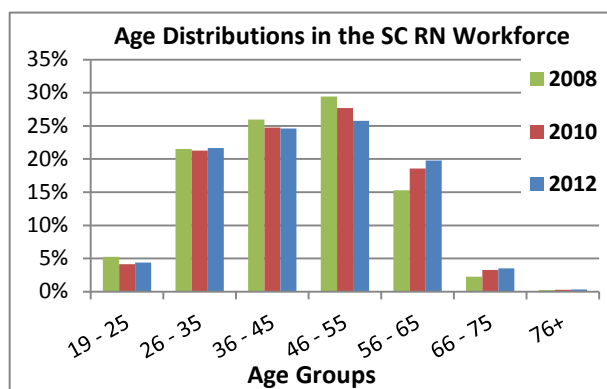




Estimating Future RN Supply and Demand in South Carolina: 2008 - 2028

Nursing shortages disrupt the timely delivery of health care and jeopardize the safety of hospital patients. Being able to anticipate when a nursing shortage might develop allows policymakers, educators, and healthcare executives to institute actions and policies which can prevent or minimize its impact. In the 1990s, most areas in the United States entered into a nursing shortage cycle that was

anticipated to grow in severity until 2020. However, two things occurred in the period from 2000 to 2010 which changed the dynamics in the nursing workforce: nursing education programs aggressively increased the number of graduates; and a severe economic recession took place between 2007 and 2010 that encouraged nurses to increase the number of hours they worked, brought nurses who had retired or left the profession back into the workforce, and kept some nurses of retirement age to stay in the workforce longer. The result is that the developing shortage has been averted – at least temporarily.



Yet we are about to enter a new period in time. The recession has abated, the healthcare system is changing in ways that will rely heavily on a well-educated nursing workforce, and the largest age-related segment of the workforce – the baby-boom generation – is now reaching age 65. This last fact (the aging of the workforce) will have the greatest impact on the supply of RNs available to work, and the extent to which they participate in the nursing workforce. For those reasons we developed forecasting models for the supply of RNs and the demand for RNs in South Carolina in order to assess if or when a shortage is likely to develop in our state.

Estimating the Future Supply of RNs

The size of the nursing workforce is necessarily based on the number of nurses who hold an active license to practice in South Carolina. Depending on the number of licensed RNs who are actively employed as nurses, and on the number of hours worked each week, the size of the workforce can fluctuate. Both active engagement in the workforce and the number of hours worked each week are closely related to age. In general, as RNs age, their workforce participation rates decrease, either because they retire and leave the workforce completely or they reduce the number of hours worked per week or weeks per year. Registered Nurses in their childbearing years often leave the workforce temporarily or reduce their work hours to part time.

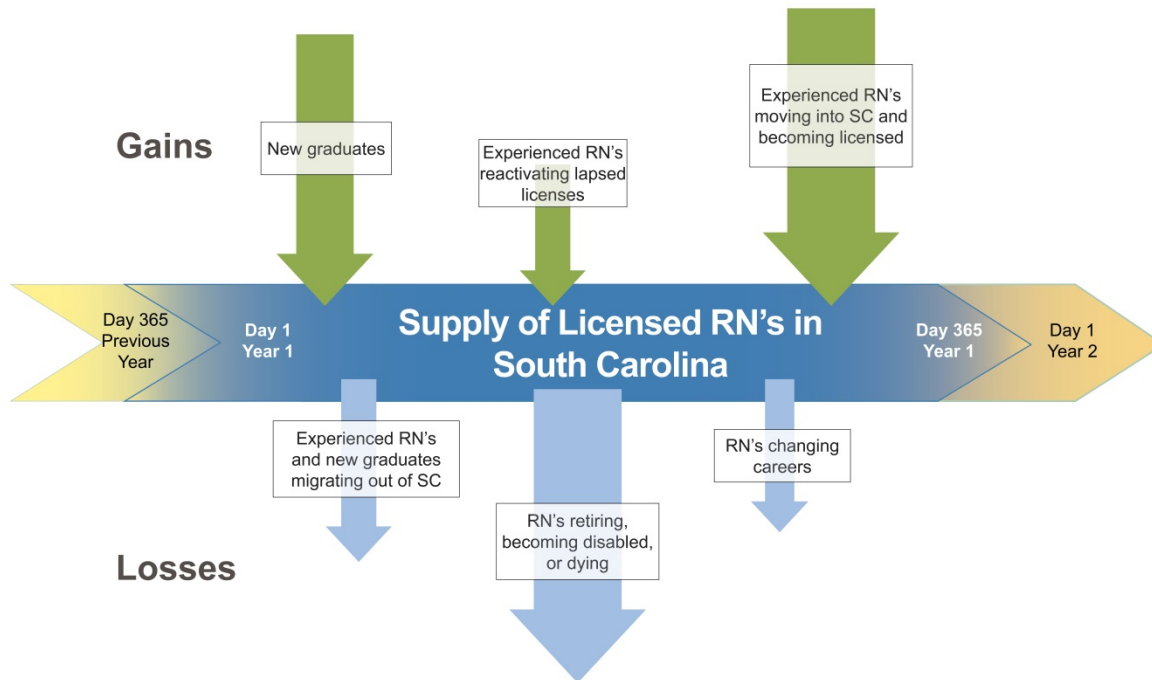


Figure 1. Conceptual stock and flow model of the RN workforce

Projecting the size of the nursing workforce into the future requires first a projection of the number of RNs holding an active license, an estimation of how many are likely to be actively employed as nurses, and an estimate of work effort each week. In order to maintain stability in the supply of actively licensed RNs, the number of nurses becoming licensed in the state for the first time or reactivating a lapsed

license must equal the number who allow their license to lapse. In order for the supply to grow, the number of newly licensed or re-activated nurses must be greater than the number who allow their license to lapse.

Table 1. Historical RN Workforce Size and Rates of Growth

	RNs active in the workforce	Biennial RN workforce growth rates
1996	24,587	--
1998	26,614	8.2%
2000	28,905	7.9%
2002	30,693	5.8%
2004	32,319	5.0%
2006	33,845	4.7%
2008	35,940	6.2%
2010	38,806	8.0%
2012	40,520	4.4%

Data source: Total RNs in the workforce as of July 1st as reported by the SC Office of Research and Statistics.

The Office for Healthcare Workforce Analysis and Planning created an estimation model to project the supply of RNs¹ in the state into the future. We used 2008 as our baseline year and created annual projections for each year until 2028. The model is a simple 'stock and flow' methodology using age-specific estimates of the various factors that influence the total supply of licensed RNs (both gains and losses) to arrive at future estimates of supply. The basic elements of the model are described in Figure 1. Age-specific estimates for each factor

¹ Our counts and estimates of RNs include Advanced Practice RNs.

are based on information provided by RNs during their South Carolina license renewal process.² Each of the factors influencing the supply of licensed RNs was held constant throughout the 2008 – 2028 projection period. The model assumes:

- a consistent number of new graduates entering the pool of licensed RNs each year
- a consistent number of RNs migrating into South Carolina each year and obtaining a license to practice
- a consistent number of RNs reactivating a previously lapsed license each year
- age-specific percentages of RNs allowing their license to lapse each year based on historical patterns between 2006 and 2010
- age-specific percentages of licensed RNs being actively employed as nurses each year based on 2008 patterns.

Note that there are three different measures of RN supply in the state: the total number licensed (the potential workforce); the number actively engaged in the nursing workforce (a headcount of the actual workforce); and the number of full-time equivalents (FTEs) based on the number of hours worked each week by those employed in the nursing workforce (the FTE workforce).

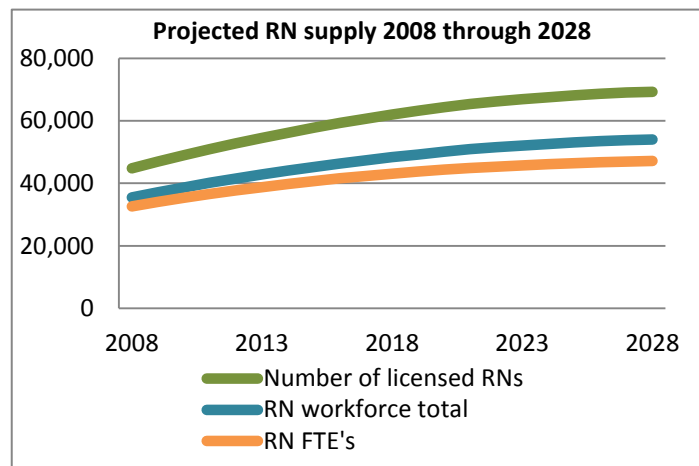


Figure 2. Results of the SC RN supply estimation model 2008 – 2028

Table 2. South Carolina RN Supply Projection Estimates

At Year End	# Licensed RNs	# RNs in the Workforce	# RN FTEs
2008	46,975.0	35,521.0	32,608.2
2013	56,288.3	42,804.2	38,798.5
2018	63,461.9	48,351.8	43,093.4
2023	68,174.0	52,065.9	45,721.9
2028	70,497.3	54,031.9	47,119.5

The results of the nurse supply model, summarized in Table 2, suggest that the number of RNs in the workforce and the number of full time equivalents will grow at a slightly slower rate than the overall supply of licensed RNs. Figure 2 illustrates the trends.

Estimating the Demand for RNs

Estimates of demand for RNs in the state are based on information provided by the South Carolina Department of Employment and Workforce, Labor Market Information section (LMI). Results from the 2008 Quarterly Census Employment Survey were used to estimate the number of RNs employed in the state that year. It is an average of the number of RNs employed across all different employer types, over the four quarters of the year. The 2008 employment estimate included both full and part-time

² Each of the factors identified in Figure 1 are described in detail in the South Carolina Nurse Supply and Demand Models 2008 – 2028 Technical Report.

employees, and thus is a headcount estimate of those in the workforce. Because the data are drawn from employment and wage surveys, the estimate of employed RNs does not include the number of positions that were available but unfilled in 2008. In order to account for the demand for RNs represented by unfilled positions, we asked the LMI to estimate the number of vacant positions for RNs in 2008. They did so by analyzing the number of online job ads for RNs each month. Those monthly totals were summed and averaged to get an estimate of the number of unfilled positions likely to be available at any time during 2008.

We compared the LMI estimate of employed RNs with data provided by RNs during the license renewal process in 2008 and found the LMI estimate to be different from the true size of the workforce, based on RN-supplied data. We opted to use the RN-supplied information about employment rather than the LMI estimate. To that we added the estimate of vacant positions in 2008 to reach a more accurate estimate of the total demand for RNs in 2008.

In conjunction with the U.S. Bureau of Labor Statistics, the LMI in South Carolina produces a projection of the demand for RNs over a 20 year period. The annual growth rate of 2.3% in South Carolina, resulting from those occupational projections, was used in our model to project the annual in-state growth in demand for RNs from 2008 to 2028. More detailed information about the demand estimates, vacancy estimates and annual growth rates can be found in the South Carolina Nurse Supply and Demand Model 2008 – 2028 Technical Report.

Figure 3 shows how the resulting estimates of RN supply and demand for RNs correspond to each other.

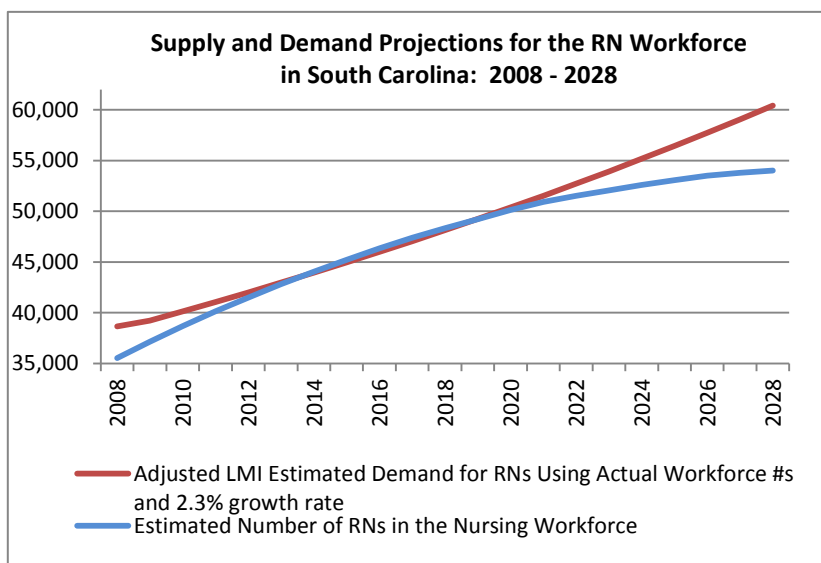


Figure 3. Comparison of RN Supply and Demand Estimates for South Carolina

Results

The gap between the number of RNs in the workforce in 2008 and the estimate of demand for RNs in 2008 is the number of job vacancies estimated by the LMI office. In general, comparison of the two projections suggests that the supply of and demand for RNs in South Carolina have been closely balanced in recent years and may remain in balance for several more years if the assumptions underlying both models are sustained. The results

also suggest that a nursing shortage

may begin to develop in approximately 6 to 8 years, and grow to a shortage of approximately 6,400 RNs by the year 2028.

The current balance in the nursing workforce is likely to be a temporary thing. Nursing shortages have been a cyclical event in the United States for almost 100 years. Between the changes occurring in the healthcare system and the large number of baby boomers likely to retire in the next decade, a future

shortage is not unlikely. Therefore, this is a good time to concentrate on areas of nursing workforce policy beyond the need to simply increase the number of new graduates. The national Institute of Medicine, through the Committee of the Robert Wood Johnson Foundation Initiative on the Future of Nursing, has carefully studied the role of nurses in our changing healthcare system. One result is a set of recommendations designed to bring about the characteristics needed in the nursing workforce of the future. These recommendations include, among others:

- Remove scope of practice barriers to allow advanced practice nurses to practice to the full extent of their education and training
- Implement nurse residency programs to support nurses as they first begin to practice or move into new clinical practice areas
- Increase the proportion of nurses with a nursing baccalaureate degree to 80% by 2020
- Double the number of nurses with a doctorate by 2020

Limitations of Supply and Demand Projections

Several things can happen to change the RN workforce dynamics that lie behind these projections:

- Another recession – keeping older RNs in the workforce later in life and/or increasing the number of hours RNs work each week
- A rapidly improving economy – resulting in RNs reducing the number of hours worked each week, or increasing the rate at which RNs retire in the next decade
- A substantial increase or decrease in the number of experienced RNs migrating into South Carolina and joining the nursing workforce
- Stronger growth in demand for RNs as a result of changes in care delivery models and/or the increase in the number of people with health insurance

Both the RN supply and RN demand model results presented here rely on a set of assumptions that are unlikely to be maintained over a long span of time. Individual workforce behavior changes in reaction to economic conditions, personal circumstances, and wage levels. In addition, the growth in demand for RNs may fluctuate up or down from the 2.3% annual estimate we used. The estimates generated by any long-range projection model become less accurate the farther they are from the baseline. For that reason, projection models should be updated and replicated on a regular basis in order to account for changing economic and labor force conditions.

In addition, our models do not reflect regional or urban/rural differences in the balance between supply and demand in the state. Nor do they differentiate between different types of RNs – especially among advanced practice Registered Nurses (APRNs). There is a need to understand supply and demand dynamics for each APRN group on their own. Finally, given the recommendations from the Institute of Medicine, it is important to understand whether the demand for RNs with different levels of education is in balance with the supply of RNs at different education levels. Each of these limitations points to the need for more fine-grained study of supply and demand within the nursing workforce in South Carolina.