The Nursing Workforce Challenge

*Public Policy for a Dynamic and Complex Market*

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Report to the
Jonas Center for Nursing Excellence
Understanding the Nursing Workforce
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Executive Summary

This report reviews major policy issues related to the nursing workforce, drawing upon prior Urban Institute work, new literature review, assessment of federal survey data, and key informant interviews.

Key Points

• Nurses constitute the backbone of health services, spending the most time with patients and playing a key role in promoting quality and medical safety.

• Nursing has faced recurrent short-term labor market shortages as shown by vacancy rates reported by employers. Intermittent shortages vary by state and are normal, as the market is not static but responds to shifting supply and demand. Unpredictable shifts in both supply and demand can also occur, as seen in the current economic downturn.

• However, there are now long-term structural issues as well. The aging of the population of Americans will increase demand for nursing care while retirements will reduce the nursing workforce available to care for them. The large generational bulge of nurses who were educated in the long expansionary period of the late 1960s and 1970s are now nearing retirement age, and the succeeding age cohorts of nurses are smaller.

• Nursing wages serve as a signal both to would-be nurses and to nurse employers and thus affect both supply and demand.
  • Lower wages reduce the attractiveness of nursing as a profession and so reduce supply. At the same time, they increase demand for nurses by lowering employers’ total wage bill.
  • Wages that do not accurately reflect the value of nurses’ contributions allow employers to use them at less than their full capabilities. Conversely, higher wages draw more people into nursing and drive employers to use the more costly input more efficiently.
  • Some efforts to combat shortages, such as importation of foreign-trained nurses, offer temporary relief but may exacerbate the problem by depressing wages in the short run.

• The frequently cited projections of future large shortages of nurses are based mainly on demographic trends and past patterns in supply and demand. The different projections produce a broad range of shortage estimates and should not be relied upon to provide policymakers with a precise number of nurses that will be needed at any particular future time.
Moreover, the overall projections do not address the qualifications of nurses needed to respond to shifting demands for various levels of care. Therefore, good data need to be filtered through informed judgment to support workforce planning.

Projections of nursing supply relative to demand vary across states and across regions within states, particularly between rural and urban settings. Medical personnel, including nurses, tend to work near where they were trained, so the distribution of support for nursing education matters.

Men and racial, ethnic, and language minorities are not well represented in the nursing workforce. Language skills are essential for high quality care, and the availability of culturally appropriate care has been shown to improve patient outcomes. In addition, encouraging a broader range of people to go into nursing will expand the labor pool.

The evidence that nurses contribute greatly to producing high quality care is strong, and nurses’ unique contributions to care teams for expanded access to primary care, coordination across modalities of care, and continuity of care merit greater attention as health care reform discussions proceed.

Educational institutions have shown substantial responsiveness to demand for new paths to licensure and for mid-career advancement from one nursing status to another or into nursing from another career. Nonetheless, educational bottlenecks and rigidities still impede smooth increases in nursing supply in response to increased demand.

- The educational pipeline is long (5 to 10 years from application to productive entry to the workplace), and some evidence suggests that demand for nursing degrees exceeds available student slots.
- Schools report difficulties in maintaining sufficient faculty. Nurses today tend to obtain their doctorates later in life than during earlier eras and thus will likely have shorter faculty careers. It is hard for schools to staff for fluctuating demand using lifetime-tenured positions, and it can be hard to pay differential salaries in times of tight faculty supply.
- Schools face shortages of teaching space and clinical training placements.

Current and Recommended Responses and Interventions

- The market has responded to the recent shortage as it did in previous shortages. Enrollment in nursing programs has risen over the past several years in response to increases in wages and improvements in working conditions. Diverse private initiatives seem helpful but are often limited in scope. Many are also institution-specific and lack a clear way to bring them to scale.
- Public funding has historically been a mainstay of nursing education with a focus on increasing the number of nurses trained. Going forward, it could be tailored to help address the structural aspects of the current shortage.
- Key federal Title VIII support for nursing education has declined markedly as a share of health spending and on a per-student basis since the 1970s era of expansion.

- Graduate medical education funding supports hospitals and would have to be retooled to support clinical training for nurses in new roles in a redesigned system.
• Further support of educational bridge programs could facilitate access to nursing careers for a broader population.

• Public funding of health coverage through Medicare and Medicaid accounts for over a third of total health expenditures. Payment reforms to these two programs, such as those that focus on outcomes rather than on procedures, could serve to recognize the contributions of nurses. They may be easier to achieve today than before as high level policymakers, both public and private, are focusing on reform of health financing and delivery.

• Regulatory reform to address evolving scopes of practice could allow appropriately qualified nurses to contribute at more advanced levels of practice and ancillary personnel to assume some tasks traditionally assigned to nurses. Scope of practice change should be coordinated with educational policy and supported by payment reform.

Moving Forward

• Today’s health care system stands on the brink of great change. Decisions taken under public reform—and in the private sector’s push for better value—will massively influence the future of nursing. Policies under discussion include how to expand health coverage, the scope of benefits to be covered, what providers should participate on what basis, and how services are priced in various delivery modes and for various levels of patient acuity. It is imperative that nurses be constructively involved in policy discussions on the future shape of health care.

• A nursing workforce agenda going forward should expand its focus beyond professional aspirations and advocate more strongly for policy relevance. It may be helpful for nursing advocates to emphasize nurses’ positive contributions, such as promoting safety, relative to messages that may seem negative, such as complaints about working conditions.

• Specific advocacy goals could include the following:
  • Setting clear and measurable objectives and prioritizing among them. Public and private policymakers need realistic actionable proposals rather than restatement of the dimensions of the problem and the need for action.
  • Promoting greater investment in nurse workforce data. Information should be available about developing shortages and surpluses by geographic area. A particular emphasis is needed on timeliness and consistency across reporting formats.
  • Documenting further the business case for nurses. A greater understanding of nurses’ contributions to improving access and promoting quality of care is critical as the health system is redesigned. Such information can help promote payment and other reforms that encourage institutions to enhance nursing capabilities in the interest of better and more cost-effective patient care.
  • Broadening the focus of policy emphasis. Focusing simply on the number of nurses trained or in the educational pipeline without paying attention to how they are paid and used once in practice does not serve the long-term interests of either nurses or nurses’ employers. Policies that better match nurses’ wages to their contribution to care will both encourage an adequate supply of nurses and promote their efficient use.
Introduction

Concerns about nursing shortages have existed for decades, and there is evidence that the labor market adjusts for cyclical, short-term shortages. Demographic trends and ongoing changes in the health care delivery system suggest that structural issues in this market now dominate cyclical concerns. However, there are now long-term structural issues as well. The large generational bulge of nurses who were educated in the long expansionary period of the late 1960s and 1970s are now nearing retirement age, and the succeeding age cohorts of nurses are smaller, even as population aging will increase demand for care. These issues will require solutions beyond the traditional labor-market responses of improving wages and working conditions or simply graduating more nurses without regard to their likely career trajectories or the system’s long-term needs. The current interest in broad reform of the U.S. health care system provides an opportunity to consider solutions that take a long view. Scopes of practice, payment mechanisms, and the organization of care delivery are all on the table, and the decisions made will substantially affect the nursing profession.

This paper aims to deepen understanding of the issues affecting the nursing workforce for general health policy audiences. We emphasize the need for thoughtful action and describe available and appropriate policy responses.

This paper focuses on registered nurses (RNs, sometimes called registered professional nurses, as in New York). Registered nurses receive two, three, or four years of formal education, depending on their background and which pathway they choose to licensure (box). This report does not address issues associated with other nursing personnel, such as nurse’s aides or licensed practical or vocational nurses, who have less education and more limited scope of practice. And it touches only briefly on nurse practitioners, who have more education and a broader scope of practice, when considering emerging roles for nurses, especially in health systems reform.

RNs outnumber all other health professionals (HRSA 2006; BLS 2008a) and provide the vast bulk of patient care. They work in a broad range of settings from nursing homes to insurance companies. Most practice in hospital inpatient settings, but hospitals’ dominance in nurse employment is declining. Nurses are involved in all aspects of health care, and, as health care delivery has changed, so have nurses’ practice settings. Further evolution in health care delivery will continue to change the distribution of personnel across sites.

Changing delivery modes and the aging population are increasing the number of nurses needed per U.S. resident.

Demographics and the nature of the delivery system are the largest (but not the only) determinants of how many nurses the country will demand (or need) in the future. Demographics and the nursing education system will be the largest (but, again, not the only)
Academy and Jonas Center (2006), allows only a sampling of states’ and institutions’ responses to workforce problems. For a broader discussion of diversity issues, see New York.

Note that the supply and demand for nurses is a very broad topic. In focusing here on the number of nurses, this report gives much less attention to other important aspects of the nursing workforce. Most notably, we do not address how composition of the workforce affects cultural and language appropriateness, nor do we provide detail on the distribution across states and by rural/urban location within states. Finally, space allows only a sampling of states’ and institutions’ responses to workforce problems. For a broader discussion of diversity issues, see New York Academy and Jonas Center (2006).

II. Dimensions of the Issue
A. The nursing workforce today

Nurses are the basic building blocks of health care. The most recent estimate puts the number of registered nurses in the United States in 2006 at 2.3 million (Buerhaus et al. 2009). The number of RNs has been rising steadily since 1980 (figure 1). The share of all nurses that work and the share that work full-time has also risen. Of course, population growth alone calls for more nurses, and population aging increases health care needs, but the number of nurses has grown at a faster rate than either the total population or the over-65 population (figure 2).

The number of nurses has always risen in step with overall health spending (Buerhaus et al. 2009). Most nurses primarily work in direct patient care—within hospitals, nursing homes, or ambulatory care settings. The range of their practice settings and responsibilities attests to registered nurses’ broad knowledge, skill set, and flexibility. Increasingly, nurses are also playing new roles in health care, working in advanced-practice settings or outside of direct care.

Hospitals have long employed the majority of nurses (figure 3). However, even surgery can now take place on an outpatient basis, and hospitals’ share of overall medical spending has fallen, along with their share of nursing employment. Between 1984 and 2004, the proportion of nurses working in hospitals fell from 68.2 to 57.4 percent, while employment in ambulatory care rose from 8.7 to 11.7 percent. A growing share of nurses—6.6 percent, up from 1.4 percent in 1984—work outside of health care institutions, for example, in insurance jobs, education, policy or regulatory positions, or health care information technology. The number of nurse educators is important, since these nurses train future nurses. Their ranks are again rising after relative declines through the 1980s (figure 3).

Trends in demographics, employment setting, and education all affect the balance between supply and demand for nurses. Other factors, including population health, the organization of care, the increasing complexity of care, and payment for care, also play a role. A short look backward provides useful perspective on today’s issues and planning for the future.

Education for RN Licensure

“There are three major educational paths to registered nursing—a bachelor’s of science degree in nursing (BSN), an associate degree in nursing (ADN), and a diploma. BSN programs, offered by colleges and universities, take about 4 years to complete. In 2006, 709 nursing programs offered degrees at the bachelor’s level. ADN programs, offered by community and junior colleges, take about 2 to 3 years to complete. About 850 RN programs granted associate degrees. Diploma programs, administered in hospitals, last about 3 years. Only about 70 programs offered diplomas. Generally, licensed graduates of any of the three types of educational programs qualify for entry-level positions. Many RNs with an ADN or diploma later enter bachelor’s programs to prepare for a broader scope of nursing practice. ... In all States, the District of Columbia, and U.S. territories, students must graduate from an approved nursing program and pass a national licensing examination, known as the NCLEX-RN, in order to obtain a nursing license.” —Bureau of Labor Statistics (2008b)

“The functions of RNs are strikingly diverse” —Institute of Medicine (1983, 317)
B. A brief retrospective on nursing workforce developments and policy

In one way, current concerns are not new. Nursing shortages have come and gone over many years, in eras of very different scopes and structures of the health care delivery system. In other ways, concerns are now different. They involve long-term rather than immediate market conditions, and the health policy environment has changed substantially since the last major change in workforce policy that began in the mid-1960s.

Recurring shortages over time

Since at least the 1930s, nursing shortages have periodically attracted public attention and prompted discussions of reform (see, for example, Leroy 1982). The most recent such period arguably began in 1999 and lasted longer than in earlier years (Buerhaus et al. 2004). The historical pattern suggests that market forces played the dominant role in ameliorating this and earlier shortages. Observers across different eras have commented on the key role of increases in nurses’ wages relative to the costs of living and of other occupations (Aiken 1982, 1989; Buerhaus et al. 2004). In addition, hospitals report undertaking at least a thousand local initiatives to improve the conditions of nursing work (AHA 2002). They have also come to depend on nursing temporary employment agencies to supplement employed nurses. In addition, foreign-educated nurses now constitute a much larger share of the workforce, albeit concentrated in relatively few areas (Polsky et al. 2007).

Shortages are periods of imbalance in nursing labor markets. At such times, hospitals and other prospective employers want to buy more nursing services than nurses are willing to sell given the wages and working conditions on offer. Shortages can be caused by shifts in either demand or supply or by a mismatch in desired and offered mixes of skills and experience. They can appear national in scope but generally reflect local conditions. Hires are usually site specific, most nurses do not readily migrate across state lines, and fiscal circumstances can vary considerably by market and even by institution.

The strains of the imbalance between supply and demand are felt on both sides. In times of shortage, hospitals have to do more to recruit and retain nurses—pay them more, improve their work environment, and take other measures—and to use them more efficiently (May et al. 2006). Nurses experience demands for longer shifts or more overtime, to cover more patients per shift, and other increased workloads (Buerhaus et al. 2007b). Shortages are most commonly reported by hospitals, but ambulatory care, education, and other settings also feel the effects, as practice settings compete for nurses.

Shortages are typically declared based upon immediate employer experience rather than long-term measures of supply and demand. Indicators include job positions unfilled, increased use of contract nursing services, need to pay bonuses, and reports of difficulty in hiring. In normal markets, shortages are inherently temporary, corrected by some mix of increase in supply and decrease in demand. However it is measured, studies and news accounts suggest that the short-term shortage of the early 2000s is waning (Buerhaus et al. 2004, 2007c; Dougherty 2008).

The opposite of a shortage is a surplus, a time when employers can readily obtain the numbers and capabilities of nurses they want at accustomed wages. Surpluses seem mainly to go unremarked, although in the mid-1990s, the Pew Commission (1995) explicitly foresaw an emerging surplus owing to an expected downsizing of hospitals from better overall coordination of health care. This surplus did not in fact occur, as in the latter 1990s private and public health plans did more to hold down payments for hospital care than to discourage use

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“In measuring labor shortages, it is essential to use a combination of labor market indicators, to realize the complexity of the concept, and not to hastily conclude that a shortage exists and then quickly generate solutions.”—Pindus et al., 2002

“The key factor is prevailing wage. As wages increase, supply often increases. ... Economists define shortage as a situation in which demand exceeds supply and a surplus as a situation in which supply exceeds demand. We in health care muddy the water by saying there aren’t enough RNs.”—Kovner (1999, p.2).
of hospital care. All projections need frequent revision, but particularly those made in eras of rapid change.

Short-term imbalances of supply and demand send useful signals to sellers and buyers about the need for changes in wage levels and roles for labor. A long-term shortage in a vital profession like nursing, on the other hand, is a substantial concern for public policy (GAO 2001, AACN 2009e; IOM 2008; Buerhaus et al. 2007b; NLN 2009b).

**Federal policy and large workforce shifts starting in the mid-1960s**

Two major federal policy interventions of the mid-1960s greatly affected the nursing workforce. First, the Nurse Training Act of 1964 created Title VIII of the Public Health Service Act to subsidize the supply side of nursing through grants and loans from the Health Resources and Services Administration (HRSA) to nursing schools and nursing students (IOM 1983). The Act addressed immediate concerns of shortage, but was a long-term intervention to increase both the numbers and the level of training of nurses. Its funding peaked a decade later, as discussed below.

Second, Medicare and Medicaid created massive new demand for health services. Federal and state spending rose from zero in the enactment year of 1965 to over $24 billion in 1974, about 55 percent for care in hospitals (CMS 2008). Moreover, hospitals enjoyed cost-based reimbursement, so that they were simply repaid for spending more on nurses. This increase in demand then helped attract more students into nursing.

These huge boosts for nursing education and employment coincided with two broader social trends: higher education was expanding to serve the baby boom cohort of Americans, then just starting college, and women were becoming more likely to enter and remain in the labor force than their postwar mothers had been. As a result, the number of nursing graduates soared between 1965 and 1975, from about 30,000 to about 70,000 a year (IOM 1983). This surge produced a historically large cohort of nurses. Today, this baby boom generation of nurses is nearing traditional retirement age (figure 4).

Also in the 1960s, the American Nurses Association (ANA) and others pushed to raise nurses’ educational credentials. They were responding to a perceived shortage of skills, not of numbers. Their rationale was that greater professional autonomy and more advanced education in science were needed to perform well within an ever-advancing clinical environment (Donley and Flaherty 2008). Before 1965, over three-quarters of nurses were educated within hospitals, while only a minority had baccalaureate degrees (BSNs) (IOM 1983; Donley and Flaherty 2008). By the mid 1970s, not only were there far more nurse graduates per year, but also a large majority were college educated, somewhat more often in new community college programs granting associate degrees (ADNs) than in BSN programs (IOM 1983). Diploma-granting programs within hospitals were on the decline, and many hospital programs started to move toward offering their graduates community college degrees through joint programs. Diploma-granting programs within hospitals were on the decline, and many hospital programs started to move toward offering their graduates community college degrees through joint programs. During 1980-2004, the share of nurses whose initial nursing education was a bachelor’s or associate degree approximately doubled, while that of diploma nurses halved (Figure 5).

**Changes in the Policy and Economic Environment over Time**

This historical overview lends support to the concerns of observers who feel that future imbalances between supply and demand may be more difficult to surmount than past ones. Since the 1960s
and 1970s, for example, the population has aged, and new workers no longer greatly outnumber retiring ones. Moreover, professions other than nursing also need to replace aging workforces (Council on Competitiveness 2008). Support for public planning has been in decline since the high-water mark of the National Health Planning Act of 1974. Both public and private payers have moved away from cost-based hospital reimbursement—with prospective payment for hospital care in the 1980s and a general shift in insurance toward managed care in the 1990s—and nurses’ services cannot normally be separately billed, apart from certain advanced practice nurses. Leaps in federal and state funding achieved in the past appear unlikely in an era of large deficits and financial crisis. At the same time, new concerns are arising about the level of education and training and sophistication needed for nurses to be able to play larger and more independent roles within an evolving health system. These and other shifts are considered further in the following sections.

C. Projections of the future nursing supply and demand for nurses

The nursing workforce could grow rapidly during the 1960s and 1970s expansions of health coverage because maturing baby boomers were swelling the labor force. Now, the aging of boomers will simultaneously shrink the nursing workforce and swell the elderly population that needs the most nursing care. There is widespread agreement in the nursing literature that a serious shortage of nurses looms ahead (HRSA 2004; CCNA 2008; NLN 2009b; ANA 2008; IOM 2008; Buerhaus et al. 2009). However, there is much less agreement on the size and timing of the shortage.

The concept of a shortage is straightforward but, in practice, it is difficult to quantify. On the demand side, there is no standard for how many nurses are needed (Goldfarb et al. 2008), and various short-run indicators are cited. The lack of agreed-upon, objective standards is exacerbated by the need to project demand forward in time, where there are many unknowns, notably new technologies and changing modes of care delivery. On the supply side, projections must take into account not only the size of the age cohorts entering the labor force over time, but also the attractiveness of nursing as a profession—wages, schedules, working conditions, and prestige—relative to competing professions, and how the perception of the relative merits of different careers will change over time.

These difficulties notwithstanding, researchers regularly make projections because health care workforce planning needs such estimates. Three sets of projections are commonly cited—HRSA (HRSA 2004), the Bureau of Labor Statistics (BLS 2008b), and Buerhaus et al. (2004). Each of these sources has built its own model to generate projections of future nursing employment levels. HRSA and BLS project both supply and demand, while Buerhaus and colleagues project supply only and compare this estimate with the HRSA demand projection. The models have some assumptions in common, but other assumptions differ, including how far to the future the projections look. As a result, both supply and demand projections differ across the models as do the predictions of shortage.

Supply, demand, and shortage projections

The HRSA model predicts that there will be about 2.7 million nurses in 2020, of whom 2.1 to 2.3 million will be “active in the nursing field.” Based on current patterns of workforce participation (full-time or part-time, age at entry, age at retirement), these estimates imply that the number of full-time equivalent (FTE) nurses will decline from about 1.9 million in 2000 to about 1.8 million in 2020. In contrast, the BLS model predicts that there will be 3.1 million active nurses in 2016. Under the same participation patterns, this model suggests about 2.5 million FTEs (authors’ calculations). In 2000, Buerhaus and colleagues estimated that the number of FTE nurses

“available data on supply and demand for RNs are not adequate to determine the magnitude of any current imbalance between the two with any degree of precision.” —US Government Accountability Office (2001)
would fall from a peak of 2.2 million in 2012 to just over 2 million in 2020. On the demand side, HRSA’s baseline model projects demand for nurses at 2.8 million FTEs in 2020, while BLS estimates that there will be 3.1 million jobs for nurses in 2016, a figure unadjusted for part-time work (BLS 2008b). A comparison of these demand estimates to the various estimates of supply yields shortage predictions of some 300,000 to 1,000,000 FTEs.

All of the models assume that past trends on both the supply and the demand sides will generally continue into the future. HRSA’s demand model extrapolates current national patterns of health care use and assumes that future demand will be driven largely by population characteristics. (It does make separate estimates for alternative scenarios of wages, HMO enrollment rates, inpatient and outpatient surgery rates, insurance coverage status, and other factors.) On the supply side, both HRSA and Buerhaus and colleagues assume that the behavior of each age cohort will follow patterns seen historically in entry into nursing by new graduates from nursing programs; thus, the projected number of graduates from nursing programs, like the demand for nurses, is driven largely by population growth. The share of students attracted to nursing and workforce participation rates by age and education level are also assumed to remain relatively stable into the future. Exit from the nursing workforce due to mortality, retirement, disability, and other reasons likewise are assumed to follow past patterns. The models do allow for some deviations from the past. For example, the HRSA model considers the effect of upgrades in nursing education levels. However, the models do not control for factors other than wages that affect the attractiveness of the nursing profession. The BLS model takes into account broader economic trends—labor force participation rates by age, sex, and race/ethnicity; total economic performance; and industry-level employment in the health sector—and generates estimates that are between the other two models.

Basing projections on past trends makes sense. But the resulting projections should be viewed in light of the assumptions that produced them and revised when these assumptions are no longer warranted. In 2007, Buerhaus and colleagues revised their supply estimates upwards to 2.5 million in 2020 (Auerbach et al. 2007) when the number of working nurses grew six times faster than had been predicted between 2000 and 2004 (Kuehn 2007). This revision in light of newly available data is an indication of how difficult it is to project supply. The authors cite a later age at first entry into nursing and an overall increase in interest in nursing as a profession as the key drivers of the change. The likely evolution of health care delivery in the coming decade suggests that revisions will also be needed in projections of demand.

Regional differences

Although the market for nurses can appropriately be considered to be national, shortage estimates differ across states and across regions within some states (GAO 2001). A recent study concludes that nurse shortages are “significantly greater” in rural areas than in urban ones (Cramer et al. 2006). Research has shown that the geographic distribution of shortages of nonphysician providers, which includes nurses, follows the distribution of shortages of physicians, and that these shortages are more frequent in states with lower educational capacity for each provider type (Cooper et al. 1998). These studies suggest that simply producing more nurses may not be effective in alleviating areas’ shortages if attention is not paid to where the nurses are produced.

Underlying factors affecting supply

Among the most important factors in the supply models are the influence of teaching capacity, tuition costs, working conditions, and RN compensation. Considerable anecdotal evidence suggests that teaching capacity is strained, tuition costs have outpaced federal aid, working conditions have declined as compared with other employment options available to nurses, and growth in compensation has been relatively stagnant. These factors may be amenable to change, and so their effects are worth considering in greater depth.
Nursing education

Overall, nurses have a higher rate of labor force participation than other college-educated women (figure 6); retention within the profession is relatively high. Hence, there is less scope for increasing the number of FTEs from within the existing pool of trained nurses and greater need for increasing the number of nurses being trained. Nursing educational capacity is, therefore, an important key to future nursing supply.

The number of students entering nursing has been growing since 2001, following several years of decline (figure 7). The number of nursing students is almost 50 percent higher than it was in 1996 when the decline began, although the rate of growth has slowed recently. There are indications, however, that nursing educational capacity may be straining to accommodate all of the potential enrollees. The National League for Nursing reports that almost 100,000 applications were rejected in the most recently surveyed year, not because the applicants were unqualified but because there were no places available for them (NLN 2009a). Because many applicants submit multiple applications, it is not clear how many individuals are represented by these applications. In the face of a projected shortage, however, the rejection of any qualified applicants suggests a need to examine educational bottlenecks.

The production of nurses takes several years, so there is a lag between market signals of a need for more nurses and when the nurses can be available. Constraints on producing more nurses include physical capacity at nursing schools, faculty, and opportunities for clinical experience (AACN 2008a). In addition, there is a lack of mentors available to help new nurses make the transition from student to practicing nurse in a clinical setting.

Physical capacity constraints are seen in general classrooms but more strongly in laboratory space. Expansion of nursing school capacity can be costly for schools since building and stocking science labs is expensive. Such costs can be difficult to recoup through tuition; universities often have limited ability to charge differential tuitions to students based on their declared field of study. As a consequence, although nursing courses are more expensive to conduct, nursing students generally pay the same tuition as, say, liberal arts majors who require little special equipment or materials, although nursing students may, however, face some specific laboratory charges.

Faculty constraints are the most frequently cited bottleneck. Universities may find it difficult to offer nursing faculty higher salaries than other faculty members even though they do for professional schools including law, medicine, and engineering where outside salaries are much higher than in nursing (Joynt and Kimball 2008). Faculty need advanced nursing degrees as well as clinical experience, both of which are time-consuming and expensive to acquire. The share of nurses receiving advanced degrees, particularly PhDs, has been increasing steadily since at least 1980 (figure 8), which should provide a base for expanding nursing education once physical capacity and other constraints have been addressed. Although, as noted above, the share of nurses in education has recently rebounded after several years of decline, the age of doctorally prepared nurses is rising and, compared with other disciplines, nurses seek advanced training later in their careers and tend to retire earlier (Yordy 2006).

Opportunities for clinical experience is the most pressing other constraint for nurses in training and for newly licensed nurses transitioning to practice (AACN 2008a). Nursing vacancies in hospitals mean that nursing staff have little time for the additional duties of mentoring new nurses. Cost containment efforts have put pressure on health care facilities at all levels to reduce staff and seek higher productivity than new nurses are likely to be capable of meeting on first entering practice.

Working conditions and compensation

Tuition support, which has declined substantially over time, and educational capacity influence how many people become nurses; working condi-
tions and wages influence how many stay in practice over time. Earnings of nurses increased by 4.9 percent in 2002 following a decade of stagnation (Buerhaus et al. 2004) and have been rising slowly since that time, easing this constraint somewhat (Spetz and Given 2003). Working conditions, however, remain an issue.

The same cost containment and efficiency factors that have affected facilities’ willingness to participate in nurse training have contributed to a reported deterioration in working conditions for nurses (Buerhaus et al. 2009). For 56 percent of nurses leaving the workforce, the top reason, after retirement, was finding a less stressful and less physically exhausting work environment (Hart 2001), although there are indications that some improvements have been made recently in working conditions (Buerhaus et al. 2009). Staff shortages have led many facilities to institute mandatory overtime for nurses or extra shifts. Nurses note the increase in the number and acuity of the patients in their charge and have expressed real fears about quality of care and the safety of their patients, fears that have been documented in the literature (Altman et al. 2004). Nurses see greater autonomy and flexibility in the delivery of care as one way to alleviate some of these concerns as well as improve working conditions (Kovner et al. 2007).

"We face an impending crisis as the growing number of older patients, who are living longer with more complex health needs, increasingly outpaces the number of health care providers with the knowledge and skills to care for them capably." — John W. Rowe, chair of the IOM Committee on the Future Health Care Workforce for Older Americans, quoted in National Academies (2008)

Demographic factors

The average age of nurses is rising, and many nurses will reach retirement age within the next two decades. Unless a much larger share of new workers choose nursing, the shortage could be severe. The recent increase in nursing enrollment has begun to influence the age distribution of nurses. In 2002, employment of nurses under age 35 grew by 90,000, reaching the highest level of younger RNs since 1987. However, about half of the growth was concentrated in the 30- to 34-year-old cohort, suggesting that nursing is still not a popular career choice for recent college graduates (Buerhaus et al. 2004).

Nursing is still largely a female profession, although men now represent about 5 percent of nurses (HRSA 2006). Some of the decline in the share of women going into nursing is attributable to the increasing openness of other professions to women. The aging of the population that will increase the need for nurses also implies a reduction in the share of the population that is of school age. Teaching, particularly in K–12 schools, is also dominated by women. Some women who would have chosen teaching may choose nursing instead as teaching jobs dwindle and demand for nurses rises.

Economic conditions

Buerhaus et al. (2009) have established a link between employment growth among RNs and economic conditions. Employment of RNs grew faster between 2001 and 2003 than at any time in over three decades. At the same time, the already high workforce participation of nurses grew by 1.5 percent increase between 2000 and 2004. During this time, the American economy was slowing down and unemployment was unusually high. Older women accounted for much of the growth in 2002 and 2003, many of whom were reentering the workforce; hospital employment of RNs older than fifty rose 15.8 percent in 2002 (Buerhaus et al. 2004). Because most of these RNs were married and living in states where unemployment had risen faster than average, Buerhaus and colleagues concluded that the earnings and job security of RNs’ spouses, as determined by the broader economic climate, are powerful factors driving nurses’ work decisions in the short run (Buerhaus et al. 2007b). The current recession is keeping more nurses in the workforce, providing short-term relief on the supply side even as insurance coverage contracts and demand for some
services falls (see, for example, Dougherty 2008, Alltucker 2009, and Halsey 2009).

**Underlying factors affecting demand**

**Defining staffing needs**

There are different standards for what constitutes adequate nurse staffing and, by extension, demand for nurses. Goldfarb et al. (2008) discuss standards in hospitals, but their argument transfers easily to other settings where nurses practice. Demand may be based on the number of nurses needed to meet professional standards, that is, how many nurses the facility would like to have without taking cost into account. Alternatively, demand may be based on how many nurses the facility can afford to hire given likely revenue and competing costs. A large share of health care is delivered in response to emerging or urgent needs and so is not predictable on a day-to-day basis, so facilities must also take into account staffing for peak demand as well as periods of low demand.

**Changing demand for services**

However demand is defined, it is rising. The increase comes from several sources, including changes in the population and changes in payment for health services. The aging of the population means rising service use to meet the increase in health problems that often comes with age. Overweight and obesity are also correlated with increased health problems, particularly chronic diseases such as diabetes and heart disease that call for intensive case management (Finkelstein et al. 2008). The so-called “obesity epidemic” puts additional pressure on health services use. Finally, technological innovations have made more conditions treatable so more people get treatment.

The shift to prospective payment as the dominant form of reimbursement for hospitals affected nurses in two major ways. First, it created incentives for hospitals to discharge patients as soon as they were no longer in need of acute care. Second, it meant that hospitals no longer received separate reimbursement for each element of their costs, including nursing costs. Hospitals thus had incentives to decrease all inputs to the level needed to permit the earliest possible discharge. The resulting increases in average patient acuity and decreases in average length of stay mean that nurses in hospitals are taking care of more patients on average and that, on average, their patients are sicker.

Payment reform discussions include mechanisms that emphasize payment for quality. Recognition of nurses’ contribution to increasing quality of care is growing (Needleman et al. 2002; Aiken et al. 2002; Stanton and Rutherford 2004; Kane et al. 2007), so demand for nurses may rise if quality-based reimbursement mechanisms, such as pay-for-performance, become more widely accepted.

**Changing scope or location of practice**

While the majority of nurses practice in hospitals, many work in other areas of care delivery that have been affected by the changing delivery system. The past two decades have seen tremendous growth in ambulatory care, including ambulatory surgical care, with the accompanying need for patient follow-up. Homecare is one of the fastest growing areas of health care delivery, and nurses account for a large share of the projected increase in needed homecare personnel (Berman 2005).

Nurses have a broad range of skills, and in many areas their expertise overlaps with that of other professionals. Nurses, particularly advanced practice nurses, can and do provide primary care, with good results and reports of high patient satisfaction. The emerging shortage of primary care physicians likely will increase the demand for more nurses to serve as primary care providers and may create pressures to change the boundaries of traditionally licensed scopes of practice, as discussed further below. Current practice limitations constrain the autonomy of nurse practitioners (Christian et al. 2007) and reduce incentives to enter the field (Kalist and Spurr 2004). Where both physicians and nurses are in short supply, as is increasingly the case in many regions of the country, nurses may be in greater demand as primary care providers, potentially exacerbating shortages in their more traditional areas of practice.
Discussion

Prediction of future shortages depends on what the predictor believes will happen to all of the various factors affecting supply and demand. The existing supply and demand models all assume that the future will be not substantially different from the past. None foresaw a wholesale change in how care is delivered or paid for, a likely outcome if current reform currents continue. The recent economic turmoil combined with the growing consensus on the need for health care reform suggest that it might be time to reassess this assumption.

On the supply side, there is recent evidence that market signals of a shortage combined with declining prospects in other fields and/or increasing unemployment among nurse spouses have led to the hoped-for supply response among the existing nurse workforce as well as renewed interest in nursing as a career. Demand for places in nursing schools has risen and, after some lag, there are indications of an increase in the number of places available, as enrollment surged in the early 2000s, peaking at a 17 percent annual rate in 2002–03 (AACN 2009c). The limits of increased enrollment given current educational capacity may be near, as enrollment growth has slowed, but new federal support in 2009 as well as initiatives to address educational shortages in many states, described below, are encouraging.

On the demand side, the picture is much less clear. The health sector has grown rapidly through many economic ups and downs. Despite the large national job loss in the year through April 2009, for example, employment in hospitals has not dropped and has risen in ambulatory care (BLS 2009). The rate of increase in overall health care costs has exceeded general inflation for years on end, and consensus is building that this pattern is not sustainable. Greater attention to quality suggests that the limits to cost-cutting by simply doing more with less within the current system may have been reached. At the same time, the call for expanding health insurance coverage to a much broader range of the population is growing louder. The drive to insure more people is being coupled, in the interest of affordability, with a drive to discover new ways to control costs. Care management, care coordination, and primary prevention, all of which would increase demand for nurses in the short run, are among the leading candidates. Expanding scopes of practice for nurses to help address the shortage of primary care providers would also increase demand for nurses under a reformed health care system.

The design of health system reform—in both delivery and payment for care—could affect both demand for and supply of nurses. The success of the changes in improving care while containing costs will determine whether the changes are sustainable. Nurses are central in health care delivery, and health reform is certain to change demand for their services. Involving nurses in the redesign of care strategies will take the participation of more nurses at the policy level but could contribute to the long-term success of the measures proposed. Furthermore, the improvement in working conditions that would be associated with giving nurses more flexibility and autonomy could itself affect the supply of nurses through its effect on the attractiveness of nursing as a career.

It is impossible to say whether continuing business as usual or making the types of changes identified here would result in a larger increase in demand. It is also difficult to imagine a future where demand will be lower, making immediate attention to understanding bottlenecks in supply imperative.

III. Responses to the Shortage

Numerous responses to workforce problems have been implemented or suggested. This section describes past responses—initiatives that have actually been implemented—not as recommendations, but as illustrations of what has been done. The next section covers future policy—including proposals not yet implemented, at least not sufficiently.

A. Private responses

Among hospital responses, short-run recruitment is of little policy import. Simply offering signing bonuses, for example, reported by 44 percent of hospitals in 2005 (May et al. 2006), may shift nurses from one state or hospital to another. But it does
nothing to address systemic or long-term problems. Far more significant are increasing pay relative to other careers or changing how nurses work with patients and other caregivers. These steps may permanently increase satisfaction, improve patient care, or enhance career attractiveness. Improving working conditions may also create a virtuous cycle, in which greater satisfaction enhances staff stability, which bolsters quality of care, which improves “financial outcomes,” which supports the enhancements (Pricewaterhouse 2007, 32). Thousands of employer efforts have been documented (AHA 2002, 2008; Health Workforce Solutions 2008). The following examples are illustrative.

Supplementing the workforce

Hospitals’ use of independent nursing agencies for temporary help has long been cited as proof of shortage (LeRoy 1982; AHA 2002; Kimball and O’Neil 2002). However, it may also improve overall efficiency. Hospitals can use nonemployees to even out imbalances between fluctuating demand for services and a fixed supply of employed nurses. Agencies may give their own nurses greater pay and flexibility, but overreliance on agencies may hurt a client hospital’s continuity of care and organizational culture. Their contributions and drawbacks under different circumstances seem too little studied (an exception is Goldfarb et al. 2008).

The hiring of foreign-educated nurses has emerged as a longer-term solution to shortfalls in the domestic supply of nurses (Aiken et al. 2004). Some 15.3 percent of new RNs in the 1990s were trained internationally, versus 8.8 percent in the 1980s. In the 1990s, real wages were rising steadily for the foreign nurses, but almost not at all for domestic nurses (Polsky et al. 2007). Ethical and practical concerns about reliance on other countries’ nurses have been advanced. However, the United States is not alone in seeking to import nurses, conditions in “exporting” countries encourage nurses to leave (Buchan et al. 2003), and the large-exporter Philippines actively educates nurses to work abroad. More practically, this approach may have reached its realistic limit, as concerns about shortage are worldwide (Simoens et al. 2005).

Improving compensation and workplace conditions

Wage or benefit increases are the most straightforward marketplace response; they end shortages by not only increasing supply but also reducing demand while encouraging more careful use of resources. Wage hikes are certainly the solution that economic theory expects. At least one experienced observer has noted their role in ending nursing shortages (Aiken 1982, 1989), and lack of real wage increases in the 1990s likely helped precipitate shortages starting in 1999 (Buerhaus and Staiger 1999; Buerhaus et al. 2004). Higher wages immediately encourage nursing dropouts to re-enter active nursing or work longer hours. Over time, higher wages also encourage more new entrants, after a lag due to the length of the educational pipeline.

Higher wages, of course, presuppose sufficient demand to support them, not merely generalized need or desire for care giving, but also higher revenues for hospitals and other employers or management willingness to raise nursing’s share of existing revenues. The early 2000s shortage followed 1990s constraints on both hospital revenues and nursing wages, and began to lessen after subsequent increases in wages enabled by improved hospital margins. Future changes in the levels and methods of hospital payment would also affect demand and wages, as considered more below.

Many new initiatives seek to improve workplace conditions, broadly defined:

More flexible scheduling and lower demands for overtime increase nurses’ control over their professional lives (GAO 2008). About a third of hospitals used some form of flexible scheduling as of 2005, including self-scheduling (May et al. 2006). Others have created special “parent shifts” for nurses with small children. Finally, some are experimenting with allowing nurses to “bid” for traditionally unpopular shifts (Tarkan 2004).

Stress reduction to avoid burnout of nurses may be responding to a side effect of raising nurse-patient ratios. Other initiatives target stress directly, such as weekly massages, optional time in a “healing garden” to rejuvenate and reflect, and for-
mation of a staff softball team or other staff social events. Such programs have been found to raise satisfaction rates (RWJF 2006).

Better assimilation of new nurses more narrowly targets dropouts in the first year. Informal help may come from experienced nurse mentors or “retention coordinators” (Lillibridge 2007). Formal residency programs allow new nurses to share their experiences, receive advice from seasoned nurses, and work on continuing education (Krugman et al. 2006; Rosenfeld et al. 2004; Williams et al. 2007).

Improving nursing careers together with patient care

Beyond such add-ons to traditional workplaces, more fundamental changes address how nurses care for patients, their role within their institutions, and their career paths. Most seek not just to make nurses’ lives easier but also to streamline and improve patient care and outcomes. Empirical documentation of effectiveness seems scant, but anecdotal evidence suggests that elevating nurses’ status can increase their satisfaction and retention rates.

Greater integration of nurses into care teams has increasingly drawn attention as a way to improve quality of care (Alliance for Health Reform 2008). For example, Transforming Care at the Bedside seeks to create a “supportive environment that nurtures professional formation and career development” within which “effective care teams” of nurses and others “continually strive for excellence” (IHI 2004, 5).

Improving nurses’ autonomy may take the form of giving nurses a greater voice in patient care standards and planning or encouraging them to conduct their own research project, especially on ways to improve quality of care (Haynes 2008). Private employers have also worked to elevate the status of nurses. Some hospitals have made organizational changes to give nurses more power in their hierarchies. Others have sought to include nurses in decisions that directly affect their work, such as patient-staff ratios and equipment acquisitions.

The “magnet hospital” approach combines many such initiatives. Seeking to understand why some hospitals do better in recruiting and retaining nurses, early research identified factors attractive to nurses, including high quality nursing leadership, competitive personnel policies and programs, sustained quality improvement, autonomy for nurses consistent with practice standards, and positive image of nursing (McClure et al. 1983). In 1994 the ANA began conferring Magnet Recognition® status on qualifying hospitals and other organizations.2 Only about 5 percent of institutions nationally have received recognition, but many others are in the pipeline (ANCC 2009; Triolo et al. 2006). A halo effect may also influence other entities that observe the results obtained by the designated facilities.

Magnet status recognizes good workplace conditions and correlates with lower turnover and likely higher quality of care (Havens and Aiken 1999; McClure and Hinshaw 2002). There may, however, be selection bias in such observations, and at least one study finds that some as yet unrecognized hospitals do even better (Ulrich et al. 2007). This effort to improve will benefit from learning more about which elements of “magnetism” are most influential, how much they cost, and what offsetting savings may occur. Other efforts also seek to create cultures that value nursing more highly (e.g., AONE 2004).

Improved support systems can promote nursing efficiency. One way to free up nursing time for patient care is to have support staff perform some tasks—such as addressing personal care needs or transporting patients—although nurses often use any interaction with a patient to help assess patient status. More help in managing paperwork also addresses a frequent complaint of nurses; electronic health records are often touted as helpful (Haynes 2008). Improved work flow and supply manage-

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2The full set of institutional characteristics considered is extensive (ANCC 2009) and incorporates by reference the ANA’s separate standards for nursing administration (ANA 2004).
ment can also improve efficiency (JCAHO 2002; Feldstein 2008).

Education-related initiatives

Many hospitals have provided forms of tuition support for current or prospective nursing staff or refresher courses for nurses returning to the workforce (AACN 2002, 2003; Tarkan 2004; May et al. 2006; Wood 2009). Other employers have formed partnerships with nursing schools to give students the opportunity to obtain nursing experience in a clinical setting and also provide additional education to current nursing staff (May et al. 2006). Other strategies for supporting nursing education include rigorous orientation programs to acquaint new nurses to hospital settings, specialized training in specialty clinical areas, and preceptor programs that pair new nurses with more experienced nurses mentors (e.g., Wolak et al. 2009). Nurse residency programs (noted above) also provide such support at the start of a career.

Employers have sometimes also bolstered nursing faculties—by directly subsidizing faculty salaries, lending master’s-prepared nursing staff members to serve as faculty, and assisting in faculty searches and recruitment (RWJF 2007; May et al. 2006). In addition, some new schools have opened in response to higher demand for education. Their ability to meet educational standards has at times been questioned, however (Shishkin 2008).

B. Public policy responses

States are the central public actors. They traditionally support state colleges and universities, operate licensure and quality regulation, and administer the joint state-federal Medicaid programs (NCSL 2001). Medicare and Medicaid make the federal government the biggest single purchaser of health care, however, and workforce issues are national, even international, in scope. Local governments may also play a role, especially where they see a thriving educational or health care sector as central to their economic stability and development. This section describes four key types of public initiatives, often partnering with private actors.

Education—expanding capacity of the pipeline

Many scholarship or loan programs support nursing students, some general, others need-based or targeted to specific needs, including increased diversity3 (NCSL 2001; HRSA 2005). Loan forgiveness often rewards graduates who work in areas of need. Good data on the numbers and scope of student assistance from all sources appear to be lacking (CHPRE 2002). Most nurses are educated in state schools, including community colleges; and state schools are the central public policy lever available for building nursing workforces (HRSA 2005). However, the most recent decade of budget austerity has seen regular state appropriations for higher education decline in competition with other needs (Goodman 2009).

Since professionals tend to begin practicing near their place of final education, numerous states and some localities have undertaken special initiatives, especially when seeing a severe shortage and often seeking private partners (RWJF 2005a). Such initiatives typically target funding to perceived capacity needs, including lack of space, faculty, and clinical rotation options (AACN 2006), often trying to partner with private funders (Pennsylvania Department of Labor and Industry 2008, Pennsylvania Office of the Governor 2008). Student scholarships are a similar target (Tampa Bay Business Journal 2004). Such limited efforts may be very helpful in the short term, but may do little to change general

3 Enhancing diversity in the nursing workforce is a goal in its own right, quite apart from its impact on the supply and demand for nurses, the focus here. As AACN (2008c) has noted, “Nursing’s leaders recognize a strong connection between a culturally diverse nursing workforce and the ability to provide quality, culturally competent patient care.” The topic warrants its own publications (e.g., Grumbach et al. 2003).
perceptions of how desirable nursing and nursing education are as career choices. A contrasting example comes from Maryland, which has generated multi-year funding by adding 0.1 percent to the rates of all Maryland hospitals—some $18 million per year (HSCRC 2008, Tan 2007-08). This strategy is uniquely available in Maryland because of its comprehensive hospital rate regulation.

Another strategy has been to start wholly new nursing programs, both full baccalaureate programs and a variety of new, accelerated degree-granting programs that expand career pathways for already licensed nurses (Raines and Taglairene 2008; AACN 2008d, 2009b). The latter programs create pathways for already licensed practitioners to upgrade their credentials—such as nurses with diplomas gaining bachelors of science in nursing degrees or RNs becoming advanced practice nurses. Similarly, accelerated BSN or masters programs “fast track” holders of college degrees into a nursing degree. Non-traditional programs are growing rapidly, but remain small relative to traditional pathways (AACN 2008d). Some observers within the profession question the desirability of such proliferating degree programs (compare AACN 2004 with Dracup et al. 2005).

Title VIII of the Public Health Service Act continues grant support for nursing education that dates back to the Nurse Training Act of 1964. The most striking thing about this support is how greatly its magnitude has varied over time. An all-time high of $777 million was reached after one decade (1973 level in 2008 dollars, figure 9), but declined over the next decade to about $100 million, not rising again until increases began again in the early 2000s. As a percentage of health care spending the drop is even more striking—from about 0.16 to 0.007 percent. There is an association between funding and enrollment—the low funding of the 1990s coincided with a period of low nursing enrollment—although causality cannot be discerned from the data.

The types of support have also changed over time, including scholarships and loan repayment programs for nursing students; loans for nursing faculty; grants for education, practice, and retention; and funding for advanced nursing education, as well as smaller amounts for supporting specific needs such as geriatric education and nurse workforce diversity. The Health Manpower Amendments of 1981 ended the formerly large capitation payments to institutions, leaving student aid as the main focus. Under current law, the Nurse Reinvestment Act of 2002, the focus is on support for advanced nursing students and building of career ladders (AACN 2005).

The proposed Nurse Education, Expansion, and Development Act, repeatedly introduced in the 2000s, aims to re-create the former type of substantial capitation grant funding (AACN 2009a). The Nurse Faculty Education Act (S. 1575) would have funded a small set of demonstration projects. It is not clear whether giving capitation aid directly to institutions creates different outcomes from giving aid to students that can only be used to pay institutions. Targeting project funds to institutions, especially through capital grants, could more effectively create needed classroom and clinical space. However, given that money is fungible and that nursing programs exist within much larger institutions, new public funding in one area may to some extent be offset by shifts elsewhere.

The funding picture may be changing. The American Recovery and Reinvestment Act of 2009 (the “stimulus bill”) provided large, new one-time funding to support nursing education (Pub. Law 111-5, Feb. 17, 2009; AACN 2009f). Moreover, President Barack Obama’s first budget calls for a 54 percent increase in total Title VIII funding (USDHHS 2009; AAMC 2009).

Sizeable federal funds also flow via Medicare payment for graduate medical education (GME). GME mainly funds hospitals that educate physicians, but also supports those that train nurses and other health practitioners, paying some $300 million

4 MedPAC, the Medicare Payment Advisory Commission, is an independent federal body that advises Congress on Medicare.
a year, according to MedPAC sources. GME does not support today’s larger needs for baccalaureate and higher training nor for community-based practice. The Institute of Medicine and leaders in the nursing profession have suggested changes in this regard (IOM 1997; Thies and Harper 2004; Aiken and Gwyther 1995).

Regulation of Nurses’ Scopes of Practice and of Employers’ Use of Nurses

Licensure and Payment Policy

Workforce supply and demand reflect the changing roles of nurses over time, as noted above. Those roles in turn are influenced by the nursing scopes of practice enforced by licensure agencies for each recognized category of health professional within a state (Christian et al. 2007), as well as by private and public health plans’ payment policies (Cromwell and Rosenbach 1988; Blumenreich 1991). Buyers cannot demand what is not legally allowed or paid for. Advanced practice nursing of various kinds can allow nurses to help meet unmet health care needs as well as to utilize their full professional skills, but licensure and payment rules must permit this practice to attract nurses into such practice (Kalist and Spurr 2004).

Two substantial and growing health care needs are to deliver primary health care services of good quality and to improve care coordination and management, especially for chronic disease (see, for example, Laurant et al. 2005, Mundinger et al. 2000, Tringali et al. 2008, and Boville et al. 2007). In both areas, nurses are seen as adding great value to a physician workforce increasingly dominated by specialists and subspecialists. Expanding the scope of practice and autonomy of nurses in the delivery of primary care can help improve access to care, encourage care-seeking at earlier stages of an illness, and reduce unnecessary emergency room use.

To complement or supplement physician services requires nurses able and authorized to practice more independently. Achieving greater flexibility in utilization of the various health care workforces in turn requires new regulatory attitudes about scopes of practice and sometimes statutory amendment as well. Political and intra-institutional conflicts must also be managed over the increasingly porous boundary between primary care physician and nursing scopes of activity. Registered nurses also routinely perform some tasks that could usefully be delegated to others with less training, licensure rules permitting. How to improve flexibility of practice so as to get the most value from the varied health care workforces and to change over time as needs and technology change merits much more attention from health care payers and licensure authorities.

Hospital staffing ratios

California enacted the first minimum hospital nurse staffing ratios, responding to nurses’ complaints of overwork and reduced quality of care (CNA 2009). Enacted in 1999 and implemented in phases starting in 2004, the law was touted as a quality measure and also a solution to the nursing shortage, evidently on the theory that hospitals would be forced to attract more nurses through improved wages or working conditions. The measure also had potential to exacerbate the shortage, however, by increasing demand without increasing supply. To its credit, California also increased Medicaid funding for hospitals to facilitate more hires and soon embarked upon a broad-based effort to boost nursing education (box below). Wages and staffing ratios increased after the law, but evidence about quality appears to be mixed, and both negative and positive assessments have appeared (compare Bolton et al. 2007 and Sochalski et al. 2008 with Mark et al. 2009 and Spetz et al. 2009). Moreover, numerous other in-state and national trends have also affected California experience.

The effectiveness of this approach remains controversial. Fixed legal ratios do not account for patient acuity, nor for the circumstances within which nurses work—both of which affect staff’s ability to take good care of a patient population (Welton 2007). Moreover, implementation of the new regulations was only completed in 2008 and compliance seems mixed, so that California’s experience is neither final nor yet completely understood. Finally, the staffing-ratio approach takes no note of differences in educational levels or the mix of staffing at
any given institution. There is more general evidence that hospitals with a higher proportion of baccalaureate nurses have better outcomes (Aiken et al. 2003; Needleman et al. 2006; Kane et al. 2007), but substantially more information is needed to judge the relative effectiveness of staffing ratios and other interventions in improving care. Nonetheless, the fixed-ratio approach seems likely to attract state interest for the foreseeable future (Larkin et al. 2007; Cortez 2008).

**Workforce data collection and analysis**

A consistent theme in analysis of workforce issues is that good, timely data are often lacking. Production of information is a classic public good that requires public support, and HRSA’s quadrennial survey is the major source of national and even state-specific data. Federal support for this and other workforce efforts has grown only slowly if at all, as interest in many forms of health planning has waned. In about two thirds of states, including New York, state-level data centers focus on workforce issues for nurses or all practitioners (RWJF 2005b; CHWS 2009; Forum of State Nursing Workforce Centers 2009; HWIC 2009). If sufficiently funded and staffed, such centers can generate policy-relevant information more geared to state policy-making needs and budget cycles, but funding can be hard to maintain (NC Center for Nursing 2008; Schalin 2008).

Consensus seems lacking on what data to collect, at what geographic level, or within what institutional structure. State-level operations plausibly improve credibility and policy relevance within each state, but some states are likely too small to operate effectively. It is useful to have comparable data from neighboring states and similar regions elsewhere in the country, as can be seen in the work of HRSA-initiated, typically regional health workforce centers (see, for example, Martiniano and Moore 2009, Southeast Regional Center for Health Workforce Studies 2007, and University of Texas 2007).

Moreover, there may be economies of scale and synergies in analysis if nursing workforce issues are considered in the same center with other parts of the health workforce, as in New York. For example, having corresponding data on the circumstances and performance of the major employers of nurses (hospitals, visiting nurse services, and nursing homes) is useful for considering the feasibility of various interventions to bolster the nursing workforce. Institutionally, public partnering with a university or a foundation may enable a center to attract and retain more talented data management capabilities, although perhaps at some cost in control over operations. However configured and focused, efforts to generate more consistent and timely data would greatly assist in policy development and evaluation.

Cutting across all of the initiatives just discussed, states may take a multifaceted approach. Such coordinated interventions have intuitive appeal and have often been recommended by task forces (box).

**Funding for nursing services**

Most writing and discussion of nursing-shortage-oriented interventions is incomplete, in that it focuses almost exclusively on the supply side of nursing—attracting students, producing nurses, and retaining them in practice. Full understanding of shortages calls for examination of the demand side as well, including, as already noted, how pri-

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**The California Example of Multifaceted Intervention**

Given the many influences on any state’s workforce, multiple, coordinated interventions might plausibly do most to increase the number and educational attainment of nurses, as proposed by a number of state task forces (Moskowitz 2007b, Pennsylvania Department of Labor and Industry. 2008). California targeted five areas starting in April 2005—expanding educational capacity, partnering with private industry on faculty, developing new avenues to nursing careers, and coordinating with federal and other funding sources (CA Dept of Labor 2006). It enhanced existing state relationships and also provided funds to localities and other entities. Accomplishments cited include increased school capacity and new rural clinical simulation laboratories. Some independent observers credit state action with ameliorating the early 2000s extreme shortage (Goldeen 2008).

"Nursing is rendered fiscally invisible when it comes to hospital income but continues to figure prominently when examining operating costs, making nursing a periodic target for budget cuts." — Keepnews (2006, p. 237)
vate and public health plans and programs pay for services involving nurses.

Few if any interventions have paid more for more or better nursing, much less to support expansion and upgrading of nursing capabilities in the future. Pay for performance initiatives might reward hospitals that use nurses more effectively to improve quality during a hospital stay, if properly designed, and suggestions for such initiatives are being heard (e.g., Aiken 2008). One tenet of quality improvement is the importance of a team approach to patient-centered and evidence-based care (IOM 2003 and 2004; Commonwealth Fund 2009). Nurses are a key team member and spend the most time with patients, but all must work together. Beyond pay for performance for episodes of care lie broader quality improvements that nurses can help to achieve, such as reducing hospital stays or better managing chronic conditions. Going forward, it is very important to continue to document the value added by nurses and ways that funding flows can recognize and incentivize attainment of greater value, as discussed next.

IV. A Public Policy Agenda for Moving Forward

Concerns about the nursing shortage have been coming from many quarters—employers, educational institutions, foundations, industry organizations, and nursing associations, each with their own perspective. At the same time there is growing awareness of nurses' ability to improve the delivery of care. Our perspective is that this moment offers an opportunity to recast workforce concerns as systems design issues and to gather broad support for constructive change. This section suggests action items for such an agenda.

A. Supply side: address shortcomings in education

As documented in this brief, addressing the nursing shortage involves far more than attracting more people to the profession and training them all as quickly and cheaply as possible. Funding, required skill levels, and institutional and professional barriers are all factors to be considered (see also Joynt and Kimball 2008).

Funding

Past shortages have often encouraged increased federal and state funding for nursing education, but in today's economy a very strong case is needed to win such increases. While it is encouraging that there has been more foundation and private sector engagement in nursing workforce issues, these supporters will likely be facing difficult financial circumstances as well, at least in the near term.

Addressing nursing supply issues in this environment requires

- A strategic and coordinated effort to increase grant and GME-like funding to nursing educational institutions, with attention to differences in regional and local capacity, building on recent changes in federal policy.

- Continued experimentation and expansion of new ways to share educational resources, including funds, facilities, and faculty, within educational institutions and across health professions.

A strategic effort to increase funding means targeted approaches, bolstered by a strong case that resonates with health providers, policymakers, and consumers. An example would be focusing on particular educational levels and/or specialties within nursing that are directly related to documented need for those types of nurses or educational capacity. A persuasive case for targeted funding also requires clarity in distinguishing between the capital/capacity needs of educational institutions and financial assistance for students. The consensus among nursing leaders is that institutional capacity is a significant limiting factor. This view sees the bottleneck less as a lack of student financial aid and more as shortages of qualified faculty, classroom and laboratory space, and/or clinical placements. It is important to draw these distinctions in order to assure that the best use is made of the limited resources available to address the problem.
One cautionary note is that, even within the nursing profession, there is some disagreement regarding the best educational paths for addressing nurse workforce needs. For example, there are tradeoffs between shorter, more intensive training programs that may offer more limited exposure to a range of clinical settings, and longer programs that are more costly and perhaps less attractive to more mature students making a career change. Another concern is that new educational entrants may not meet standards. These issues require further research and open dialogue in order to promote a comprehensive, coordinated response.

**Bottlenecks and Inflexibilities in Education**

If capacity is the binding constraint even in the face of projections of increasingly severe shortages and long waiting lists of students, then why do institutions not raise tuition, raise salaries, and find more space? There are several reasons why the solution is not so simple. Academic institutions have rigidities in their fiscal structures that make it difficult to raise tuitions or faculty salaries selectively in response to changing demand across programs. Schools also seem reluctant to hire more tenured staff in response to an increase in students because past drop-offs have sometimes left them with expensive overcapacity. This lack of flexibility is more pronounced in public institutions, where state governments or regents must authorize higher tuition or spending. And, in the current economic environment, educational and political leaders are unlikely to suggest increasing the financial burdens on families through tuition increases.5

Given such institutional barriers, now is the time to further explore and promote new and creative ways to expand capacities and share burdens—between hospitals and universities, within universities, and through public-private partnerships. Within each school, many facilities and faculties could be shared for health professions training. While some collaboration does occur within universities for basic science courses, such efforts can be expanded, perhaps to include sharing between educational institutions within close proximity. States can help to broker the arrangements, at least within public college systems. One new form of collaboration is centralized applications to nursing schools, which should facilitate multiple submissions, and help assure that available slots do not go unfilled (AACN 2009d).

Outside provider organizations (including hospitals) and universities already collaborate for clinical placements, but additional partners may be needed to help encourage provider organizations to spend time supervising and mentoring students. Foundations can play such a role (Davis and Napier 2008), but likely not indefinitely nor nationwide. Similarly, private funding and collaborative arrangements with hospitals may enable universities to offer incentives to attract and retain faculty, such as joint appointments, opportunities to continue clinical practice, class assignments at hospitals, or reduced teaching loads for clinical mentors.

A number of these innovative approaches are being tried around the country, but funding is needed to bring some of these programs to scale. Publicizing well-documented evidence of the effectiveness of such programs must be an important part of the agenda (section C. below).

Finally, it is clear that simply graduating more nurses will not address many of the workforce problems summarized in this report. In the absence of reimbursement and regulatory changes to support the effective use of nurses once graduated, a simple boost in the supply of nurses will tend to hold down wages, perhaps to the short-run benefit of employers, but it will also tend to encourage low-value uses of highly trained staff and feed back negative signals about nursing careers to prospective future students.

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5 Other types of rigidity have also been cited as impediments to improved workforce policy—including rigidities of state line-by-line budgeting, the lack of budgetary and programmatic independence for nursing degree-granting programs, the hierarchical nature of educational structures, the lag time between educational interventions and outputs, and the split of state policymaking among departments of labor, economic development, health, and education, as well as with boards of licensure. Full consideration of such issues goes beyond the scope of this brief. How best to enable leaders in nursing education to flexibly respond to professional and market signals is an important issue for further work going forward. So is how funders can best support those efforts.
B. Demand side: promote the business case for nursing and improve understanding

As already noted, current nurse workforce planning models project demand imperfectly because they largely assume a static health system, so that an aging population is the main factor underlying future demand as modeled. However, changes are occurring in the health care system that can and should affect the future demand for nurses, and further changes seem likely. It is important to improve traditional workforce planning, but even more important to address how nurses’ roles and remuneration could be optimized under a reformed system of health delivery and financing. Health reform will reshape future demand, the time to influence reform is now, and nurses need to claim a place in designing reform because, as the backbone of patient care, they will surely be asked to implement much of it.

As action items for reform, two elements stand out: (1) health insurance reimbursement and (2) scopes of practice.

Reimbursement Policy

A growing body of research associates hospital nursing care with reductions in complications, lengths of stay, medical errors, and the likelihood of subsequent readmission, as summarized above. One thorough assessment found further that there is a business case for hospitals to achieve such improvements by using a higher proportion of RNs because the savings exceed costs. However, although hiring more nurses improves quality, it is not cost effective for hospitals under current reimbursement policies that do not pay more for better quality (Needleman et al. 2006). Existing payment policies are the main problem, not just in hospitals, but also in other care settings, where improved patient management and care coordination are unrecognized. Willingness to pay more, or differently, for care is a key to using nurses more effectively in systems reform.

Current health care reform discussions include payment reform (MEOHHS 2009, Rosenthal 2008) so the time is ripe to emphasize the importance of nurses in care teams. Part of the nursing policy agenda needs to be to understand the implications of such options for nurses and to help educate reformers about how each option would recognize the contributions of nurses—or fail to do so.

Nurses’ Scopes of Practice

Settings of care and roles of nurses have been shifting, but regulatory and payment restrictions inhibit nurses’ capacities to serve patient interests in new ways. It may prove easier to address such changes as part of health reform than in the traditional contexts of licensure and payment policy separately. Reform naturally considers payment, licensure, and other topics as interrelated parts of change. Reform also creates a natural constituency for making care more cost effective, as nurses can help to do, in order to make expansions of coverage, an enhanced benefit package, and other qualitative improvements affordable. Finally, broader alliances for change seem possible for overall reform than for narrower regulatory modifications.

Health reform’s expansion of coverage will increase the demand for care in many settings. In organizing to meet that new demand cost-effectively, and to improve service for all, nurses’ scopes of practice need re-assessment in light of emerging evidence about their capabilities—within outpatient surgery centers, long-term care facilities, and rehabilitation facilities, as well as in primary care. Nurses could usefully assume increased clinical or management responsibilities in these settings, where often there is no full-time physician. The role of nurses in each setting needs to be clearly defined, the value of the nurse in these settings (e.g., managing post-operative care, supervising care teams, prescribing medications) needs to be documented, and scope of practice regulation and educational preparation of RNs needs to fit the models for cost effective, quality care. Support for rigorous research needs to continue for all health care settings, as discussed below.
C. Research and advocacy

Two action items seem most important. The first is improving information, especially by targeting further research on nursing trends and accomplishments. The second is continuing advocacy to raise public awareness of nursing’s value and build patient-oriented coalitions.

Improving the knowledge base

A key resource both for workforce planning and for health systems redesign is better and more timely workforce data. Consistency or at least comparability in definitions and reporting periods across national and regional data sources, and, where applicable, consistency in reporting across health care professions will facilitate planning. Additional support for collecting and analyzing local and regional workforce data will help in understanding variation in local labor markets, in debunking “one size fits all” planning, and in formulating short-term policy recommendations.

Addressing the limitations in longer-run projections of nursing workforce needs is also important, especially on the demand side and particularly to include changes in health care delivery. Improvements in modeling clearly seem possible, yet the complexity and ever-changing nature of supply as well as local variations caution against placing undo emphasis or resources on developing the “perfect” model as the best solution in workplace policymaking. As Nichols (2002, 6) points out, “quantitative work is not a substitute for expert judgment.” Beyond better data and modeling, more research is needed on the use and contributions of nurses throughout health care that can better inform such judgment going forward. Specifically, the reform agenda should encourage research on

• The value-added of nursing—cost and benefit impacts on care in different settings
• Patterns of nurse staffing in various settings and conditions; especially instructive might be comparisons of nursing scopes of practice (and value added) between traditional institutions and population-oriented systems like the Kaiser Permanente health plans and the Veterans Agency health system, which internalize costs for the entire continuum of care
• Substitutability across types of nurses, and between nurses and other providers
• Understanding the production function for hospital care, including the role of contract nurses in addressing variable demand at hospitals
• The role of nurses under different approaches to producing care, considering not only different labor inputs, but also capital, such as changes in architectural design, location of services within an institution, health information technology, and bar coding of drugs and supplies
• How different payment methods influence choice among those approaches
• Classifying acuity levels/care needs in order to staff accordingly and pay appropriately

Advocacy and use of evidence

Good data and research evidence alone will not be enough to promote the changes in supply and demand noted above. Research findings need to be made accessible in ways that engage employers, the public, and private and public health plans in promoting willingness to restructure payment methods that affect nursing care. Old modes of thinking about nurses need to be altered, for example, to overcome hospital leaders and physicians insufficient appreciation for nurses’ contributions to patient safety (Buerhaus et al. 2007a). All of these goals call for an approach to advocacy that is grounded in policy analysis in addition to professional aspirations.

Health reform poses some danger that budget hawks will favor low payment levels above other goals, including better care from better nursing involvement. Similarly, some employers of nurses may prefer above all else to have more nurses produced (at others’ expense) so as to hold down
wages and make it easier to maintain accustomed modes of delivering care. Nurses could do well to find and partner with patient-oriented proponents with whom to make common cause in assuring that nurses can practice so as to optimize access, quality, and affordability for patients—and for Americans seeking to maintain healthy lives outside of clinical settings.

Nurses also need to hone their skills in evidence-based advocacy and to present findings not only from a nursing perspective (e.g., improved quality of life for the patient, more effective use of nursing skills, higher career aspirations), but from economic and policy analytic perspectives as well, even when such perspectives seem at odds with the institutions in which they work. It also seems helpful to emphasize nurses' many positive contributions to patient health and patient care rather than complaints about working conditions or professional status that may seem negative. Employers, insurers, and policymakers need to be convinced that resources spent on better nursing care will be money well spent, offering more value for their money, and that system evolution based on changing incentives to achieve optimal nursing input to the health production function is preferable to increased regulation of nursing roles or reimbursement.

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Figure 1. Number of Registered Nurses in the United States by Employment Status, 1980–2004

Figure 2a. Registered Nurses per 1,000 U.S. Residents by Employment Status, 1980–2004

Figure 2b. Registered Nurses per 1,000 U.S. Residents Age 65+ by Employment Status, 1980–2004

Figure 3. Registered Nurses by Practice Setting, 1980–2004


Figure 4. Age Distribution of Registered Nurse Population, 1980–2000

Figure 5. Registered Nurses by Initial Nursing Degree, 1980–2004


Figure 6. Civilian Labor Force Participation by Age, Female College Graduates and Nurses, 2004

Figure 7. Index of Enrollment in BSN Programs
(Relative to Base Year 1994)


Figure 8. Registered Nurses, by Highest Nursing Degree,
1980 to 2004

Figure 9. Funding for Title VIII Nursing Workforce Development Programs

(in $millions)

Source for Title VIII funding: Appendix A https://www.ncsbn.org/NrsgConsensusDocMarch08.pdf  Note: CPI adjustment made using BLS estimate of price growth in Medical Care and Medical Care Services: http://data.bls.gov/cgi-bin/surveymost?su
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