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 (2012 survey)
  - Graduations (2011-2012 Annual Schools Report)
  - Endorsement, inactive transitions, lapsed license data 2011-2012

• **More reliance on BRN data**
  - State-to-state migration data from 2008 NSSRN is too old

• **Adding “high” and “low” estimates for employment rates**
  - High = highest rate for each age group in 2008, 2010, or 2012
  - Low = lowest rate for each age group in 2008, 2010, or 2012
Basic structure of the model

- **Supply**: Stock-and-flow model

- **Demand**: Focus on RNs per capita, compared with national benchmarks
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 2013 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
How do the numbers compare with the 2011 forecasts?

- Graduations are expected to drop in 2015-2016
- Fewer graduates projected than in the 2011 forecast

<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>2010-2011</td>
<td>14,228</td>
<td>13,141</td>
<td>14,835</td>
<td>10,666</td>
</tr>
<tr>
<td>2011-2012</td>
<td>13,691</td>
<td>13,895</td>
<td>13,340</td>
<td>10,814</td>
</tr>
<tr>
<td>2012-2013</td>
<td></td>
<td>12,948</td>
<td>13,867</td>
<td>11,009</td>
</tr>
<tr>
<td>2013-2014</td>
<td></td>
<td></td>
<td>12,601</td>
<td>11,176</td>
</tr>
<tr>
<td>2014-2015</td>
<td></td>
<td></td>
<td></td>
<td>11,617</td>
</tr>
<tr>
<td>2015-2016</td>
<td></td>
<td></td>
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<td>10,557</td>
</tr>
</tbody>
</table>
How do the numbers compare with the 2011 forecasts?

• Declines in licenses to new grads from other states & foreign-educated RNs
  – 25% drop for out-of-state
  – 46% drop for foreign-educated

• Fewer RNs moving to California from other states
  – Big revision downward in estimates has significant effect on forecasts

• Lowered forecast of RNs moving out of California as compared with 2011
  – Weighting the 2008 NSSRN less

• Employment rates are lower among younger RNs, higher among older 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)
Forecast of Full-time Equivalent RNs per 100,000 population

Best Supply Forecast
U.S. average
US 25th percentile
How do we compare to other states?

<table>
<thead>
<tr>
<th>State</th>
<th>Working RNs per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah</td>
<td>598</td>
</tr>
<tr>
<td>Nevada</td>
<td>618</td>
</tr>
<tr>
<td>California</td>
<td>657</td>
</tr>
<tr>
<td>Texas</td>
<td>671</td>
</tr>
<tr>
<td>Georgia</td>
<td>705</td>
</tr>
<tr>
<td>Virginia</td>
<td>708</td>
</tr>
</tbody>
</table>
What is demand?

- **National benchmarks: Employed RNs per 100,000**
  - California was ranked 48th in 2008, 589 per 100,000
  - 25th percentile: 799.5 per 100,000
  - National average: 854 per 100,000
  - 50th percentile: 890 per 100,000
  - These were adjusted to FTEs for the supply-demand comparison

- **Bureau of Labor Statistics, forecast of 2020 demand**
  - 275,782 FTEs (was 236,400 FTEs for 2018)

- **RNs per patient day, 2011-2012 fiscal year**
  - 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

![Graph showing forecasts of RN demand from 2013 to 2030]

- **National 25th percentile FTE RNs/population**
- **National average FTE RNs/population**
- **California Employment Development Dept. forecast**
- **Maintain 2013 FTE RNs/Population**
- **OSHPD hours per patient day-based forecast, BRN calibration**
- **OSHPD hours per patient day-based forecast, EDD calibration**
Best supply and demand forecasts for RNs, 2013-2030

- Best Supply Forecast
- National 25th percentile FTE RNs/population
- National average FTE RNs/population
- OSHPD hours per patient day-based forecast, BRN calibration
Implications for policy

• **How do we define shortage?**
  – Are current employment levels adequate?
  – Should California be at the national average? 25th percentile? Bottom?
  – Economic demand vs. need-based demand

• **In this economy…**
  – Demand is starting to ramp up again

• **What do we need to do?**
  – Stop the expected declines in RN school sizes
  – Consider growing our RN programs a bit more