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

Inflow of nurses

Nurses with Active Licenses Living in California

Outflow of nurses

Share of nurses who work, and how much they work

Full-time equivalent 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

<table>
<thead>
<tr>
<th></th>
<th>New enrollment</th>
<th>Projected enrollment from 1 yr</th>
<th>Projected enrollment from 2 yrs</th>
<th>Graduations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>13,318</td>
<td>12,162</td>
<td>13,347</td>
<td>11,119</td>
</tr>
<tr>
<td>2015-2016</td>
<td>13,152</td>
<td>13,110</td>
<td>12,177</td>
<td>11,191</td>
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<tr>
<td>2016-2017</td>
<td></td>
<td>13,862</td>
<td>13,236</td>
<td>10,761</td>
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<td>2017-2018</td>
<td></td>
<td>14,219</td>
<td></td>
<td>10,627</td>
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<tr>
<td>2018-2019</td>
<td></td>
<td></td>
<td></td>
<td>11,200</td>
</tr>
<tr>
<td>2019-2020</td>
<td></td>
<td></td>
<td></td>
<td>11,489</td>
</tr>
</tbody>
</table>
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:
  - 4/5 of the nurses in the age group (1/5 will “age up” to the next group)
  - 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)

Higher forecasted supply in 2017 vs. 2015 due to more nurses moving into CA & higher employment rates

Interpret with caution
Forecast of Employed RNs per 100,000 population

- **Best Supply Forecast**
- **U.S. average**
- **US 25th percentile**

*Interpret with caution*
How do we compare to other states?

<table>
<thead>
<tr>
<th>Working RNs per 100,000</th>
<th>2015 American Community Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wyoming</td>
<td>584</td>
</tr>
<tr>
<td>Nevada</td>
<td>678</td>
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<tr>
<td>Utah</td>
<td>771</td>
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<tr>
<td>New Mexico</td>
<td>774</td>
</tr>
<tr>
<td>California</td>
<td>809</td>
</tr>
<tr>
<td>Alaska</td>
<td>836</td>
</tr>
</tbody>
</table>
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

- National 25th percentile FTE RNs/population
- National average FTE RNs/population
- California Employment Development Dept. forecast
- Maintain 2017 FTE RNs/Population
- OSHPD hours per patient day-based forecast
- HRSA Demand Forecast

Interpret with caution
Best supply and demand forecasts for RNs, 2017-2035

Interpret with caution
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