The national shortage of nurses which grew to crisis proportions in many communities in the late 1970s has subsided. Recent evidence suggests that hospital nurse vacancy and turnover rates have declined significantly since 1979. The recent swift reversal in the availability of nurses, from shortage to waiting lists in some hospitals, has taken many by surprise. It also raises the possibility that greater understanding of the factors that influence the market for nurses might make it possible to avert future shortages.

Recent Changes In Nurse Employment

Beginning in 1980 and 1981, the acute shortage of hospital nurses was reported to have abated in some areas of the country. A report issued by the California Hospital Association, for example, noted a significant increase in nurses seeking employment, a decline in hospital nurse vacancy rates, and the lowest turnover rate among hospital nurses since 1977. A similar picture emerges from analyses of national data. Vacancy rates in 1980 for hospital nurses dropped to their lowest point since the 1940s, as indicated in Figure 1. A national study of the use by hospitals of temporary nursing service agencies to supplement staff vacancies found that 36 percent of hospitals using agencies in 1980 reported that they no longer use them.

Most of the present shortage of nurses seems concentrated in one-third of the nation's hospitals. In September of 1980, as indicated in Figure 2, more than one-quarter of hospitals reported no vacancies at all. Another 40 percent had nine or fewer vacant positions, which would not appear to constitute an acute shortage given the size of most nursing service departments. State and local government hospitals experienced the highest overall vacancy rates. The picture that emerges from the 1980 survey of hospitals is consistent with anecdotal evidence that the acute shortage of nurses is now concentrated primarily in large urban public hospitals. Vacancies in community hospitals, where they exist at all, seem confined to unpopular hours.

Linda Aiken is vice-president for research at The Robert Wood Johnson Foundation, Princeton, New Jersey. The research assistance of Maria Gil-del-Real, Karen Tyson, and Betty Dooley is gratefully acknowledged.
The nation has been plagued by nursing shortages since World War II. Two periods have been exceptions: from 1968 to 1971 and the current period beginning in late 1980. The circumstances surrounding these two shortages and their resolutions are remarkably similar, and suggest a pattern which might be useful to consider in future policy decisions.
Historical Perspective

In the early 1960s, hospitals reported vacancy rates for nurses that averaged over 23 per 100 budgeted positions, the highest vacancy rates ever recorded. When Medicare was passed in the mid-sixties, it was widely feared that the increased use of hospitals by newly insured elderly would create a critical national shortage of nurses. Nurses' salaries, which historically had lagged behind other women's occupations, increased dramatically. The resulting increases in hospital costs were absorbed by Medicare and other third-party payers.

Following the rapid rise in salaries, nurses returned to the labor force in large numbers. Labor force participation rates rose from 55 percent in 1960 to 70 percent by 1972. Both full-time and part-time employment increased. Enrollments in nursing schools also increased dramatically, helped by educational subsidies available through the Nurse Training Act.

During the period 1966 to 1971, nurses' salaries rose twice as fast as those of teachers and of all female professional, technical, and kindred
workers. As indicated in Figure 3, as nurses' relative wages increased, hospital nurse vacancy rates decreased.

Beginning in late 1971 with the introduction of hospital wage and price controls, the growth of nurses' salaries slowed. Over the remainder of the 1970s, nurses' wages experienced little growth, fell behind those of comparable groups, and failed to keep pace with inflation. During the decade of the seventies, despite a doubling of enrollments in nursing schools, hospital nurse vacancy rates rose dramatically and hospital administrators reported a widespread acute shortage of nurses by the end of the decade.  

In 1980, the cycle began again. The change in administrations in Washington resulted in a temporary easing of cost-containment pressures on hospitals. Nurses' incomes rose 13.5 percent a year during the two-year period 1980 and 1981, which was above the inflation rate for those years and well above average wage increases in private industry.  

Nurses' salary gains were once again considerably higher than those for teachers, female professional workers, or other hospital-based occupations such as medical social workers and physical and occupational therapists. As indicated in Figure 3, the same pattern observed in 1966-1971 is evident for the period 1980-1981: as nurses' incomes rose relative to those of comparable groups, hospital nurse vacancy rates declined.

Nurses responded in two similar ways following wage increases in both 1966-1971 and 1980-1981: inactive nurses returned to active employment, and nurses increased the number of hours they worked. The number of full-time equivalent employed nurses increased by 25 percent between 1977 and 1980, from 821,000 to 1,025,000.  

Registered nurses returning to the work force accounted for a 10 percent increase in the overall supply of employed nurses in 1980. Both full-time and part-time employment increased during this period.  

The economic downturn of the past several years is a factor contributing to the swiftness of the resolution of the recent nursing shortage. The national unemployment rate was almost 10 percent in mid-1982, the highest since World War II. Double digit inflation in 1979 and 1980 provided a strong incentive for married women to return to the labor force to maintain their families' standard of living. Between 1975 and 1980, the proportion of husband-wife families in which both were employed increased from 39 to 45 percent, although this has been a steady trend observed since 1960.  

In addition, hospital occupancy rates have fallen in communities hardest hit by unemployment thus decreasing somewhat the requirements for nurses. While the economic downturn undoubtedly contributed to the swiftness of the resolution of the nursing shortage, it does not seem to be the sole explanation. The rise in nurses' income seems to be associated with declines in hospital nurse vacancy rates even after taking into account
the effects of general unemployment and inflation. This suggests that even in the absence of an economic downturn, the recent increases in nurses' relative incomes would have contributed to a reduction in the shortage of hospital nurses, though probably not at the speed witnessed over the past year.

The Labor Market For Nurses

Nurses are not income maximizers. Those who select nursing as a career base their decisions on factors other than lifetime earnings. The rate of return on nursing education has never been high in economic terms. Studies of nurses indicate that the quality of working life, evidence of having contributions recognized and valued, involvement in decision-making, and professional autonomy are all as important to nurses as monetary rewards. Why then does the relative wage rate figure so centrally in the circumstances surrounding shortages and their resolution?

The labor market for nurses is different than that of most other occupations. Labor economists have noted that nursing is an occupation affected by oligopsony: the presence of only a few firms that employ the majority of those in a particular occupation. \(^9\) Two-thirds of all employed nurses work in hospitals. Most communities have a limited number of hospitals. Moreover, the specialized nature of nursing education does not seem to allow nurses to move easily out of health care into positions of comparable status in other industries. Less than 5 percent of registered nurses in 1980 had left health care for other employment despite traditionally low wages and poor working conditions. Hospitals have been and remain the dominant employer of nurses, and are relatively immune to pressures from other industries that might compete and elevate nurses' salaries. Thus, nurses' incomes have traditionally lagged behind those of comparable groups.

Artificially depressed wage rates for nurses can create shortages by changing the behavior of both nurses and employers.

**Low relative wages result in substitution of nurses for nonnurses.** Nurses are versatile hospital employees. Their broad training enables them to substitute for allied nursing personnel (L.P.N.s and aides); take on many of the responsibilities of other health-related personnel including medical social workers, occupational and physical therapists, and inhalation therapists; assume many managerial and clerical roles; and even substitute for physicians in some functions. Because of this versatility, when nurses' relative wages fall, it is more economical for hospitals to employ more nurses as opposed to other kinds of workers.

For many years, the gap between nurses' incomes and those of physicians has increased. In 1945, nurses' incomes were one-third of physicians'; now nurses earn less than 20 percent of physicians' incomes. Moreover,
the income gap between nurses and allied nursing personnel gradually narrowed over the decades of the sixties and seventies. By 1979, nurses’ salaries were less than 30 percent higher than those of aides with no formal education. When the costs of turnover, limited job versatility, continuing education, and supervision costs are all considered, it is more economical if nurses’ salaries are relatively low to replace allied nursing personnel with nurses. There is clear evidence that this did indeed happen in the seventies. Hospitals across the nation shifted from a staffing complement of one-third nurses and two-thirds aides and L.P.N.s, to a ratio of 50 percent registered nurses by 1980. There was a direct replacement of nurses for aides in a period characterized as one of acute shortage of nurses where the usual expectation would be for substitution in the opposite direction—more L.P.N.s and aides, not less.

Thus, artificially depressed nurses’ wages encourages those hospitals preferred by nurses, because of favorable locations, better working conditions, or charismatic leadership, to stockpile nurses—that is, to employ many more than would be employed under higher wage rates. Such employment practices contribute to overall shortages, and exacerbate existing geographic imbalances.

**More nurses will choose part-time employment.** A unique aspect of nursing, especially hospital nursing, is that nurses can work almost any number of hours they choose. About one-third of all employed nurses, over 400,000 nurses, worked part-time in 1980. Decisions made by nurses as to how many hours they work can significantly affect the nation's total supply of nurses. For example, if every nurse working part-time in 1980 worked an average of eight more hours a week, the increased nursing time available would be the equivalent of approximately 80,000 full-time additional nurses, more than the total annual output of new graduates from all the nation’s nursing schools.

Almost half of the 1.7 million nurses licensed to practice in 1980 were married with children in the home. Employed married women with children are sensitive to the wage rate because their incomes after taxes must finance child care and substitute homemaker services. When nurses’ relative wages fall, net incomes derived from full-time employment after deducting expenses and taxes are marginal. Many full-time nurses as a result, revert to part-time work. The result of this phenomenon is a significant reduction in the number of full-time equivalent nurses available for employment. During the period from 1972 to 1980, when nurses' incomes failed to keep pace with other comparable groups, the proportion of nurses working part-time increased from 18 to 25 percent of all registered nurses.

**Low relative wages result in delays of nurses reentering the labor force.** Nursing is a predominantly female occupation. Large numbers of nurses leave the labor force for childbearing and childrearing and reen-
ter at some later point. Decisions nurses make concerning the timing of return to the labor force significantly influences the nation’s supply of employed nurses. Over one-third of the net increase in the number of employed nurses from 1966 to 1972, an increase that resulted in a dramatic reduction in hospital nurse vacancy rates, came from the existing pool of inactive nurses. The same phenomenon has occurred in the past two years. Salaries have increased and, encouraged by the economic recession, large numbers of inactive nurses returned to the labor force.

Common Explanations For The Nursing Shortage

Although the nursing shortage has received immense public attention, especially in recent years, there has been surprisingly little recognition by public commissions, hospital associations, the nursing profession, or government agencies of the unusual qualities of the nurse labor market. Thus, the continuing nursing shortage in the face of significant increases in the supply of nurses has led to considerable debate about appropriate solutions.

Most prescriptions for solving the nursing shortage have focused on expanding the nation's education programs. Indeed, this has been accomplished quite successfully.

- Admissions to nursing schools have more than doubled from 49,000 in 1959-1960 to 107,000 in 1978-1979.
- The number of employed nurses has more than tripled over the past three decades, from less than 400,000 in 1950 to over 1.24 million in 1980.
- Since 1950, the increase in active nurses has outstripped population growth by 200 percent.

Paradoxically, the nursing shortage in 1979 was as acute as ever after these tremendous gains. Although three common explanations have been offered for this puzzling phenomenon, only one provides even a partial explanation for the continuing shortage in the seventies in face of such a vast increase in the number of nurses.

These three common explanations are:

Nurses are not working at all, or have left nursing for other kinds of jobs. This is not true. Nurses have one of the highest labor force participation rates of predominantly female occupations. In 1980, almost 77 percent of licensed nurses were employed, with fewer than 5 percent working in nonhealth-related jobs. Of the approximately 390,000 registered nurses not employed in nursing in 1980, more than one-third were fifty years of age or older. Most have not worked for many years and would not be candidates for employment in today's complex hospitals. Another third are married women with children, many of whom will eventually return to the labor force.
A large proportion of nurses has been attracted away from hospital employment to nonhospital jobs. The facts do not support this explanation. Although job opportunities for nurses in ambulatory care and health services administration grew rapidly in the sixties and seventies, and some nurses undoubtedly did move into such positions, hospitals have continued to employ the same share of a growing nurse pool—65 percent—for the past two decades.

Increasing intensity of hospital care and more hospitalizations for an aging population have increased the need for nurses faster than additional nurses can be employed. There is clear evidence that the intensity and complexity of care required by hospitalized patients has increased. There has also been a 10 percent increase in inpatient days. However, between 1972 and 1980, the number of full-time nurses employed by hospitals increased by 69 percent, outstripping a generous estimate of the need for additional nurses to a considerable degree. Thus, while the increase in intensity of services and hospital inpatient days is partial explanation for the increased employment of hospital nurses, it is by no means a complete explanation for shortage during a period of very rapid increase in the supply of nurses.

Despite the inadequacy of these three common explanations to fully account for the persistent shortage of nurses in the seventies, recommendations continue to focus on increasing the supply of nurses. Relatively little attention has been given to the unique aspects of the nurse labor market, especially with respect to the factors which influence employer demand for nurses. History suggests that unless greater consideration is given to imperfections in the labor market for nurses, we may be at risk of unwittingly recreating another nursing shortage just when the problem seems to be under control for the first time in ten years.

Issues For The Future

Health care expenditures have risen at an alarming rate, particularly over the past two years, and are consuming an ever increasing share of the nation's Gross National Product, from 8.9 percent in 1979 to 9.8 percent in 1981. Hospitals, which account for over 40 percent of total expenditures, logged increases of 17.5 percent in the one-year period from 1980 to 1981. Such growth levels cannot be sustained without jeopardizing other valuable health and social services, and cost-containment efforts can be expected to increase in the years to come.

One consequence of hospital cost-containment strategies employed in the seventies was the unintended increase in employer demand for nurses that resulted from artificially constrained wage rates. As demonstrated earlier, the rapid shifts from adequate supplies of nurses to national shortages and back again seem strongly associated with changing wage rates.
This is not to say that nurses refuse to work when wages are perceived to be inadequate; recently they have worked in large numbers regardless of incomes. The important issue is that the number of positions for nurses is related to wage rates as well as to some absolute definition of need derived from numbers of hospital beds, types of insurance coverage, aging of the population, and so forth.

In the decade of the 1980s, the number of employed nurses is expected to increase by almost 500,000. The number of full-time equivalent nurses per 100,000 population is projected to increase from 473 in 1980 to 568 in 1990, a rate of growth which will outstrip the increase in population by 20 percent. Since supply and demand for nurses is now reasonably in balance as measured by historically low numbers of vacant budgeted positions for hospital nurses, the net increase in nurses in the 1980s can be expected, under current market conditions, to improve the general distribution of nurses and help resolve some of the remaining local imbalances. However, historical trends also suggest that should the normal growth in nurses' wages be artificially constrained once again so that nurses' incomes lag considerably behind those of other comparable groups, shortages as measured by widespread unfilled budgeted positions might again prevail despite the expected net increase in nurses.

The sensitivity of the nurse market to changes in wage rates is not a uniquely American phenomenon. The fiscally conservative Thatcher government in England, even during a period of extreme austerity, has recognized the unique impact of wage rates on the availability of nurses, and has singled out nurses from the rest of the health work force for special treatment. The Thatcher government supported average salary increases for nurses of 61 percent between 1979 and 1982, a figure 12 percent above the inflation rate for these years and well above average wage increases in private industry.

Given the modest economic rewards for becoming and remaining a nurse, nonmonetary rewards are very important in maintaining nurses' morale and career commitments. Being a nurse in today's fast-paced hospitals is physically gruelling, emotionally draining, and intellectually taxing. Nurses' responsibilities for making critical patient care decisions have increased dramatically over the past ten years as hospitals have shifted to an increasingly sick patient population. However, the undervaluation by physicians and hospital administrators of nurses' knowledge and experience is a major source of nurses' dissatisfaction and frustration with their current roles. Nurses want to be appreciated and respected, recognized for their expertise, consulted regarding areas of their responsibility, and to participate in decision making, have some control over where their talents can best be used, and maintain reasonable personal lives along with work responsibilities. The reorganization of work settings and modifications in interprofessional relationships necessary to bring about these...
changes do not necessarily involve major monetary investments. They primarily call for modifying traditions which have limited utility in a changing world.\textsuperscript{18}

The nursing profession must also be held accountable for attending to some long neglected problems which have contributed to the current difficulties in hospital nursing. Serious attention must be given to developing a differentiated nursing structure that clearly identifies nurses according to their levels of expertise. The proliferation of different educational pathways to becoming a nurse has made it difficult for physicians or others to clearly differentiate the more educated or experienced. In addition, medical schools and nursing schools have become increasingly isolated from one another, and nursing education has withdrawn from direct involvement in the delivery of nursing services. Nursing and medical schools should be more closely linked academically, and nursing faculty and nursing students should have closer ties to the world of nursing practice, particularly hospitals, since most nurses ultimately practice there.

Ensuring an adequate supply of nurses reasonably distributed across geographic locations and types of health care institutions require a twofold agenda for the future. Nursing, medicine, and hospital management need to forge new relationships which better maximize the contributions each group makes to the delivery of effective, affordable health care. Without such changes, nursing will become a less attractive career for highly motivated and dedicated young people with the high science aptitudes required for nursing practice in modern hospitals. However, unless we are also sensitive to the unique features of the nurse labor market, including the relationship between nurses' relative wages and the behavior of employers who stockpile nurses when relative wages are low, and the behavior of nurses themselves who adjust their hours according to wage rates, we could find ourselves in 1990 with 500,000 additional nurses in the workplace and another acute shortage.

The pressures in 1982 to constrain the growth of hospital costs are as great or greater than those of 1972. There is ample evidence that cost containment strategies pursued in the seventies contributed to a national nursing shortage by artificially constraining the growth of nurses' salaries. Pursuing the same course in the eighties may result in the same outcome—a widespread national shortage of nurses despite a continuing increase in the supply of nurses. If averting another shortage is important, policies developed to contain hospital costs should be designed with sensitivity to the impact of fluctuations in wage rates on the overall supply and distribution of nurses.
NOTES

12. The Registered Nurse Population.
14. Aiken, Blendon, Rogers, "Shortage of Hospital Nurses."