Forecasting Nursing Workforce

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“An adequate supply of nurses is essential to achieving the Nation’s goals of ensuring access to affordable, high-quality healthcare. The adequacy of nurse supply varies geographically throughout the Nation, with a general consensus that at the national level currently a moderate shortage of registered nurses exists.”

Health Resources and Services Administration, 2004
“Health workforce data analysis (including collection) and forecasting is necessary to develop an effective response to the health workforce shortage threatening our most vulnerable communities. A healthy Wisconsin requires a sufficient, diverse, competent and sustainable health workforce.”

Wisconsin Health Workforce Data Collaborative, 2009
“Wisconsin is on the cusp of an unprecedented period of workforce change. The situation is inevitable and the outcome poses enormous challenges for the state’s economy. The shifting demographics and the effects on Wisconsin’s workforce and economy cannot be overstated.”

Office of Economic Advisors, 2009
Wisconsin Population and Labor Force

- POPULATION
- CIVILIAN LABOR FORCE

![Population and Labor Force Graph](image-url)
Unique Set of Challenges

Decreasing labor supply due to aging population

AND

Increasing demand for health care
National Nursing Forecast

• 2004 Health Resources and Services Administration (HRSA) projected RN supply and demand for the nation and states

• The study is nationally focused and relies on a relatively small sample size

• Reports and analysis previously generated by the HRSA have not been updated because of federal funding cuts
History of Data Collection Success

• In 2007, DWD developed a comparable model to the HRSA version

• Inability to populate the model with robust data served as a catalyst for moving the data effort forward

• Office of Economic Advisors and other Wisconsin Health Workforce Data Collaborative (WHWDC) members continue to work together
History of Data Collection Success

- The Healthier Wisconsin Partnership Program (HWPP), a part of Medical College of Wisconsin (MCW) Advancing a Healthier Wisconsin (AHW) endowment, awarded a grant to the “Collaborative Response to the Growing Wisconsin Health Workforce Crisis” project

- One of this project’s goals calls for the expansion of the existing forecasting tool for RNs in Wisconsin
History of Data Collection Success

- Senator Robson language was signed into law in 2009 Wisconsin Act 28 (2009-11 Budget Bill) on June 29, 2009 mandating nurses renewing their license to complete a workforce survey.

- The survey incorporated the National Minimum Nurse Supply Data Set, developed by the Forum of State Nursing Workforce Centers.

- The 2010 RN Renewal License Survey data was used to expand and improve the existing forecasting model.
Supply and Demand projections of Wisconsin RNs through 2035

Guiding force for the supply & demand projections are changing demographics and overall population growth

Base and Scenario models

Head Count and FTE

Direct Patient Care and Broad Nursing Workforce

Broken down by gender and age groups
The Wisconsin Model

- Uses Wisconsin-specific data
- Improved way to forecast nurse educators:
  Demand for nurse educators is based on overall demand in next period
- Easily adaptable to other occupations
- All base models assume that the nursing labor market was in equilibrium in 2010. But this assumption can be challenged in the scenario models
The Wisconsin Model

- Base Supply Model uses a constant ratio of RNs to the total population by gender in 13 age groups to project the future supply of RNs
- Scenario Supply Model lets users change the ratios by changing the factors that may influence supply:
  - Change in new graduates
  - Change in labor force participation
  - Change in retirement pattern
  - Change in net migration (in and out)
The Wisconsin Model

- Base Demand Model relies on constant nurse staffing intensity and health care usage by age and health care settings to project the future demand for RNs.
- Scenario Demand Model allows users to change either overall base demand or base demand in any of the health care settings:
  - Nursing Homes and Extended Care
  - Home Health Care
  - Inpatient Care
  - Emergency Care
  - Ambulatory Surgeries in Hospitals
  - Ambulatory Care
  - Public and Community Health Care
  - Nurse Educators
  - Other
Preliminary Results: Base Case

RN Supply and Demand Projections: Wisconsin, 2010-2035 (Base Case, Head Count, Broad Nursing Workforce)

Note: Broad Nursing Workforce consists of licensed RNs who work in direct patient care, or have a job that requires an RN license, or are employed in health care field, or are actively seeking a job in nursing.
## Preliminary Results: Base Case

**Projected RN Supply, Demand, and Gap: Wisconsin, 2010-2035**  
**(Base Case, Head Count, Broad Nursing Workforce)**

<table>
<thead>
<tr>
<th>Preliminary Results</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Supply</td>
<td>62,962</td>
<td>66,664</td>
<td>67,143</td>
<td>66,267</td>
<td>65,657</td>
<td>66,019</td>
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<tr>
<td>Base Demand</td>
<td>62,962</td>
<td>68,338</td>
<td>72,733</td>
<td>77,776</td>
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<tr>
<td>Gap</td>
<td>0</td>
<td>-1,675</td>
<td>-5,589</td>
<td>-11,508</td>
<td>-17,633</td>
<td>-22,703</td>
</tr>
<tr>
<td>Percent Gap</td>
<td>0.0%</td>
<td>-2.5%</td>
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Note: Broad Nursing Workforce consists of licensed RNs who work in direct patient care, or have a job that requires an RN license, or are employed in health care field, or are actively seeking a job in nursing.
Scenario Supply and Demand Models

- Allows for change in the base RN to population ratio through changes in isolated factors that influence supply
- Allows for changes to overall demand or in various settings
- Factors can be changed in any projected year and in any combination
- Can challenge the equilibrium assumption
Scenario Models Demonstration

Broad Nursing Workforce Head Count: Scenario Supply and Demand Model

### Scenario Percent Change to Base Demand Ratios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
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<tbody>
<tr>
<td>Nursing Home/Extended Care</td>
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<tr>
<td>Home Health</td>
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<tr>
<td>Inpatient</td>
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<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>Emergency</td>
<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>Hospital Ambulatory Surgery</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>Ambulatory Care</td>
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<tr>
<td>Public Health</td>
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<td>Other</td>
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<tr>
<td>Educators</td>
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<tr>
<td>Total</td>
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<tr>
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<td>Non-Participation Ratio</td>
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<td>Retirement Ratio</td>
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<td>0.0%</td>
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<td>Net Migration Ratio</td>
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### Change from Base Demand

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<tr>
<td>Change</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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### Base Registered Nurse Gap

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<td>0</td>
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</tr>
<tr>
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### Scenario Registered Nurse Gap

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Projected RN Supply and Demand

- Base Demand
- Scenario Demand
- Scenario Supply
- Base Supply

Victoria Udalova and Tom Walsh  Forecasting Nursing Workforce
We would like to thank the members of the Wisconsin Health Workforce Data Collaborative (WHWDC) for their commitment to comprehensive health care workforce planning.

Our special thanks also goes to all the nurses who completed the workforce survey making this work possible.
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