Comparing Forecasts of Registered Nurse Supply and Demand for California

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Background

Projections of future supply and demand for registered nurses (RNs) have been published by the California Board of Registered Nursing (BRN) since 2005. The forecasts are intended to guide educators, employers, and policymakers to take action to ensure that supply is adequate to meet future health care needs, while also ensuring that newly-graduated RNs are able to find employment in California.

Other organizations and researchers have also published RN supply and demand projections, based on different methods and datasets. This document compares the methods and results of some often-cited projections.
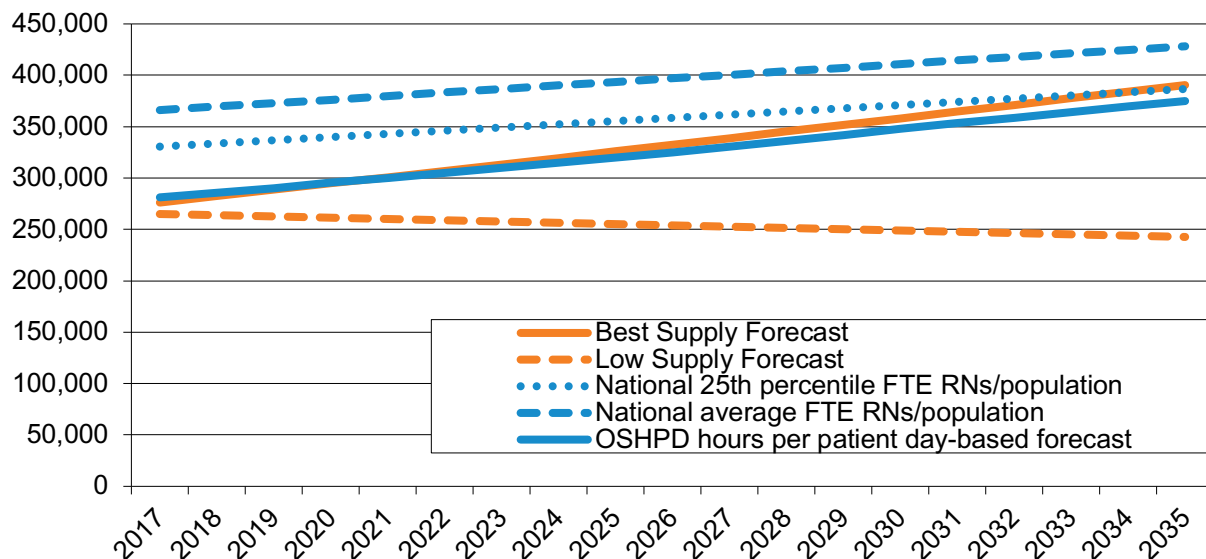
California Projections, 2017

The projections developed by the BRN are based on the BRN's surveys: the Annual Schools Survey and the Biennial Survey of Registered Nurses.

The supply projection is based on a "stock and flow" model, in which the "stock" of RNs is the number of RNs licensed and living in California, and the "flow" are the numbers of nurses entering and leaving the workforce each year. Each year, the stock of nurses changes based on the flows; the projection model thus produces and estimated increase or decrease in the supply of nurses for each year after the starting year. The total number of nurses is then multiplied by employment rates to estimate future full-time equivalent (FTE) employment.

Several different projections of demand are calculated because there are many factors that can affect future demand for RNs. The potential need for RNs does not necessarily match demand, because demand is based – at least in part – on the amount of funds employers choose to dedicate to RN employment.

The supply and demand projections are for RNs overall and do not attempt to disaggregate demand based on RN educaiton level.

Figure 1. California RN Supply and Demand Forecasts (Full-Time Equivalent)

Comparison of Projections

This table compares supply and demand projections for California RNs from multiple sources. The supply projections ranged from approximately 333,000 to 374,954. The demand projections ranged from 327,800 to 387,900. Studies that provided an estimate of the percentage of shortage/surplus reported a range from 4.1% surplus to 11.5% shortage. Over the time periods projected, these projections are likely within margins of error. The outlier is Zhang et al., who reported a projected shortage of 141,438 RNs, which would be a shortage of approximately 40%; this is an outlier in relation to other projection models.

Source	Year forecasted	Supply (FTEs)	Demand (FTEs)	Shortage/ Surplus	Notes
California Board of Registered Nursing, 2017	2035	390,487	374,954	4.1% surplus	Supply projection based on stock-and-flow model. Demand projections are straight-line models with several different calibrations.
California Employment Development Department	2026		327,800		Projections based on national Dept. of Labor models, which are for all occupations and may not distinguish specific occupations well. Model does not include a supply projection.
National Center for Health Workforce Analysis, U.S. Dept. of Health and Human Services, 2017	2030	343,400	387,900	11.5% shortage	Detailed microsimulation model based on national data sources; California RN data not used and models do not account for California's unique mix of integrated care.
Auerbach, DI, Buerhaus, PI, Staiger, DO. How fast will the registered nurse workforce grow through 2030? Projections in nine regions of the country. Nursing Outlook, 2017	2030	~333,000			Model uses a cohort approach with 36 years of Census data. Model is for regions, not states. The Pacific region projection is approximately 470,000 FTEs in 2030. In 2014, California had 70.8% of RNs. If this percentage applies to 2030, then California supply would be 332,767.
Zhang, X, Tai, D, Pforsich, H, Lin, VW. United States Registered Nurse Workforce Report Card and Shortage Forecast: A Revisit. American Journal of Medical Care Quality, 2017	2030			141,348 RNs (no percentage reported)	Demand for RNs is a straight-line estimate based on projected national Medicare spending. Supply is estimated using a method similar to Auerbach et al., but with only 10 years of data. Supply and demand numbers not published. Note that the result implies a shortage of nearly 40%.