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>Year</th>
<th>New enrollment</th>
<th>Projected enrollment from 1 year</th>
<th>Projected enrollment from 2 years</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>
<td></td>
<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>Working RNs per 100,000</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(2013 estimate for CA; 2008 for other states)</td>
<td></td>
</tr>
<tr>
<td>Utah</td>
<td>598</td>
</tr>
<tr>
<td>Nevada</td>
<td>618</td>
</tr>
<tr>
<td><em>California</em></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

- 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
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