University of California San Francisco

# 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 (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 BreEZe 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





#### 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

	New enrollment	Projected enrollment from 1 yr	Projected enrollment from 2 yrs	Graduations
2012-2013	13,181	12,948	13,867	11,292
2013-2014	13,226	13,342	12,601	11,291
2014-2015		12,162	13,347	10,795
2015-2016			12,177	10,832
2016-2017				9,960
2017-2018				9,972

# How do the numbers compare with the 2013 forecasts?

- Declines in licenses to new grads from other states & foreigneducated 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





How do we compare to other states?

Working RN	s per 100,000		
2013 American Community Survey			
Idaho	638		
Nevada	648		
New Mexico	678		
Utah	706		
California	752		
Vermont	765		



### 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





## 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

