

An Interactive Demographic Approach to Projecting the Supply of Nurses by State

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Numerous studies and reports on the shortage of nurses in the United States have appeared over the last few years. Most notably, an article in the *Journal of the American Medical Association* in June of 2000 raised the possibility that the year 2020 nursing workforce could fall twenty percent short of the actual need. Additional evidence has shown that an overworked workforce could compromise public safety.

In this context, state policy makers need to be able to assess the potential scope of a shortage in their own states. One component in making such assessments is the future projections of the supply of nurses within the state. Statistical approaches have been used to develop such projections with some success, but the processes generating the outcomes have not always been understood by the recipients.

In an attempt to develop a more user-friendly projection process, a simplistic demographic approach has been employed. The initial model prototype was developed on data from the National Sample Survey of Registered Nurses where the total RN (Registered Nurse) population was broken out into 5-year age groups. For each of those age groups, an estimated attrition rate was used to project the number of nurses who would still be practicing in 5 years and to move that number into the next 5-year age group. Using NCLEX data, the projected number of new graduates entering the work force over the next five years were then distributed among the age groups to arrive at the 5-year projections. The process was then repeated to generate 10, 15, and 20 year projections. Finally, an age-specific multiplicative factor was employed to convert each projection into RN Full Time Equivalent (FTE) figures.

This method was carried down to the state level where assumptions were modified to reflect the context of each individual state. Excel spreadsheets were created for use by each state which contained the data assumptions (starting population in 5-year intervals, age distribution of new licensees from U.S. nursing programs, age distribution of new licensees from non-U.S. nursing programs, 5-year attrition rates, FTE adjustment factors) on the first page and the outcomes on the second page. By adjusting the assumptions on the first page, the user could see the immediate impact of those changes on the second page. In this way, the was (and is) interactive.

The model has received a positive reception and has been employed in some states, but refinements are still in order. As some nurses hold licenses in multiple states, efforts must be made to ensure that the data reflect on those licenses who are practicing in the state. Most importantly, the model needs to incorporate in and out-migration between states in order to ensure that the proper attrition rates are being employed.