

Wisconsin Registered Nurse Supply and Demand Forecasting Model: Brief Summary

OVERVIEW

Wisconsin's labor force is facing a great change as the baby-boom population begins to retire. The changes are inevitable, and the Office of Economic Advisors (OEA) economists have already examined their effects in a paper titled, "[The Impact of Aging Population on Wisconsin's Labor Force](#)". As stated in the paper, the effects of the shifting demographics on Wisconsin's workforce cannot be overstated. However, health care faces a unique set of challenges due to the nature of this industry. Along with decreasing the labor supply, the aging population will also increase the demand for health care. Swift steps need to be taken to ensure high quality health care in the future.

The Office of Economic Advisors, along with other Wisconsin Health Workforce Data Collaborative (WHWDC) members, are working together to alleviate the expected health care workforce crisis. The Healthier Wisconsin Partnership Program (HWPP), a part of Medical College of Wisconsin (MCW) Advancing a Healthier Wisconsin (AHW) endowment, awarded a grant to a "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 registered nurses (RNs) in Wisconsin.

Work on a supply and demand forecasting model is currently under way. Once fully completed, the model will provide base projections under the assumption that the current market conditions remain constant, and it will allow for policy scenario analysis by changing the model's underlying assumptions. Policymakers will be able to use the model as a tool to help take

"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

proactive steps towards minimizing the anticipated shortage of RNs.

The forecasting model was originally developed by Department of Workforce Development's (DWD) health care policy analyst and economists working together in 2007, but the supply and demand forecasts were limited by inadequate data. The 2010 RN Renewal License Survey data was used to expand and improve the existing forecasting model. This improved tool allows for supply and demand projections of RNs in Wisconsin through 2035.

The 2004 Health Resources and Services Administration (HRSA) model was used as a guide for the design of the Wisconsin Model. However, the Wisconsin Model deviates from the HRSA model in several significant ways. The Wisconsin Model includes base and scenario models. The scenario model allows users to generate forecasts based on a variety of policy interventions. Additionally, HRSA made the assumption that the labor market for RNs was in equilibrium in 1996. In comparison, the Wisconsin Model starts with the assumption that the market was in equilibrium in 2010, but later allows users to challenge this assumption.

This summary was produced by the Office of Economic Advisors, Wisconsin Department of Workforce Development.

The Office of Economic Advisors (OEA) is a group of economists and analysts charged with identifying, analyzing, interpreting, and projecting workforce trends and assisting the administration and Wisconsin citizenry to better understand the effects of those trends on state's employment and economic growth.

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The supply and demand models both rely on changing demographics and the overall population growth as the major driving force. Additionally, each model has four sub-models:

- Broad Nursing Workforce, Head Count RNs
- Broad Nursing Workforce, FTE RNs
- Direct Patient Care, Head Count RNs
- Direct Patient Care, FTE RNs

The Base Supply Model uses a constant ratio of RNs to the total population in each age group to project the future supply of RNs. The Scenario Supply Model lets users change the ratios by changing the factors that may influence supply.

The Base Demand Model relies on constant nurse staffing intensity and health care usage by age and by employment setting to project the future demand for RNs. The Scenario Demand Model allows users to change either the overall base demand or base demand in any of the employment settings.

Both base models assume that the nursing labor market was in equilibrium in 2010. However, this assumption can be challenged in the scenario models.

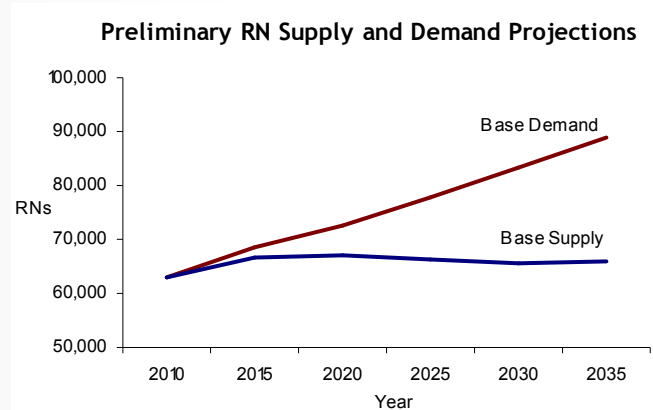
Summary: Supply Model

- Base supply is primarily driven by changing demographics and population growth
- Allows for change in the base RN to population ratios by age through changes in isolated factors that influence supply:
 - ♦ Graduation rate
 - ♦ Labor force participation rate
 - ♦ Retirement pattern
 - ♦ Migration (in and out)
- Scenario Supply Model allows these factors to be changed in any combination and for any projected period
- A change to base supply changes RN supply for the adjusted year and all of the following years (“filtering” feature of the Scenario Supply Model)

Summary: Demand Model

- Base demand is primarily driven by changing demographics and population growth
- Relies on two types of data: nurse staffing intensity and health care usage by age and employment setting
- Scenario Demand Model allows for a percentage change from the base demand in the following 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
- Demand for nurse educators is based on total demand for nurses in the next period
- Users can change total demand for nurses or demand in any of the employment settings in any combination
- Users can challenge equilibrium assumptions

Graph 1: 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.

Table 1: Projected RN Supply, Demand, and Gap in Wisconsin, 2010-2035 (Base Case, Head Count, Broad Nursing Workforce)

| Preliminary Results | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---------------------|--------|--------|--------|---------|---------|---------|
| Base Supply | 62,962 | 66,664 | 67,143 | 66,267 | 65,657 | 66,019 |
| Base Demand | 62,962 | 68,352 | 72,768 | 77,835 | 83,373 | 88,825 |
| Gap | 0 | -1,689 | -5,625 | -11,568 | -17,715 | -22,807 |
| Percent Gap | 0.0% | -2.5% | -8.4% | -17.5% | -27.0% | -34.5% |

Coming Soon:

- ⇒ “Wisconsin RN Supply and Demand Forecasting Model: 2010-2035” report containing forecasts and analysis based on the base and scenarios models.
- ⇒ “Wisconsin RN Supply and Demand Forecasting Model: Technical Report” containing detailed description of the forecasting methodology.