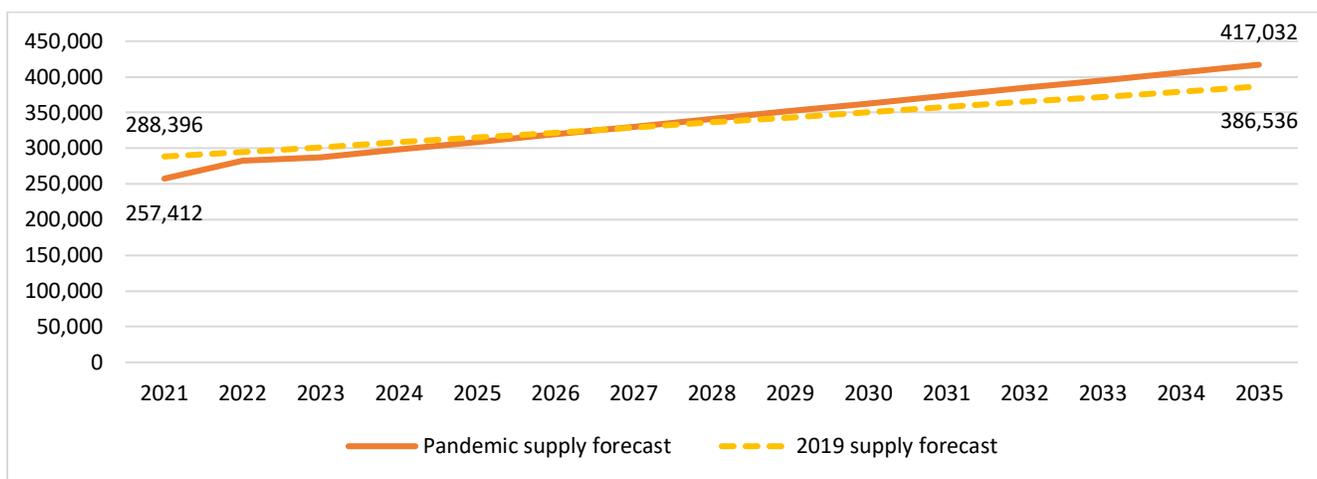


### Projections of Future Supply and Demand for RNs

The future supply of RNs was projected using the RN Survey and Schools Survey data described above. The COVID-19 pandemic has two implications for the supply projection. First, there is anticipated to be a greater-than-normal rate of RNs aged 55 to 64 years allowing their licenses to lapse. In this preliminary projection, we assume the rate will double for the next three years and then return to the pre-pandemic rate. Second, the numbers of graduates from RN education programs will be lower due to reductions in new enrollments but will recover as the 2021-22 admission cohort moves toward graduation.

Figure 7 presents two projections of full-time equivalent RN supply from 2021 through 2035. The orange line provides the projection based on assumptions described above, and the yellow line presents the projection published in 2019. Note that the pandemic-projected future enrollments of RNs are somewhat higher than those included in the 2019 model, which results in more rapid supply growth in the long-term. The new projection of supply for 2021 is 30,984 fewer than was projected in 2019. However, by 2026, supply is expected to reach the level previously projected and will be 30,496 greater in 2035 than previously projected.

**Figure 7. Projected supply of RN full-time equivalent employment, 2021-2035**

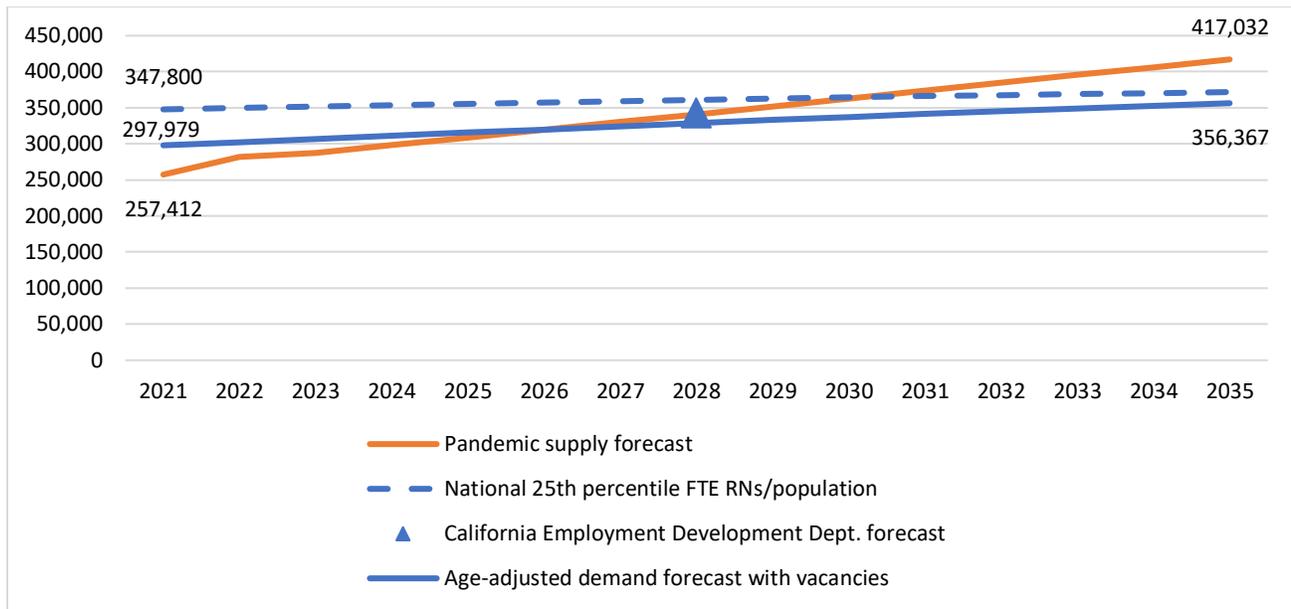


To understand the impact of changes in projected supply of RNs on California’s healthcare system, supply needs to be compared with projected demand for RNs. Figure 8 presents the new supply projection with three projections of demand: (1) a projection based on current employment of RNs and projected growth and aging of California’s population, (2) the number of full-time equivalent RNs needed to attain the national 25<sup>th</sup> percentile of RN employment per 100,000 population, and (3) the Employment Development Department’s projection of RN employment in 2028. The first demand projection adds to current employment the vacancy rate reported by the Hospital Association of Southern California for the 3<sup>rd</sup> quarter of 2019, assuming this vacancy rate applies to all employment sectors. It then projects future demand based on projected population growth and historic patterns of health care utilization for each age group.

As seen in Figure 8, the supply of RNs in 2021 is estimated to be 40,567 full-time equivalent employment below demand, which is a 13.6% gap. A shortage of RNs is projected to persist until 2026, when supply and demand become balanced. The projected supply in 2028 matches the demand projection from the Employment Development Department as well. By 2035, there is projected to be greater supply of RNs than demand, with supply surpassing the current national 25<sup>th</sup> percentile of nurse employment per 100,000 population in 2030.

Note that some RNs were not working in nursing but seeking employment in 2020, as reported above. We estimate that approximately 8,500 RNs were seeking employment, which would fill about 20% of the current shortfall.

**Figure 8. Projected supply and demand of RN full-time equivalent employment, 2021-2035**



## Discussion

The preliminary data from the 2020 Survey of Registered Nurses indicate that many older RNs have left nursing, and a large number intend to retire or quit within the next two years. At the same time, unemployment among younger RNs increased and there were (small) decreases in new enrollments in RN education programs during the 2019-20 and 2020-21 academic years. Together, these changes have led to a reduction in the supply of RNs compared with previous projections. However, RN education enrollments are projected to surpass pre-pandemic levels during the 2022-23 academic year. These new RNs are anticipated to be sufficient in numbers to fill open jobs, with supply matching demand in approximately five years.

Several limitations need to be considered. First these are statewide analyses and projections, which do not reveal [important regional differences](#) that have been previously reported. Second, the projections assume that retirements return to pre-pandemic rates after about three years. Third, the projections assume that all newly-graduated RNs obtain licenses and become available to work in California. However, if newly-graduated RNs continue to face unemployment, they may move to other states and thus not become part of California’s RN supply.

National data indicate growing interest in the RN profession. The American Association of Colleges of Nursing, which is an association for nursing programs that offer baccalaureate and graduates degrees, reported that their survey of 956 baccalaureate-granting RN education programs found an [increase of 1.5% in applications to entry-level programs and an increase of 5.6% in total enrollments](#). The 2021-22 Annual Schools Survey will provide data about whether similar growth in applications has occurred in California.

## Policy Implications

Our results are consistent with other studies that have reported concerns about [nurses’ stress during the pandemic](#) and the potential for greater numbers to [leave their jobs or to leave nursing entirely](#). Healthcare workers have reported [increases in the prevalence of depression, anxiety, and insomnia](#), which will require sustained interventions to ensure nurses’ health and long-term productivity. With a shortage of RNs likely underway now, employers need to redouble their efforts to retain RNs and develop career paths for newly-graduated RNs. They also need to rapidly develop and implement strategies to mitigate the potential harm of shortages over the next five years.