



University of California  
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# Forecasting the Nursing Workforce in California

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# Goals of this project

- Forecast the supply of nurses
- Forecast the demand for nurses
- Compare the supply to projected demand
  
- Based on the projected shortage/surplus, we can...
  - Understand the short-term and long-term needs for nurses in California
  - Identify strategies to address future shortages

# Changes to the model

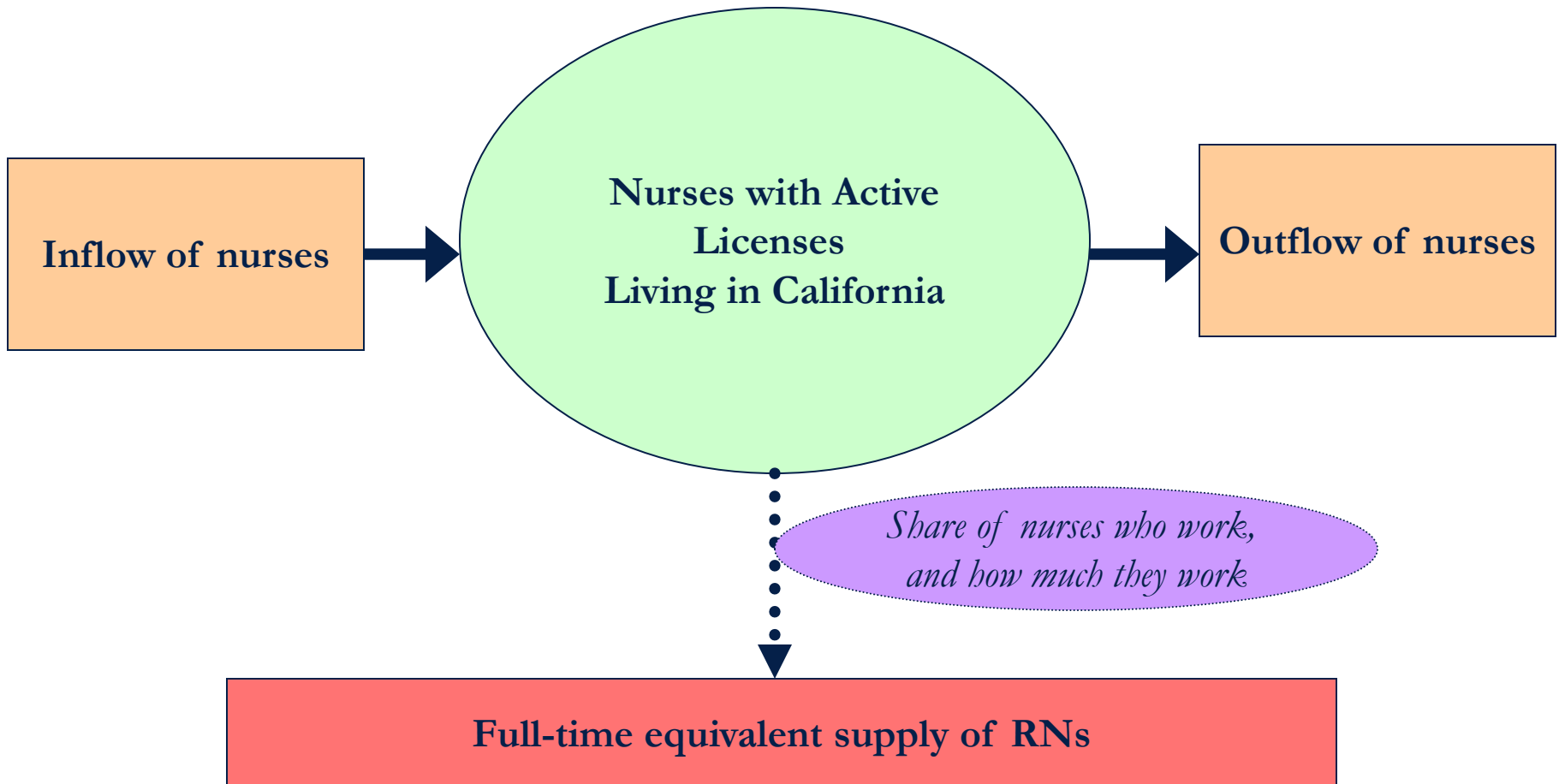
- New data

- Numbers of RNs
- Employment patterns (2016 survey)
- Graduations (2015-2016 Annual Schools Report)
- Endorsement, inactive transitions, lapsed license data 2016

# Basic structure of the model

- Supply: Stock-and-flow model
- Demand: Focus on RNs per capita
  - Compared with national benchmarks
  - Compared with projections from EDD, HRSA

# A model of the supply of RNs



# Nurses with active licenses

- Number of nurses with active licenses and California addresses in April 2017 provided by BRN
- 5-year age groups provided by BRN

# Inflows of RNs

- Graduations from California nursing programs
- Immigration from other countries
- Migration from other states
- Transition from inactive license
- Transition from lapsed license

# Outflows of nurses

- Migration to other states
- Transition to inactive or lapsed license



# Graduation data

- Actual data (red) from 2014-15 & 2015-16
- Projected enrollments provided by RN schools in the Annual Schools Survey
- Projected graduations (light blue) are 80.8% of enrollments from 2 years prior

	New enrollment	Projected enrollment from 1 yr	Projected enrollment from 2 yrs	Graduations
2014-2015	<b>13,318</b>	12,162	13,347	<b>11,119</b>
2015-2016	<b>13,152</b>	13,110	12,177	<b>11,191</b>
2016-2017		13,862	13,236	<b>10,761</b>
2017-2018			14,219	<b>10,627</b>
2018-2019				<b>11,200</b>
2019-2020				<b>11,489</b>

# How do the numbers compare with the 2015 forecasts?

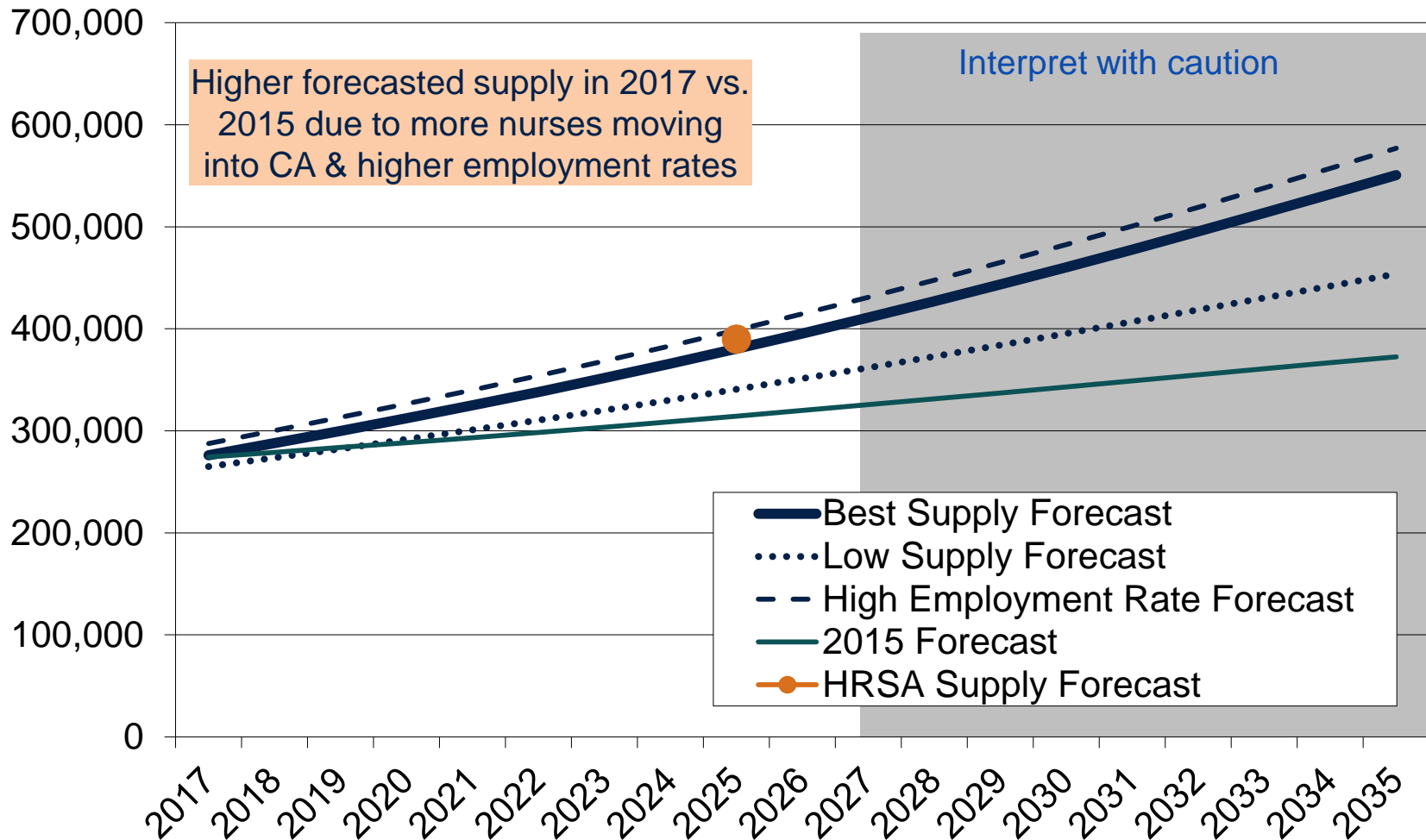
- More out-of-state graduates getting first licenses in California
- Higher rate of nurses <30 years moving into the state
- More nurses re-activating licenses
- Fewer young nurses moving out of California
- Stable rates of licenses lapsing
- Higher employment rate of younger RNs

# How does the supply forecast work?

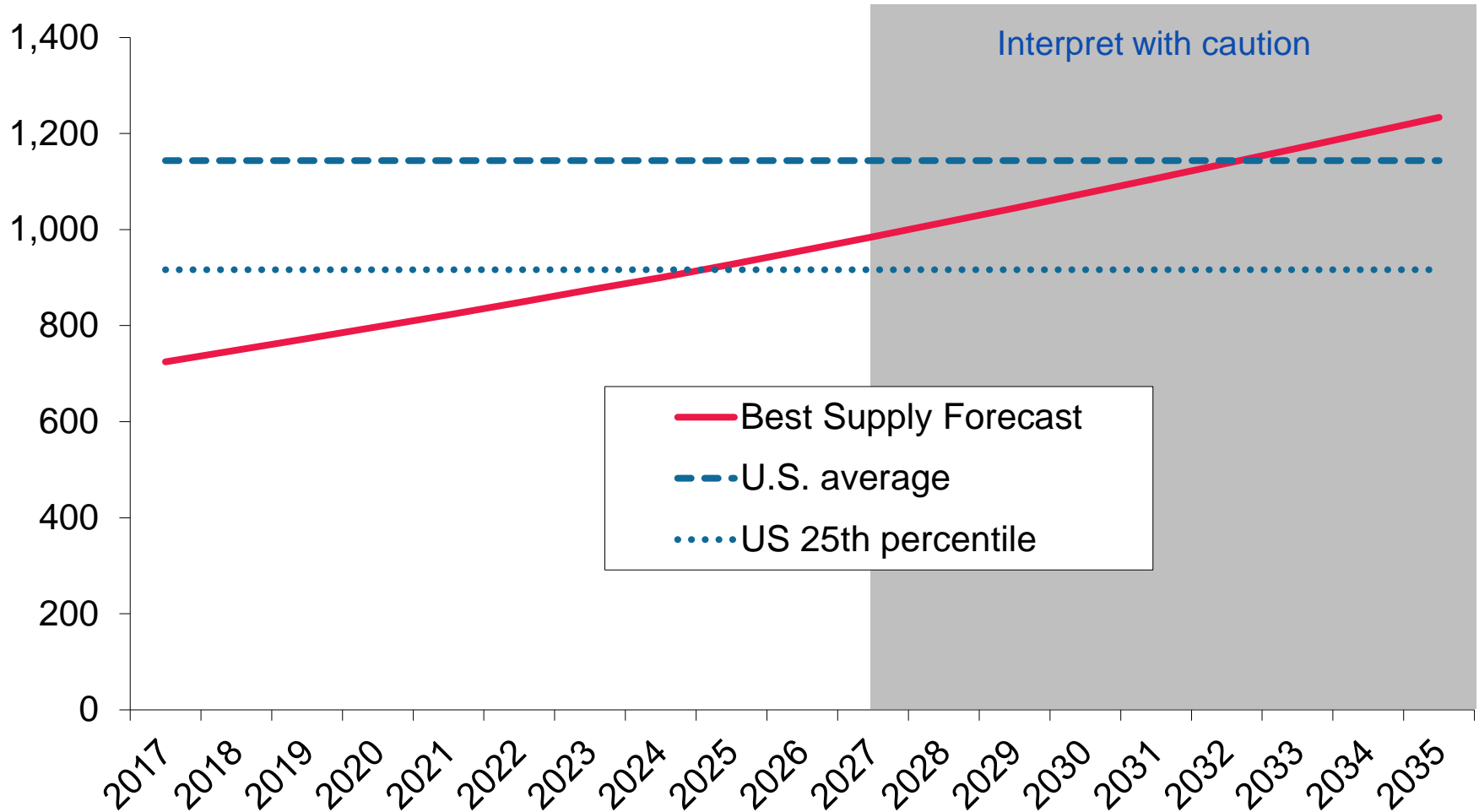
- The supply of actively licensed RNs next year for an age group will equal....
  - $\frac{4}{5}$  of the nurses in the age group ( $\frac{1}{5}$  will “age up” to the next group)
  - $\frac{1}{5}$  of the nurses from the younger age group
  - Inflow of nurses in the age group
  - Outflow of nurses in the age group
- Multiply the number of actively licensed RNs by the labor-force participation data to get

## **Full-Time Equivalent Supply**

# The range of supply forecasts (RN FTEs)



# Forecast of Employed RNs per 100,000 population



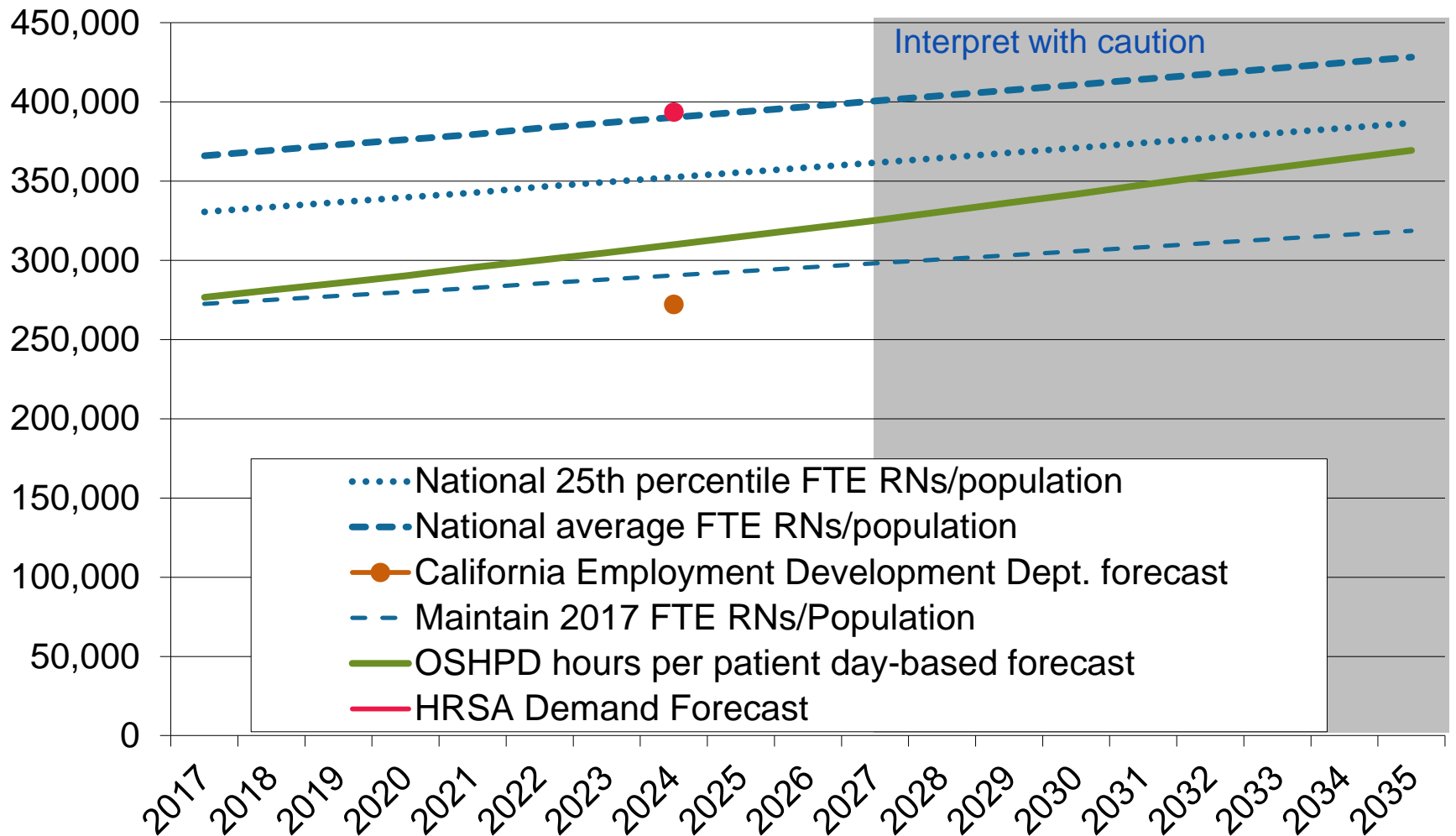
# How do we compare to other states?

<b>Working RNs per 100,000 2015 American Community Survey</b>	
<b>Wyoming</b>	<b>584</b>
<b>Nevada</b>	<b>678</b>
<b>Utah</b>	<b>771</b>
<b>New Mexico</b>	<b>774</b>
<b>California</b>	<b>809</b>
<b>Alaska</b>	<b>836</b>

# What is demand?

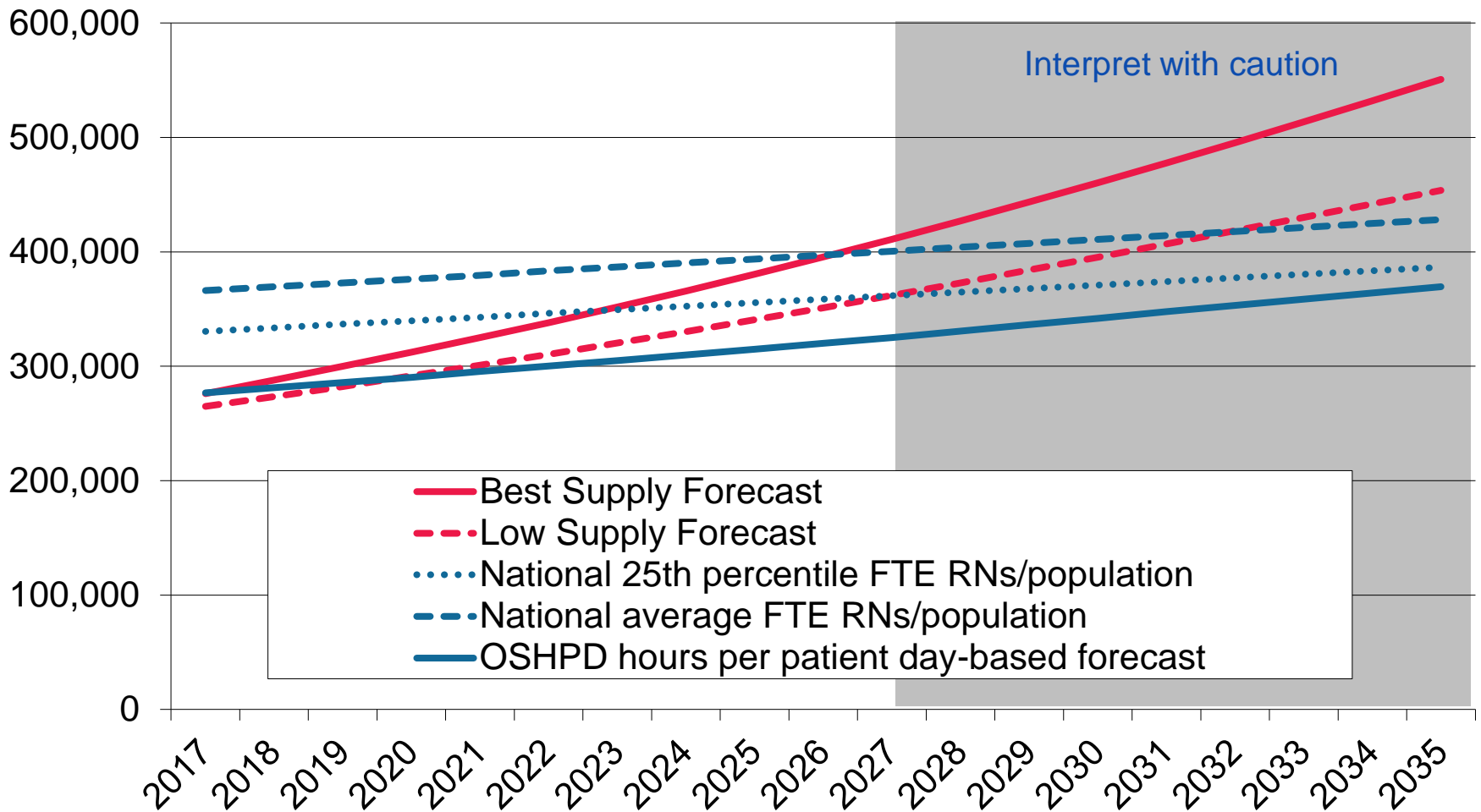
- National benchmarks: Employed RNs per 100,000
  - California had 809 in 2015
  - National 25th percentile: 916 per 100,000 (was 857)
  - National average: 1,038 per 100,000 (was 936)
  - These were adjusted to FTEs
- Employment Development Department, forecast of 2024 demand
  - 300,300 jobs (17.3% growth from 2014)
- Health Resources and Services Administration, forecast of 2025
  - 393,600 jobs
- RNs per patient day, 2015
  - Estimate growth in patient days based on population growth
  - Predict hospital RN demand from patient days forecast
  - Estimate overall demand as function of hospital demand

# Forecasts of RN demand





# Best supply and demand forecasts for RNs, 2017-2035



# Implications for policy

- Supply is projected to be higher than the 2015 forecasts
  - Depends on inflow of RNs from other states, and outflow
  - Depends on employment rates – need to ensure new graduates are employed
- Demand is very hard to predict?
  - Are current employment levels adequate?
  - Should California be at the national average? 25th percentile?
  - HRSA forecast is viewed as “better” than EDD forecast
- Risks
  - Retirements of RNs & ensuring new graduates have skills for vacant positions
  - Reductions in enrollments and graduations in RN education