The Effects of Aging Population Demographics on the Registered Nurse Workforce
TJW; December 12, 2011

The Office of Economic Advisors (OEA) is working as a part of the Wisconsin Health Workforce Data Collaborative effort to alleviate the expected health care workforce crisis. As part of a larger project, OEA expanded an existing forecasting tool for registered nurses (RNs) in Wisconsin by using data from the 2010 RN License Renewal Survey. A report titled "Wisconsin Registered Nurse Supply and Demand Forecasting Model: Results Report (Draft)" (Walsh et al., 2011) contains the results of the Wisconsin Nurse Forecasting Model, which projected a RN shortage of about 35% by 2035 if the status quo continues.

Wisconsin's economy faces enormous challenges as the baby-boom population begins to retire in large numbers (Winters et al., 2009). However, Walsh 2011 purports that the health care industry faces a unique set of workforce challenges. Along with a limited labor supply, the health care industry can expect demand for services to increase as demographics shift towards an older population. Both effects were examined by using the results of the Wisconsin RN Model. This brief will specifically focus on the results of the Direct Patient Care, Full-Time Equivalent model.

The 2010 RN License Renewal survey was used for a point-in-time count of RN supply. The year 2010 was selected as the equilibrium point for supply and demand based on topic research and expert opinions from health care professionals. The supply and demand projections for RNs displayed in Table 1 are based on the overall population growth rate. Please note that the projections in Table 1 are different than the results reported in Walsh 2011. The projections in Table 1 simply assume supply and demand grow at the same rate as Wisconsin's population.

Table 1: Population Driven Supply and Demand Projections, 2010-2035
(Direct Patient Care, FTE)

Results	2010	2015	2020	2025	2030	2035
Population Driven Supply	42,362	44,665	46,264	47,667	48,788	49,629
Population Driven Demand	42,362	44,665	46,264	47,667	48,788	49,629

The primary driving forces for both the Wisconsin RN Model supply and the demand projections are overall population growth and changing population demographics. Supply and demand for RNs would grow at the same rate as the overall population if population demographics remained constant. However, population demographics are shifting, and the impact of the shift needs to be factored in to workforce projections. Supply can be expected to grow at a slower rate than the population since the population is aging, and baby-boomers recently began to retire in large numbers. The Wisconsin RN Model captures the effects of the state's changing age demographics. Table 2 calculates the slowed supply growth that is caused by the aging population. "Slowed Supply Growth" is the difference between "WI Model Supply" results that were reported in Walsh 2011 and the "Population Driven Supply" that is displayed in Table 1. Slowed supply growth represents the difference between "WI Model Supply" and "Population Driven Supply".

Table 2: WI Model and Population Driven Supply Projections, 2010-2035
(Direct Patient Care, FTE)

Results	2010	2015	2020	2025	2030	2035
WI Model Supply	42,362	44,596	44,666	43,927	43,542	43,900
Population Driven Supply	42,362	44,665	46,264	47,667	48,788	49,629
Slowed Supply Growth	-	69	-1,598	-3,740	-5,246	-5,729

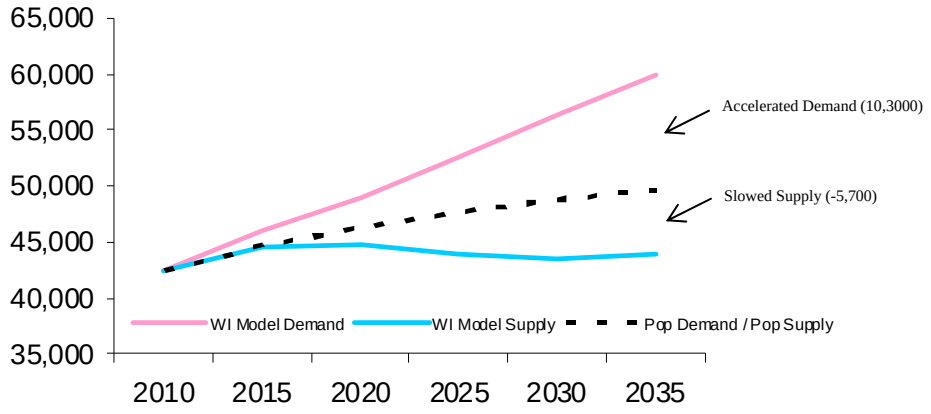
Like the supply projections, demand projections capture the effects of changing population demographics. An older population utilizes health care at a higher rate than a younger population. Therefore, we expect demand for RNs to increase at a faster rate than the population. The results of the Wisconsin RN Model that were reported in Walsh 2011 are displayed in Table 3 as "WI Model Demand". "Accelerated Demand Growth" represents the difference between "Population Driven Demand" and "WI Model Demand".

Table 3: WI Model and Population Driven Demand Projections, 2010-2035 (Direct Patient Care, FTE)

Results	2010	2015	2020	2025	2030	2035
WI Model Demand	42,362	46,049	49,062	52,513	56,279	59,955
Population Driven Demand	42,362	44,665	46,264	47,667	48,788	49,629
Accelerated Demand Growth	-	1,384	2,798	4,846	7,491	10,326

Graph 1 shows that the WI Model supply and demand projections both diverge from the Population Driven Supply and Population Driven Demand projections. As mentioned in Walsh 2011, the divergence is caused by workers exiting the labor market in relatively large numbers and by increased demand for health care services. The gap between WI Model Supply and Population Driven Supply in Graph 1 represents the Slowed Supply caused by the aging population. The gap between WI Model Demand and Population Driven Demand represents the Accelerated Demand. The combination of both effects causes a projected shortage1 about 35%, or about 16,000 Full Time Equivalent RNs, by 2035. About 5,700 of the shortage can be attributed to slowed supply growth while the remaining 10,300 can be attributed to accelerated demand for RNs.

Graph 1: WI Model and Population Driven Supply and Demand Projections, 2010-2035 (Direct Patient Care, FTE)



To summarize, the supply of RNs as projected by the Wisconsin RN Model is essentially flat. This slow supply growth is not unique to the nursing profession. We can expect a similar pattern for Wisconsin's labor force as a whole due to the aging population exiting the labor force in large numbers. The divergence between "WI Model Supply" and "Population Driven Supply" shows that this effect will be substantial.

The accelerated demand growth is also significant. This is a unique phenomenon. The aging population will require more health care, which will increase demand for RNs. Although the projections are specific to RNs, the driving forces that cause accelerated demand will have similar effects on all occupations in and related to the health care industry.

Written by Tom Walsh. Research Analyst, DWD, OEA. December 2011.
Contact Tom Via Email at Thomas.Walsh@DWD.Wisconsin.Gov, or Call Tom at (608) 266-3288