

# Breaking Down Silos: An Interview with the Health Workforce Forecasting Team

**N**URSING ECONOMIC\$ is pleased to provide a team interview of nurse forecasting experts who authored the groundbreaking article “Improving Nursing Workforce Forecasts: Comparative Analysis of the Cohort Supply Model and the Health Workforce Simulation Model,” which is featured in this issue (Auerbach, Chattopadhyay, Zangaro, Staiger, & Buerhaus, 2017). Several individuals from two teams share their insights and developments around supply projects. We are grateful for their time and attention given to this interview. Thanks to their valuable insight, our readers will have a deeper appreciation of how forecasting is aligned to decisions regarding workforce supply and demand projections and policies. This interview focuses on the process used to address assumptions and align analytic techniques to approach an agreement in nurse workforce forecasting.

Team members include *David I. Auerbach, PhD*, External Adjunct Faculty, Montana State University, Bozeman, MT; *Peter I. Buerhaus, PhD, RN, FAAN, FAANP(h)*, Professor of Nursing and Director, Center for Interdisciplinary Health Workforce Studies, College of Nursing, Montana State University, Bozeman, MT; *Aprita Chattopadhyay, PhD*, Chief, Workforce Analysis Branch, National Center for Health Workforce Analysis, Bureau of Health Workforce, Health Resources Service Administration, Rockville, MD; *Douglas O. Staiger, PhD*, John French Professor of Economics, Department of Economics, Dartmouth College, Hanover, NH, and Research Associate, National Bureau of Economic Research, Cambridge, MA; and *George Zangaro, PhD, RN, FAAN*, Director, National Center for Health Workforce Analysis, Bureau of Health Workforce, Health Resources Service Administration, Rockville, MD.

## Working Toward a Better Understanding

**Donna Nickitas (DN):** What motivated the Montana team and Health Resources and Services Administration (HRSA) to work together?



**George Zangaro (GZ):** In 2014, I reached out to Peter Buerhaus to discuss the nursing projections HRSA had just released. I was concerned as to why HRSA’s projections were different from the supply projections Peter and his team were producing. HRSA then engaged in several conversations with Peter and his team about the differences in our two models. Peter suggested we make an investment and bring forecasters from across the U.S. together to discuss the differences in our models and determine the appropriate methodology needed to align them with each other. In an attempt to validate the HRSA model and promote consistency in forecasting, national experts met in Montana to discuss the assumptions, analytic techniques, and different modeling approaches in an attempt to align our models.

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**NOTE:** A *Nursing Economic\$* Podcast conversation with Peter Buerhaus regarding improving nursing workforce forecasts can be accessed at [www.nursingeconomic.net](http://www.nursingeconomic.net).



**Peter Buerhaus (PB):** George and I are both nurses and understand the large number of organizations and other stakeholders who pay close attention to supply and demand projections. We realize these projections influence decisions made by universities, nursing education programs, hospitals and health systems, Wall Street analysts, and legislators. Ultimately, the projections can affect nurses and their capacity to provide nursing and health care. George and I felt stakeholders needed better information and would benefit if there was less variation in our respective forecasts. George and I also agreed our respective forecasting efforts could do better and needed to do better. What I appreciate about working with George and the HRSA team is that there was no sense of competition – we’re right, you’re wrong – rather, we both wanted to better understand the sources of the differences in the two forecasting approaches.

**DN:** What was the outcome of this collaboration? Were you surprised with the results?



**David Auerbach (DA):** The outcome was positive on a number of fronts. We assessed our key assumptions and then ran new forecasts under nearly identical starting points to allow us to isolate areas where the forecasts differed. We each came away with a better understanding of each model and its assumptions. That will help us understand the results from each model and place them in their proper context.

We also realized that some of the factors driving significant differences in the models were situations where each group was making a reasonable assumption, but they were simply different. For example, the definition of how many hours worked constitutes a full-time equivalent. These were easily adjusted by both teams.

Finally, we learned as a result of the discussions the forecasts were not as divergent as they had seemed earlier. Part of the reason was that we were starting from different baselines and that more recent data available since our assessment a few years ago had served to drive the two models’ forecasts toward each other. This may have been a coincidence and is worth continued monitoring.



**Arpita Chattopadhyay (AC):** Our examination revealed one area that contributed a lot toward the differences in the estimates from the two models is the way in which advanced practice registered nurses (APRNs) were treated. In the HRSA model, RNs and APRNs were modeled separately, while in the Cohort (Montana) model, RNs and APRNs were combined in the same model. When this difference was accounted for by excluding APRNs from the Montana model, we found projected values showed similar growth rates. However, there were still differences in the levels of supply. Part of this was attributed to the different base year data used by the two models. However, a substantial portion could be attributed to the way in which 1.0 full-time equivalent (FTE) was defined in the two models. The HRSA model used the average number of hours worked in a week calculated from American Community Survey data as 1.0 FTE, whereas the Montana model attributed 0.5 FTE to anyone who worked less than 30 hours. The Montana team and the HRSA team agreed to use a 40 hour/week as the standard definition of a FTE. This definition eliminated a great deal of the difference between the projections from the two models.

### Providing Consistent Results

**DN:** What are the key messages as well as the lessons learned as a result this team effort?



**Douglas Staiger (DS):** The article comparing our Cohort supply model and the Health Workforce Simulation Model used by HRSA has two key messages. First, despite taking very different approaches, both models are in agreement about the overall growth in supply. One important lesson learned was that once we relied on similar baseline data and FTE definitions, the two models yielded quite similar estimates of current and future supply. Second, our collaboration established agreement that the key uncertainty affecting the future supply of RNs is entry into the workforce (as opposed to retirement, which is relatively predictable). Both models currently make similar assumptions about future entry, but monitoring this flow into the nursing workforce will be critical to ascertaining whether the workforce will grow in the future as the Baby-Boom generation of RNs retires. We hope these findings will help educators and policymakers focus attention on the importance of new entry into the profession as the key determinant of an adequate future supply of RNs.

**GZ:** We need to stop working in silos and come together and share our methodologies to provide more accurately aligned estimates of nursing workforce projections. And, we need to develop a Nursing Masterfile to enable all forecasters to use the same data source when making supply and demand projections.

**DN:** What are your impressions about how the nursing community and others will respond to agreement between the two models and workforce projections?

**PB:** I don’t think the two models will always necessarily agree 100%. Rather, I envision our forecasting efforts as taking place on a baseball field where both of our future projections will land in, say left field versus in the past where

one projection might be in right field, and the other would be in the infield, or even in foul territory. I am expecting that our future forecasts might place the projection in “shallow” left field and the other might be in “deep” left. But both will be in left field and that should provide some reassurance to educators about where the ball, or should I say projection, is likely to end up. Consequently, deans and department chairs should be able to make improved decisions on enrollment and capacity that result in better allocation of faculty, space, budget, and other resources. I also think the nursing community will rightfully indicate the need for more and better projections be provided at the state level.

**GZ:** I believe the nursing community will be pleased with the alignment of our forecasting models as it will provide consistent results using different models. This also demonstrates a partnership between the federal government and an academic institution making an effort to align modeling for the nursing workforce to improve local, state, and federal government workforce planning.

### Forces Affecting Supply and Demand

**DN:** Thinking about the next 10-15 years, what worries you about the nursing workforce?

**DA:** I’m most worried that entry into nursing will turn a corner and start decreasing – perhaps due to a slacking off of wages or anecdotes that preferred jobs are difficult to come by. If this happens in the middle of the aging of the Baby Boomers at times of peak demand (projected to be around 2020-2022), there could be difficulties finding enough nurses.

**DS:** Entry into nursing is at an all-time high, and the current forecasts of future supply assume entry will remain at this level into the future. However, interest in professions tends to ebb and flow over time, and I am most worried

interest in nursing may wane as other occupations in the STEM field become more attractive to women. Men continue to be under-represented in nursing, and it would seem prudent to continue efforts to attract men into the profession to ensure large numbers of new nurses continue to enter the field.

**AC:** In my opinion, the most serious problem with the nursing workforce is the mismatch in the supply and demand of nurses by experience, specialty area, site of care delivery, and geographic location.

**GZ:** With advancements in technology and an increased emphasis on preventative care and population health, current demand models will require adjustments to appropriately reflect changes in healthcare delivery systems. However, currently there are insufficient data available to project how these new delivery system models will affect the workforce demand for nurses over the next 10 to 15 years. This could drastically change the demand side of the model such that there may be a nursing shortage.

**PB:** I don’t disagree one bit with what worries my colleagues! However, I find myself increasingly concerned with forces bearing down on nursing arising from physician shortages that will increase demand for nurses and APRNs, particularly in rural and underserved areas; the aging of the nation’s 76 million Baby Boomers who will be living longer than prior generations and challenge healthcare systems and nurses with multiple chronic conditions that increases their complexity, which will increase the demand for nurses in all types of care delivery settings as well as the intensity of nursing care required; the loss of millions of years of nursing knowledge, experience, and skill as the Baby-Boom generation of nurses retire (all 1 million of them) just when Baby Boomers may need these experienced nurses most; and, lastly, I worry about

what is going to happen with national health reform and how reforms will affect the supply and demand for nurses. All of these forces are bearing down simultaneously and they will impact the millennial generation of nurses who, in a few years, will be the largest component of the nursing workforce. How can educators, policymakers, healthcare organizations, and those concerned with quality and safety find ways to prepare the next generation of nurses for these challenges? Given this larger context, I believe the collaboration and results shown in our work will improve projections of the future and will make a positive difference.

**DN:** This interview with researchers of the two health workforce forecasting models – Cohort supply model and Health Workforce Simulation Model – illustrated the importance of how data drives decisions. Regardless of the data, there will always be some inherent uncertainty regarding the size and age composition of the nursing workforce; the forecast models provide for continued monitoring and study. These models will help inform all those involved in the nursing workforce of current and long-term expectations. We are grateful for the collaborative insight, courage, and consensus made by both teams. Thank you for helping us better understand the key forecast factors that impact RN supply and demand. Perhaps the clear Montana Mountain air allowed for high-level collegiality and mutual trust to emerge and develop these superb modifications and recommendations. It is valuable work for which the teams can be proud. \$

### REFERENCE

Auerbach, D.I., Chattopadhyay, A., Zangaro, G., & Staiger, D.O., & Buerhaus, P.I. (2017). Improving nursing workforce forecasts: Comparative analysis of the Cohort supply model and the health workforce simulation model. *Nursing Economic\$* 35(6), 283-294, 326.