Data Gaps Could Hinder Efforts to Educate Enough Nurses to Meet Demand

By Amy Overcash, Grace Roemer, and Angela Gerolamo

It has been documented widely that the growing and aging population, as well as changes resulting from health care reform, will increase the demand for registered nurses (RNs) (Spetz 2014). To effectively measure the supply of and demand for RNs in this context, timely, accurate nursing education and workforce data are a top priority. One of the recommendations of the Institute of Medicine’s (2010) “The Future of Nursing: Leading Change, Advancing Health” report was that effective workforce planning and policymaking require better data collection and an improved information infrastructure. Critical to this effort are data on applications, enrollment, and graduation from nursing schools, which provide indicators of the nursing workforce pipeline. Thirty-three states have workforce centers; of these, 29 collect nursing education data, 27 collect data on the supply of nurses in the state, and 17 collect data on the demand for nurses in the state. (National Forum of State Nursing Workforce Centers, 2015).

Recent reports from national and state organizations suggest that qualified applicants are being turned away from nursing schools due to lack of capacity (American Association of Colleges of Nursing [AACN] 2014a; Indiana Center for Nursing 2013). A shortage of nurse faculty, clinical sites, classroom space, clinical preceptors, and funding have been identified as major contributors to insufficient capacity to educate nursing students (AACN 2014a). However, nursing education data collected by the AACN and the New Jersey Board of Nursing (NJBN) suggest that nursing schools are not filling all available seats. Further, reporting and data collection anomalies preclude accurately counting the numbers of available seats and qualified nursing school applicants. In other words, neither the precise supply of nursing school seats nor the demand for them is known. Additional research and improvements in data quality are needed to clarify nursing education supply and demand issues, causes, and solutions.

Addressing the national and state-level data gaps identified in this brief will ensure that efforts to meet the demand for baccalaureate-trained RNs are data-driven, have appropriate goals, and use resources efficiently.

LIMITATIONS EXIST IN BOTH NATIONAL AND STATE-LEVEL DATA SOURCES

As part of an independent evaluation of the New Jersey Nursing Initiative (NJNI) funded by the Robert Wood Johnson Foundation (RWJF), Mathematica Policy Research sought to describe the current nursing education landscape in New Jersey. After a comprehensive analysis of available secondary data sources to examine trends in nursing education, the evaluation team identified the data collected by the NJBN through the New Jersey Collaborating Center for Nursing (NJCCN) as the only source for school and state-level data in New Jersey. Other
data sources lacked state-level data and detailed school-level information. Table 1 summarizes sources of nursing education data.

The NJCCN administers surveys annually to nursing schools in New Jersey to gather information on enrollment and graduation trends, as well as the capacity of the schools to recruit, admit, and educate nursing students at all levels of RN education. Despite the comprehensiveness of the data collected by NJCCN, accessing these data was challenging due to the lack of established processes for exchange of state data.

Recent reports from national and state organizations have identified a critical limitation to studies of nursing school supply and demand: each nursing school has historically documented only its own application process and thus it has not been possible to adequately account for students who apply to more than one school (AACN 2013; Indiana Center for Nursing 2013). This has created a paradox: nationally, 352,455 applications to baccalaureate and graduate nursing programs met admission criteria for all semesters in calendar year (CY) 2013; however, in CY 2013, more than 24,000 available seats went unfilled as more than 78,000 qualified applications were denied admission to these programs (AACN, personal communication in response to data available at http://www.aacn.nche.edu/research-data/standard-data-reports, November 13, 2014). It is important to note that the AACN provides counts of qualified applications, not qualified applicants; thus, it is possible that all qualified applicants are admitted but that there are not enough qualified applicants to fill all available seats.

POTENTIAL APPROACHES TO IMPROVING DATA

As the nation’s population grows and ages and changes in health care delivery take shape, it will be increasingly critical to accurately measure nursing education and workforce trends. This is consistent with the Institute of Medicine’s recommendation to improve data collection and information infrastructure. Similarly, the New Jersey Action Coalition has identified nursing workforce data as one of its key pillars for transforming healthcare in the state. Without high quality nursing education data, it is difficult to determine whether there is a lack of qualified applicants to nursing schools, a lack of available seats (lack of capacity) for qualified applicants, difficulty predicting the size of the new
## Nursing education data sources

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Advantages</th>
<th>Limitations to state/school-level analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Jersey Board of Nursing</td>
<td>Provides comprehensive data on the demographic, enrollment, and graduation trends of nursing students in all nursing schools in the state of New Jersey, facilitating analysis of changes across degree programs. Provides information on faculty vacancies, facilitating analysis of changes in nursing education capacity.</td>
<td>None</td>
</tr>
<tr>
<td>New Jersey Collaborating Center for Nursing</td>
<td>Expands on data collected by the New Jersey Board of Nursing by gathering additional student- and faculty-level information.</td>
<td>Longitudinal analysis is compromised by data quality and reporting issues prior to the 2011-2012 academic year.</td>
</tr>
<tr>
<td>American Association of Colleges of Nursing</td>
<td>Provides comprehensive information on students and faculty in baccalaureate and graduate nursing programs.</td>
<td>Does not include information on associate and diploma degree-granting institutions. Only includes member schools.</td>
</tr>
<tr>
<td>National League for Nursing</td>
<td>Provides comprehensive information on the nation’s nursing student population and nurse faculty.</td>
<td>Lacks detailed state-level data</td>
</tr>
<tr>
<td>National Workforce Survey for RNs</td>
<td>Helps fill the gap left when The National Sample Survey of Registered Nurses ended. Provides context for the registered nursing workforce.</td>
<td>Lacks historical data because the first survey was administered in 2013. Lacks detailed information on nursing schools</td>
</tr>
<tr>
<td>National Sample Survey of Nurse Practitioners</td>
<td>Provides context for the nurse practitioner workforce.</td>
<td>Lacks historical data because the first survey was administered in 2012. Limited to nurse practitioners. Lacks detailed information on nursing schools</td>
</tr>
<tr>
<td>Integrated Postsecondary Education Data System</td>
<td>Comprehensive source of information for institutions that participate in or are applicants for participation in any federal student financial aid program.</td>
<td>Lacks detailed information on nursing schools.</td>
</tr>
</tbody>
</table>


* As with other data sources listed in this table, the actual number of qualified nursing school applicants is difficult to determine accurately, because the application data do not account for students who applied to more than one program.

**Table 1**
entering class (inaccurate enrollment forecasting), or some combination of these challenges. Accurate nursing education data are vital to understanding trends in the nursing workforce, including whether the projected supply of nurses will be adequate to meet demand, and will be educated in line with the Institute of Medicine’s goal that by 2020 80 percent of nurses have a baccalaureate degree. Thus, in the following section we present potential solutions to the issues addressed in this brief, beginning with ways to address the data gap.

Increase access to data and improve the quality of nursing education data. State-level workforce centers or other data quality technical assistance providers should ensure that nursing schools receive technical assistance in reporting admissions data. The annual NJBN/NJCCN survey is the most useful source of data on nursing school admission, graduation, and faculty trends in New Jersey. Although in the past this critical data source was compromised by challenges in data collection and reporting, NJCCN now provides technical assistance to nursing school respondents to improve the quality and consistency of the survey data.7 All nursing workforce centers should ensure that nursing schools receive technical assistance in reporting admissions data. The annual NJBN/NJCCN survey is the most useful source of data on nursing school admission, graduation, and faculty trends in New Jersey. Although in the past this critical data source was compromised by challenges in data collection and reporting, NJCCN now provides technical assistance to nursing school respondents to improve the quality and consistency of the survey data.7 All nursing workforce centers should encourage to adopt the Minimum Nursing Education Program Data Set; this should facilitate more accurate data collection at the state level as well as improved comparisons across states. Nursing workforce centers should also re-evaluate the measures in the Minimum Nursing Education Program Data Set to ensure that they are adequate for assessing nursing education trends across states. A further consideration is the secure release of annual public-use files, including all or a portion of nursing school-level data collected in each state.8 Increased transparency and access to these data will support study and understanding of the unique trends shaping the nursing education landscape in each state. Unfortunately, state-level nursing workforce centers might not all be well-resourced for facilitating access to these data.

States should work with AACN to continue to improve the centralized application system and encourage all nursing schools to participate. The apparent contradiction between denying admission to qualified applications while seats remain empty points to a data gap, which AACN is working to resolve at the national level and which needs to be addressed at the state level. AACN has developed the Nursing Centralized Application System (NursingCAS), which serves as a centralized application portal for baccalaureate applicants to participating nursing schools across the country (AACN 2014b). According to AACN, NursingCAS is expected to enable nursing schools to maximize baccalaureate capacity (fill empty seats) through this centralized application function. Use of NursingCAS has been modest.9 However, a new version of NursingCAS (version 3.0) was launched on October 15, 2014. According to AACN, this new version addresses user

<table>
<thead>
<tr>
<th>Program type</th>
<th>Number of schools</th>
<th>Qualified applications</th>
<th>Accepted applications</th>
<th>Available seats</th>
<th>New enrollees</th>
<th>Percentage unused capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-licensure BSN</td>
<td>19</td>
<td>4,035</td>
<td>2,591</td>
<td>1,745</td>
<td>1,335</td>
<td>23.5</td>
</tr>
<tr>
<td>Pre-licensure MSN</td>
<td>1</td>
<td>51</td>
<td>51</td>
<td>40</td>
<td>30</td>
<td>25.0</td>
</tr>
<tr>
<td>RN-BSN</td>
<td>15</td>
<td>4,277</td>
<td>3818</td>
<td>2,444</td>
<td>1,876</td>
<td>23.2</td>
</tr>
<tr>
<td>Post-licensure MSN</td>
<td>14</td>
<td>1,086</td>
<td>983</td>
<td>1,397</td>
<td>983</td>
<td>29.6</td>
</tr>
<tr>
<td>DNP</td>
<td>3</td>
<td>227</td>
<td>196</td>
<td>175</td>
<td>169</td>
<td>3.4</td>
</tr>
<tr>
<td>PhD in Nursing</td>
<td>3</td>
<td>38</td>
<td>30</td>
<td>23</td>
<td>27</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Note: Post-licensure MSN includes clinical and nonclinical tracks.
BSN = bachelor of science in nursing; DNP = doctor of nursing practice; MSN = master of science in nursing; RN = registered nurse.
feedback; version 3.0 will enable schools to customize program-specific application requirements and can also provide schools with web-based admissions management software.

**Improve enrollment forecasting and use of wait lists in nursing schools.** Nursing schools should seek technical assistance as needed in the use of historical and economic data to predict acceptances and enrollments.  
NursingCAS version 3.0 will also provide useful admissions management functionality for participating schools. Likewise, schools might benefit from identifying and sharing best practices in using wait lists to fill empty seats; best practices could be shared across nursing programs and also with other types of academic programs within their respective institutions.  
The creativity and networking of nursing school administrators will support nursing programs’ enrollment management capabilities.

Supporting nursing school participation in NursingCAS, while improving quality and expanding access to data on the number of qualified applicants, available seats, and enrollment, will enable stakeholders to answer questions currently difficult to address, such as the true scale of the nurse faculty shortage and nursing school capacity to meet the demand for educating baccalaureate-prepared RNs. If improved data quality identifies insufficient numbers of qualified baccalaureate applicants, schools could implement targeted marketing techniques to increase the number of qualified applications for the nursing programs with the greatest numbers of empty seats. Furthermore, schools that have difficulty filling seats could benefit from a thorough review of reasons why applicants are declining admissions offers, which could inform program modifications.

**REFERENCES**


**ENDNOTES**

1 Consistent with the Institute of Medicine’s (2010) recommendation to increase the number of nurses entering the workforce who are prepared at the baccalaureate level, this issue brief focuses only on baccalaureate program applications and enrollment.

2 The NJNI was launched in 2007 in response to rising concerns about then current and anticipated RN shortages, as well as impending nurse faculty retirements and a lack of qualified candidates to fill those positions. The trends that drove the development of the NJNI have been documented statewide and nationally in the literature (Dickson and Flynn 2006; Reinhard et al. 2007; AACN 2014a).

3 Because surveys are administered to schools each fall to collect data from the prior academic year, the survey referencing the 2013–2014 academic year was not available for analysis and inclusion in this issue brief.

4 The NJCCN (2014) report states the following limitation: “Unique identifiers for students applying are not captured with current methodology, therefore the number of qualified applicants could have duplicates where students apply to multiple schools and are accepted. This has implications for calculations made on those enrolled.” Further, NJCCN imputed the number of qualified applications for RN-BSN and post-licensure master of science in nursing (MSN) because three schools reported unreliable data; one school reported that 3,503 applications were qualified and 3,503 students were admitted for the RN-BSN program, which, according to the NJCCN report, is “inflating the estimate.”
The NJCCN (2014) report states the following limitation: “How available seats are determined needs further exploration. Some schools identify no limit which is not possible in one year time, further refinement of this question needs to be considered.” NJCCN imputed the number of RN seats available in pre-licensure BSN programs because one school reported “unlimited RN seats available” and two schools reported “unknown” and “100+” for baccalaureate-qualified applicants. Post-licensure BSN available seats were also imputed because seven schools reported unreliable data (three schools reported “unlimited,” three schools reported “999,” and one school reported “100+”).

The New Jersey Action Coalition is one of 51 action coalitions around the country created to implement the recommendations identified in the Institute of Medicine (2010) report *Future of Nursing: Leading Change, Advancing Health*, the recommendations focus on transforming the nursing profession.

NJCCN has taken several steps to improve the quality of nursing school data and reporting: (1) refining survey items to improve clarity, (2) adding and deleting survey items to improve the usefulness of the data collected, (3) providing nursing schools with a data dictionary for survey items, and (4) providing technical assistance to nursing schools through Q&As and a webinar that reviews survey items and provides instructions on accurate reporting of those items. The webinar can be accessed through NJCCN’s website. NJCCN has also implemented quality control procedures; nursing school deans now attest to the accuracy of their schools’ reported data. NJCCN has found that these measures have improved response from schools including the timeliness of their reporting.

NJCCN is asking schools whether they would allow their reported data to be made publicly available in an effort to improve transparency.

For example, only three schools of nursing and one RN diploma program in New Jersey participated in NursingCAS for the 2012–2013 academic year application. Rutgers University is unable to use NursingCAS because applicants use a centralized university-wide portal that facilitates application to multiple schools within the Rutgers system.

For example, if 4,035 applications throughout New Jersey in 2012–2013 yielded just 1,335 enrollments for 1,745 baccalaureate seats, then schools in aggregate may need 5,274 applications to fill 1,745 seats. This analysis would need to be applied on a school-by-school basis.