Trends in Characteristics and Country of Origin Among Foreign-Trained Nurses in the United States, 1990 and 2000

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Objectives. We describe long-term trends in the characteristics of foreign-trained new entrants to the registered nurse (RN) workforce in the United States.

Methods. Using the 1990 and 2000 US Census 5% Public Use Microdata Sample files, we compared trends in characteristics of US- and foreign-trained new entrants to the RN labor force (n = 40 827) and identified trends in the country of origin of the foreign-trained new entrants.

Results. Foreign-trained RNs grew as a percentage of new entrants to the RN workforce, from 8.8% in 1990 to 15.2% in 2000. Compared with US-trained RNs, foreign-trained RNs were 3 times as likely to work in nursing homes and were more likely to have earned a bachelor's degree. In 2000, 21% of foreign-trained RNs originated from low-income countries, a doubling of the rate since 1990.

Conclusions. Foreign-trained RNs now account for a substantial and growing proportion of the US RN workforce. Our findings suggest foreign-trained RNs entering the United States are not of lower quality than US-trained RNs. However, growth in the proportion of RNs from low-income countries may have negative consequences in those countries. (*Am J Public Health.* 2007;97:895–899. doi:10.2105/AJPH.2005.072330)

Foreign-trained nurses have been a small but steady part of the nursing workforce in the United States for more than 50 years. Shortages in the US registered nurse (RN) workforce, which have occurred cyclically over this period, typically provide the impetus for employers to seek foreign workers.[1–3] With the current nursing shortage and reported RN vacancy rates of 10% to 15% in hospitals and nursing homes, there is currently a heightened interest in foreign-trained RNs.[3–5]

Estimates of the number of RNs based on the Current Population Survey[6] show that the number of foreign-born RNs employed in the United States (11.5% of RNs employed in the United States in 2000) grew 4 times faster than the number of US-born RNs during the 1990s and accounted for one third of the growth in the nursing workforce between 2001 and 2003.[5] These trends have raised concerns that the aggressive recruitment of nurses from overseas will not be met with equally vigorous assurance of the quality and skills of the immigrating nurses[7,8] and that recruiting nurses from vulnerable low-income countries may have negative health consequences for the populations of those countries.[9–16]

We used the US decennial censuses to compare the sociodemographic and employment characteristics of US- and foreign-trained new entrants to the RN workforce. We also present trends from 1990 to 2000 in the characteristics of the country of origin of foreign-trained entrants. Finally, we describe the short- and long-term implications of nurse migration for the nursing workforce needs in the United States and in developing countries.

METHODS

Using the 5% Public Use Microdata Sample files[17] from the decennial census of 1990 and 2000, we identified the number of RNs in the labor force. Occupation in the census is based on self-report. We validated the weighted totals of the census sample of RNs with the weighted totals from the National Sample Survey of Registered Nurses (NSSRN).[18] RNs in the labor force totaled 2 176 851 from the 2000 census and 2 201 813 from the 2000 NSSRN; there were 1 747 309 RNs from the 1990 census and 1 740 030 from an average of the 1988 and 1992 NSSRN surveys. These nearly identical totals validate the use of the census for describing the RN labor force. For this study of new entrants to the RN workforce, we excluded RNs with more than 10 years of US work experience, which resulted in a study sample of 40 827 individuals (21 797 in 1990 and 19 030 in 2000).

Foreign-trained RNs are defined as RNs born in a foreign country who did not enter the United States until their formal training was complete. Because the census does not specifically ask the location of a nurse's training, we indirectly determined foreign-trained RNs by using their country of birth, education level, and year of entry into the United States. More precisely, in this study, foreign-trained RNs were those born abroad whose age at the end of their formal education was lower than their age in the year they entered the United States. Our main results were not sensitive to alternative indirect definitions of foreign-trained RNs.

RN characteristics in this study consisted of demographics, income, education, practice setting, and geographic location. Income in 1990, which is converted into 2000 US dollars on the basis of the consumer price index, included wages, salaries, and self-employment income. Education represented highest degree attained rather than highest nursing degree. Work setting was based on a categorization of census industry codes. Years of total work experience was derived from age minus years of advanced schooling minus 18 (the median age for completion of secondary education). Years of foreign work experience was the difference between age at arrival in the United States and age when training was complete. Our estimates of work experience actually estimated maximum potential work experience because we could not account for time away from nursing or identify those who started nursing as a second career.

We used country of birth from the census to assign originating continent, country income level, and country nurse-to-population ratio. Per capita country income was based on gross national income in 2000 from the World Bank's 2001 World Development Indicators.[19] Values for gross national income were all converted to US dollars by the World Bank Atlas Method.[20] Nurse-to-population ratios were obtained from the World Health Organization.[21] Income level and nurse-to-population ratio of country of origin were categorized into low, middle, and high groups. The low and high groups each contained 25% of all countries; the remaining countries were in the middle group. For those RNs who we determined were foreign trained, we assumed that the country of birth was the same as the country of training.

RESULTS

Using 2000 census data, we calculated that there were 181 000 foreign-trained RNs working in the United States in 2000, representing 9.1% of the nursing workforce (data not shown). In 1990, there were only 113 000 foreign-trained RNs, representing 6.5% of the nursing workforce. These figures yield a 40% increase in the number of foreign-trained RNs as a proportion of total RNs.

Table 1 provides demographic and employment characteristics of new entrants to the US RN workforce by location of training and over time. From 1990 to 2000, the share of new entrants that were foreign trained grew appreciably. There were 469 249 RNs working in 1990 who had joined the workforce during the previous decade; of these, 8.8% were foreign trained. By 2000, that share had nearly doubled, with 15.3% of the 406 869 new entrants foreign trained.

The characteristics of the foreign-trained group also changed. The percentage of foreign-trained entrants with at least a bachelor's degree declined slightly, from 69.1% to 67.8%, whereas among US-trained entrants, the percentage with at least a bachelor's degree increased from 59.6% to 64.3%. Thus, while US-trained entrants still were less likely to have a bachelor's degree, the gap had narrowed.

The annual income of foreign-trained entrants was considerably higher than that of US-trained entrants. In 2000, foreign-trained nurses earned $44 000, compared with $33 000 for US-trained nurses. Using an income regression to control for age, work hours, and state of residence, we estimated that half of this difference could be accounted for by the fact that foreign-trained entrants were older, worked more hours, and were located in states with higher nurse wages. The trend in incomes shows that from 1990 to 2000, foreign-trained entrants experienced an 8.5% real growth in income, whereas the growth for US-trained entrants was flat. This trend can be partially explained by the more rapid growth among foreign-trained entrants in age and hours worked. It may also be influenced by differences between the 2 groups that were not specifically captured in the census data, such as differences in the shifts worked (e.g., whether foreign nurses were more likely to work the more highly compensated evening and night shifts).

Of particular note is the growth in the recruitment of foreign nurses to long-term care facilities. Although nursing homes have traditionally been more likely to employ foreign nurses than have other health care settings, employment of foreign-trained new entrant RNs in nursing homes has grown by nearly 3 times in the past decade. Historical difficulty in maintaining adequate staffing levels may have influenced the growth in numbers of foreign-trained nurses in these settings.[22] Furthermore, wages in nursing homes grew more rapidly in 2000 than in hospitals, which may have contributed to the relative income growth of foreign- versus US-trained nurses.[23]

The geographic location of new entrants is displayed in Figure 1. The geographic distribution of US-trained entrants in 1990 and 2000 look similar. The geographic distribution of foreign-trained entrants in 1990 and 2000 shows a dramatic shift from the Mid-Atlantic and Pacific census divisions to the South and Midwest census divisions.

The characteristics of the continent or country of origin of the foreign-trained entrants are shown in Table 2. As of 2000, the majority of foreign-trained RNs came from

TABLE 1—Demographic and Employment Characteristics of New Entrants to the US Registered Nurse Workforce: US Census, 1990 and 2000

Characteristic	US-Trained Nurses		Foreign-Trained Nurses	
	1990 Census	2000 Census	1990 Census	2000 Census
New entrants, weighted no.	427 875	344 803	41 374	62 066
Mean age, y (SD)	27.5 (3.1)	27.5 (3.0)	35.0 (7.3)	37.0 (7.7)
Men, %	5.8	9.9	8.6	14.2
Race, %				
White	89.6	83.6	23.3	30.1
Black	7.0	8.2	13.5	16.1
Asian	2.0	4.3	60.5	48.7
Other	1.4	3.9	2.7	5.1
Education, %				
Associate's	40.4	35.7	30.8	32.2
Bachelor's	48.2	54.3	55.8	57.1
Master's or above	11.4	10.0	13.3	10.7
Mean US work experience, y (SD)	6.2 (2.8)	6.1 (2.8)	4.4 (3.4)	5.4 (3.0)
Mean total work experience, y (SD)	6.2 (2.8)	6.1 (2.8)	13.4 (7.4)	15.5 (7.8)
Mean income, $ (SD)	32 776 (15 862)	32 931 (17 743)	40 273 (20 392)	43 703 (25 872)
Hours worked per year	1764	1782	1862	1898
Setting, %				
Hospital	79.8	72.2	83.4	63.8
Nursing home	4.1	6.6	6.3	17.5
Other	16.0	21.3	10.3	18.7

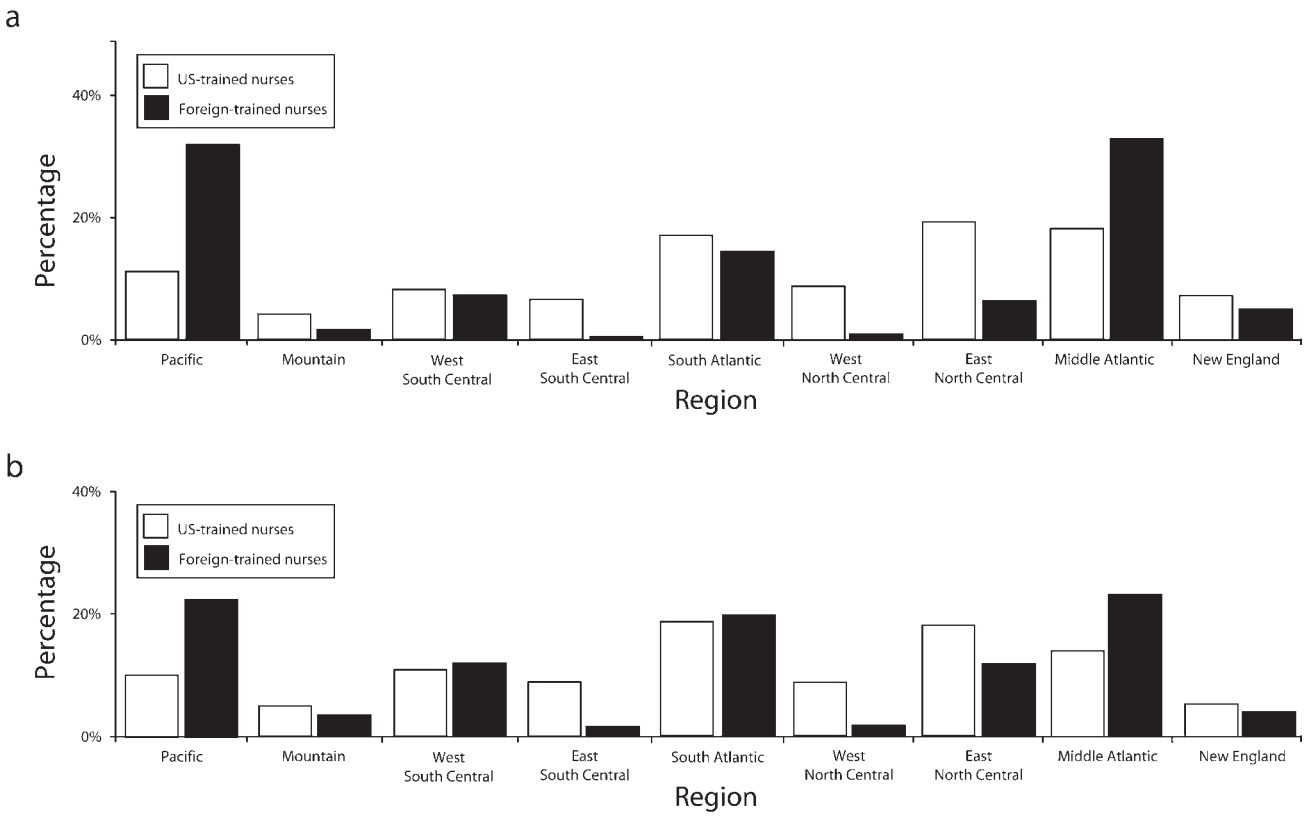

FIGURE 1—Location of US- and foreign-trained new entrant registered nurses, in 1990 (a) and 2000 (b).

Asia, predominantly from the Philippines. Nearly 25% came from North or South America (Canada, Mexico, the Caribbean islands, South and Central America), of whom more than half were from Canada; Europe and Africa contributed 11% each. This distribution reflects a relative shift away from foreign-trained RNs from Asia. In addition, from 1990 to 2000, there was a doubling of the share of new foreign-trained RNs from Canada and a tripling in the share from Africa.

Aside from a shift in continent of origin, there was also a shift in the economic profile of the source countries within the continent. In 1990, 18% of new foreign-trained RNs came from high-income countries and 11% came from low-income countries. By 2000, there was a shift away from middle-income countries, with a higher percentage from both high-income (25.4%) and low-income countries (20.7%). The same shift from the middle can be seen when the countries of origin are classified by nurse-to-population ratio. The share of foreign-trained nurses from countries with a high ratio of nurses increased by 66%, whereas the share from countries with a low ratio grew by 30%.

DISCUSSION

Foreign-trained RNs are assuming a larger role in the provision of nursing care in the United States. There were nearly 181 000 foreign-trained RNs working in the United States in 2000, which represents 9.1% of the nursing workforce. The percentage of foreign-trained RNs increased by 40%, from 6.5% of RNs in 1990. New entrants with foreign training grew from 8.8% of new entrants in 1990 to 15.2% in 2000. Other studies have affirmed this trend and suggest that it has accelerated since 2000.[5,8]

From a US perspective, the wisdom of relying on foreign-trained nurses to meet the country's excess demand for nurses will depend, in part, on whether this practice maintains the quality of the RN workforce. Compared with their US counterparts, foreign-trained entrants are more likely to have a bachelor's degree and are likely to have as much work experience. Even though education and work experience in foreign countries with less-advanced health care technology may not be directly comparable to education and work experience in the United States, there is no evidence from our results to suggest that the foreign-trained RNs are lower-quality RNs. This conclusion is further supported by our somewhat surprising finding that the foreign-trained entrants had a substantially higher average income than US-trained entrants. The contribution of differences in skills and of other factors to this higher income should be more fully investigated.

Upward trends in the recruitment of foreign nurses by large developed countries may

TABLE 2—Characteristics of New Foreign-Trained Entrants to the US Registered Nurse Workforce: US Census, 1990 and 2000

Characteristic	Foreign-Trained Nurses: 1990 Census	Foreign-Trained Nurses: 2000 Census
New entrants in the labor force	41 374	62 066
Continent/country, %		
Europe	10.9	11.5
Asia	62.8	52.1
Americas (excluding Canada)	15.3	10.9
Canada	6.1	13.6
Africa	4.1	11.1
Oceania	0.7	0.9
Per capita country income,[a] %		
Low (≤$755)	11.1	20.7
Middle ($755–$9265)	70.9	54.0
High (≥$9266)	18.0	25.4
Country nurse-to-population ratio,[b] %		
Low (≤63/100 000)	9.9	12.9
Middle (64–478/100 000)	73.4	59.4
High (≥479/100 000)	16.7	27.8

[a]Mean income is based on gross national income, from the World Bank's 2001 World Development Indicators.[19]
[b]Data obtained from the World Health Organization.[21]

exacerbate existing problems of access to health care for many smaller and poorer countries that are net exporters of nurses and already have low nurse-to-population ratios. We found that, compared with 1990, new foreign-trained RNs in 2000 were twice as likely to originate from low-income countries and 30% more likely to originate from countries with a low supply of nurses. Even a small increase in the proportion of US RNs from countries with low numbers of nurses may represent a large proportion of those countries' stock of nurses. For example, the 11.1% of foreign-trained RNs who entered the United States from Africa between 1990 and 2000 alone represents more than 1% of the entire stock of African nurses. Deterioration of the nursing stock of these poor countries may ultimately threaten their capacity to train nurses and replenish their nursing workforce. The lack of a skilled nursing workforce has been cited as a binding constraint in programs to address global health priorities.[24]

Responding to this issue by imposing restrictions on nurse migration from vulnerable countries may address a short-term crisis, but it could ultimately shrink the local supply of nurses. The prospect for higher wages overseas attracts talented local workers to the field of nursing, which may increase the local and worldwide nursing supply. The implications of policy changes should be carefully considered to avoid unintended consequences.

An important limitation of this work was that we did not observe foreign training, experience, and RN licensure directly. Foreign training and experience were inferred on the basis of age, education, and year of entry into the United States. Whether a nurse was licensed was based on self-report, but our total estimated number of RNs corresponded closely to estimates from the NSSRN, where sampling is based on state licensure records. However, the NSSRN cannot be accurately used as a benchmark for accounting for the number of foreign-trained RNs in the United States, because the NSSRN undercounts foreign nurses by sampling the same number of nurses from all states (foreign nurses typically locate in large states) and by identifying the foreign trained by the location-of-training question (nonrespondents to this question may be predominantly foreign trained).

The United States has eased its nursing shortage by, among other strategies, recruiting more foreign-trained nurses. Monitoring the characteristics of these nurses provides US policymakers and workforce managers with information on the impact of allowing this trend to continue unabated. Such information, though, tells only part of the story. Although the levels of education and work experience of foreign-trained nurses are not lower than those of US-trained nurses, these features only address the technical dimensions of care. Cultural competence, defined here as the ability to use a cultural understanding of patients in caring for them, which substantially affects the quality of care[8] and is not easily captured in any data sources, could likewise be changing and having a noteworthy—and currently unmeasured—effect on the delivery of patient care in the United States. Furthermore, the source countries are increasingly those with low incomes and low stocks of nurses. The impact of nurse emigration to the United States on the countries sending them requires closer examination, because this could have a large impact not only on the future ability of the United States to rely on overseas nurse recruitment but also on global health. ■

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Contributors

D. Polsky led the conceptualization and research design, guided the analytic process, and reviewed research findings. S.J. Ross aided in the research design and carried out the analysis. B.L. Brush provided critical review of and expert consultation on the research findings. J. Sochalski guided the research aims and provided a critical review of research findings. All authors contributed to the writing of the article.

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Human Participant Protection

The University of Pennsylvania institutional review board determined this project to be exempt.

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