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ABSTRACT

The importation of foreign registered nurses has been used as a strategy to ease nursing shortages in the United States. The effectiveness of this policy depends critically on the long-run response of native nurses. We examine the effects of immigration of foreign-born registered nurses on the long-run employment and occupational choice of native nurses. Using a variety of empirical strategies that exploit the geographical distribution of immigrant nurses across US cities, we find evidence of large displacement effects – over a ten-year period, for every foreign nurse that migrates to a city, between 1 and 2 fewer native nurses are employed in the city. We find similar results using data on nursing board exam-takers at the state level – an increase in the flow of foreign nurses significantly reduces the number of natives sitting for licensure exams in more dependent states relative to less dependent states. Using data on self-reported workplace satisfaction among a sample of California nurses, we find suggestive evidence that part of the displacement effects could be driven by a decline in the perceived quality of the workplace environment.

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1. Introduction

Registered nurses (RNs) are the single largest group of health-care professionals in the United States and their demand is expected to grow at unprecedented levels over the next ten to fifteen years. The latest [Bureau of Labor Statistics occupational outlook \(2012\)](#) estimates that the employment of registered nurses will grow 26 percent from 2010 to 2020, much faster than the average for all occupations (14 percent). Several factors contribute to this prediction – aging and growth of the population, expected shortage of primary care physicians and technological advances. These projections are likely to underestimate the demand for nurses as they do not incorporate the passing of the Affordable Care Act which is expected to expand health insurance coverage to 32 million Americans. Moreover, thousands of nurses are likely to retire in the next decade (close to 30 percent of native nurses were 55 or older in 2010).

The supply of nurses appears to have responded – between 2005 and 2010, the supply of registered nurses experienced its largest expansion since 1970. Nevertheless, this increase is expected to be short-lived as much of the increased supply was triggered by nurses who re-entered the labor force due to the recession. As the economy recovers, these nurses are expected to return to non-nursing jobs or reduce their hours of work ([Staiger et al., 2012](#)). Nurse shortages are likely to have serious implications for the quality of healthcare – higher patient loads have been associated with more medical errors, longer hospitalizations, lower patient satisfaction and increases in the mortality rate.¹ Therefore, strategies are needed to ensure that the size of the nursing workforce is large enough to meet the healthcare demands in the near future. One strategy that has been actively pursued in the US nursing market is the hiring of foreign-born nurses.² Whether

¹ See [Buerhaus et al. \(2009\)](#) and [Tulenko \(2012\)](#) for thorough reviews of the literature.

² Several immigration laws have been implemented in the past few decades to facilitate the hiring of foreign nurses. For example, to address the nurse shortage of the late 1980s, Congress passed the Immigration Nursing Relief Act of 1989, which created the H1-A nonimmigrant visa category for nurses. There were no limits placed on the number of visas that could be issued. The act expired in 1995 and the Congress decided against extending it. More recently, in 2005 President Bush signed into law the Emergency Supplemental Appropriations Package which enabled 50,000 unused employment-based immigrant visas to be allocated to registered nurses, physical therapists and their families.

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this strategy is effective at addressing and preventing nurse shortages is a contentious issue. While hospitals strongly support and lobby for migration policies that facilitate the importation of foreign born healthcare professionals under the argument that they provide critical temporary relief in times of acute shortages, the American Nurse Association (ANA) strongly opposes them on the grounds that “the influx of foreign-educated nurses only serves to further delay debate and action on the serious workplace issues that continue to drive American nurses away from the profession.” (American Nurse Association, 2008) If ANA’s argument holds true, then what is considered to be an effective policy in the short-run might not be the best strategy in the long-run. This paper’s goal is to evaluate the impact of foreign nurse importation on the long run supply of registered nurses.³ In particular, we explore if the importation of foreign nurses has affected the employment of native nurses and the number of natives deciding to pursue a nursing career.⁴

The question of how immigration affects native workers has long been of interest to labor economists. Several dozen papers have been written on this topic.⁵ Nevertheless, besides the fact that there remains no strong consensus as to whether immigration has any negative labor market effects on competing native workers, most studies have focused on broad groups of the population and it is not clear whether the results of these studies can be extrapolated to particular occupations, such as nursing.⁶ The impact of immigration is likely to be occupation-specific and depend, among other things, on the degree of substitution (or complementarity) between natives and immigrants and on the existence of economies of agglomeration in the relevant production function. For example, many recent studies have found no displacement effects, or even a positive effect of the inflow of scientists and engineers on the number of natives working in the field (Kerr and Lincoln, 2010; Hunt and Gauthier-Loiselle, 2010).⁷

We use several empirical strategies and datasets. All our strategies exploit the large geographic variation in immigrant concentration in the nursing sector in the United States to identify how foreign nurse importation has affected native nurses in

various dimensions. We start by exploring the effects of foreign nurse migration on the aggregate number of employed native nurses. Using data from the 1980, 1990, 2000 Census and the 2010 American Community Survey, we follow Card’s (2001) cross-area approach and relate ten-year changes in the number of native nurses per capita in a city to ten-year changes in the number of foreign-born nurses per capita. To instrument for foreign nurse flows into a city, we use the historical distribution of other high-skilled immigrants across cities in the US to allocate the national flow of foreign-born nurses to each city. We find large displacement effects – for every foreign nurse that migrates to a city there are between 1 and 2 fewer native nurses observed working in the city. The estimated negative effects are robust to estimation technique (OLS or IV, although IV estimates are about two to three times as large) and to a large set of controls, including state specific shocks and proxy variables for demand and supply determinants of the size of the nursing workforce. Furthermore, we also find large displacement effects when we use a second approach. Following Borjas (2003), we exploit variation in immigrant concentration at a finer level by dividing a city’s native nursing labor force into different experience groups to examine how changes over time in immigrant concentration within a city across experience groups differentially affects native nurses with different experience levels within a city. This approach is complementary to the spatial correlations approach as it allows us to control for unobserved shocks that vary by city across time. As would be expected if there is at least some degree of substitution between nurses of different experience levels, the estimated effects are smaller than those using the cross-area approach, but remain sizable – for each foreign nurse of a given experience level who enters a city, there are approximately 0.9 fewer natives of the same experience level working as nurses in the same city. Although large, our displacement estimates are not implausible if there are productivity differences between native and foreign nurses. In Cortes and Pan (2014) we provide strong evidence that foreign nurses, in particular Filipinos, are on average more productive than native nurses.

Having established large displacement effects on the aggregate native nurse workforce, we explore which groups are most affected by foreign nurse inflows and the channels through which this displacement effect takes place. We find displacement effects for all age groups and education levels (bachelor’s or associate degree), with the exception of nurses with an advanced degree. Examining internal migration flows suggests that the displacement effects are not driven by native nurses selectively avoiding or moving away from high-immigrant cities. We also find little evidence that displacement is due to more native nurses becoming unemployed or exiting the labor force. Overall, this suggests that the displacement effects observed are likely to be due to native nurses switching occupations or fewer potential nurses in a city choosing to enter nursing.

To directly test for the possibility that foreign nurse migration might affect the number of natives choosing to enter nursing, we utilize annual data on the number of individuals taking the National Council Licensure Examination (NCLEX) from 1983 to 2010. Because data for the number of native takers is available at the state level but data on foreign-educated exam takers is only available at the national level, we use a reduced form approach. We test whether increases in the aggregate (national) flow of foreign nurses are associated with fewer natives joining the occupation four years later (the time it typically takes to obtain a nursing degree)⁸ in

³ Ideally, we would also like to study the impact of foreign nurse migration on the short-run supply of nurses. However, such analysis is precluded due to data limitations. In particular, the Census which arguably has the best counts of foreign and native nurses at the city or state level is conducted only every ten years. The yearly American Community Survey only begins in 2000 and does not have geographical identifiers at the city level until 2005. The sample size of the Current Population Survey (CPS) makes it difficult to study a single occupation at the state or city level – the number of foreign and native nurses by state or city is too small for meaningful analysis. Although the National Sample Survey of Registered Nurses (NSSRN) is conducted every four years and has a large sample of nurses, there is severe undercounting of foreign nurses making it difficult to compute reliable short-run changes in the supply of foreign nurses over time. For example, the estimated shares of foreign nurses in the NSSRN are about half of those estimated using the Census data. Furthermore, the NSSRN indicates little change in the number of foreign-educated nurses between 2000 and 2004, despite evidence from the nursing licensure examinations (NCLEX) of more than a tripling in the number of foreign-educated nurses who passed the licensing exam over the same period, most of whom presumably immigrated (Aiken, 2007).

⁴ Throughout the paper, our use of the term “nurses” refer specifically to Registered Nurses.

⁵ See for example, Borjas (2003, 2006), Card (2001, 2005) and Wozniak and Murray (2012).

⁶ A small number of papers have looked at the effect of foreign nurse immigration on native nurses (Schumacher, 2011) and (Kaestner and Kaushal, 2012). Unlike previous work that tends to focus on the wage impact of immigration, our focus is on displacement effects. We also use different data sources and empirical strategies to estimate the displacement effects and to understand the channels through which displacement occurs.

⁷ On the other hand, Federman et al. (2006) study the impact of the influx of Vietnamese manicurists in California on natives and find that for every five Vietnamese who enter the market, two non-Vietnamese were displaced.

⁸ We also conduct robustness checks with two year lags to allow for the possibility that it can take as little as two years to complete an associate’s degree. The results are very similar.

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