Forecasting the Nursing Workforce in California

Joanne Spetz, PhD
Professor, Philip R. Lee Institute for Health Policy Studies
Associate Director for Research Strategy, Center for the Health Professions
University of California, San Francisco

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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 (2014 survey)
  - Graduations (2013-2014 Annual Schools Report)
  - Endorsement, inactive transitions, lapsed license data 2014

- More reliance on BRN data
  - State-to-state migration data from 2008 NSSRN is too old
  - BRN data now from BreEZee extract reports

- Extended forecasts to 2035
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 April 2015 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 2013 forecasts?

- Graduations are expected to drop in 2014-2015
- Fewer graduates projected than in the 2013 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>2012-2013</td>
<td>13,181</td>
<td>12,948</td>
<td>13,867</td>
<td>11,292</td>
</tr>
<tr>
<td>2013-2014</td>
<td>13,226</td>
<td>13,342</td>
<td>12,601</td>
<td>11,291</td>
</tr>
<tr>
<td>2014-2015</td>
<td></td>
<td>12,162</td>
<td>13,347</td>
<td>10,795</td>
</tr>
<tr>
<td>2015-2016</td>
<td></td>
<td></td>
<td>12,177</td>
<td>10,832</td>
</tr>
<tr>
<td>2016-2017</td>
<td></td>
<td></td>
<td></td>
<td>9,960</td>
</tr>
<tr>
<td>2017-2018</td>
<td></td>
<td></td>
<td></td>
<td>9,972</td>
</tr>
</tbody>
</table>
How do the numbers compare with the 2013 forecasts?

- Declines in licenses to new grads from other states & foreign-educated RNs
  - 54% drop for out-of-state
  - 62% drop for foreign-educated
  - BreEZe extract reports may not be complete (yet)

- Small changes in movements into and out of California

- Employment rates expected to rise a bit among younger RNs, drop a bit 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 for 2015 (RN FTEs)
Forecast of Full-time Equivalent RNs per 100,000 population

[Graph showing forecast of RNs per 100,000 population from 2015 to 2035.
- 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><strong>2013 American Community Survey</strong></td>
<td></td>
</tr>
<tr>
<td>Idaho</td>
<td>638</td>
</tr>
<tr>
<td>Nevada</td>
<td>648</td>
</tr>
<tr>
<td>New Mexico</td>
<td>678</td>
</tr>
<tr>
<td>Utah</td>
<td>706</td>
</tr>
<tr>
<td>California</td>
<td>752</td>
</tr>
<tr>
<td>Vermont</td>
<td>765</td>
</tr>
</tbody>
</table>
What is demand?

- National benchmarks: Employed RNs per 100,000
  - California had 752 in 2013
  - National 25th percentile: 857 per 100,000
  - National average: 936 per 100,000
  - These were adjusted to FTEs

- Employment Development Department, forecast of 2022 demand
  - 297,400 jobs (16.9% growth from 2012)

- RNs per patient day, 2014
  - 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, 2015-2035

- Best Supply Forecast
- National 25th percentile FTE RNs/population
- OSHPD hours per patient day-based forecast
- Low Supply Forecast (low count & employment)
- National average FTE RNs/population
Implications for policy

- Supply & demand are in close alignment
  - Are current employment levels adequate?
  - Should California be at the national average? 25th percentile?
  - Economic demand vs. need-based demand

- Risks
  - Reductions in enrollments and graduations in RN education
  - Loss of nurses to other states

- What do we need to do?
  - Stop declines in RN enrollments/graduations
  - Ensure new graduates get jobs in California