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What explains the rising share of U.S. men in registered nursing?

Elizabeth Munnich
Abigail Wozniak

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What Explains the Rising Share of U.S. Men in Registered Nursing?
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Abstract

This paper documents four decades of increasing participation in registered nursing among US men and explores reasons for this change. We find that a large component of the increase is due to men switching into nursing in their twenties and early thirties. Increasing educational attainment, rising labor demand in healthcare, and liberalizing gender role attitudes explain around 50 percent of the growth. Important countervailing factors include poor early labor market conditions and immigrant inflows, both of which are associated with less movement into nursing by men. We discuss the implications of our findings for policies to encourage men to take up high growth, nontraditional skilled jobs.

Elizabeth Munnich
University of Louisville
Department of Economics
beth.munnich@louisville.edu

Abigail Wozniak
University of Notre Dame
Department of Economics
a_wozniak@nd.edu

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1. Introduction

Since 1960, American men have entered the field of nursing in increasing numbers. The share of nurses who are men has risen substantially over this period, from 2.2 percent in 1960 to 11.9 percent in 2013 (Figure 1), and 13 percent in 2015.[2] The probability that a man in the labor force reports registered nursing as his occupation has risen more than ten-fold over this period. The same probability for women has also increased, but much less dramatically (Figure 2 Panel A). The nursing occupation is still far from gender-balanced, but this transition has nonetheless been economically and socially meaningful. Men have gone from rarities in the nursing field to having a significant, if minority, presence. Men and women make up nearly equal shares of some specialized subfields, like nurse anesthetist. This shift has unfolded over a period in which workers in traditionally-male occupations have faced increasing competitive pressure from automation and trade (Autor, Dorn and Hansen 2013) and, in the construction sector specifically, immigration and later the housing market collapse (Cadena and Kovak 2016). Given these long-run trends, there have been calls to encourage young workers – and men in particular – to move into high growth occupations that require some post-secondary training but less than a four-year degree.[3] We therefore view the movement of men into registered nursing as a useful case study from which much can be learned about how young workers in the middle of the skill distribution choose non-traditional occupational paths.

[2] The 2015 estimate is generated using single-year estimates from the American Community Survey.

[3] For example, a YouthBuild USA executive issued such a call in 2013 (Wright, *Huffington Post*, February 1, 2013 http://www.huffingtonpost.com/youthbuild-usa/positioning-opportunity-y_b_2601494.html) as did the Hamilton Project (Lerman, 2016).

In this paper, we document and explore the reasons behind increasing participation in registered nursing among US men. We focus on registered nursing (or RNs) because this occupation has considerably greater skill requirements and has experienced greater employment growth and lower unemployment than the other major nursing occupations, such as nursing aide (Benson 2013a).[4] The facts above suggest that registered nursing has become a more relevant career option for men over the last half century. To better understand this change, we propose a simple framework in which the share of men in nursing is driven by two sets of factors. The first is long-run trends, such as shifts in population demographics, educational attainment, post-secondary institutional access, and gender role attitudes. The second is cyclical or episodic factors, such as changes in relative earnings for RNs and local unemployment conditions.

We document the increasing participation in nursing among US men using data from the decadal US Census and the annual American Community Survey (ACS). These data sets provide us with the necessarily large samples from which to estimate our dependent variable of interest: the rates at which men from different birth state and birth year cohorts report registered nursing (RN) as their occupation. Other means of quantifying the increasing choice of RN work among men are possible, but we prefer this rate on the combined grounds of feasibility of construct, ease of interpretation of estimating equations, and its similarity to other interesting measures. We combine the Census/ACS data with information from several other sources to examine determinants of the probability that a man reports nursing as his occupation by birth year and birth state cohort. We allow these probabilities to be determined by both trend and cyclical factors. Because of our interest in the role of state-level factors in early adulthood, we restrict our attention to US-born men. We assess the role of immigrant labor market competition as one of our trend factors, but our

[4] A third nursing occupation, licensed vocational nurses (LVN), is a smaller share of all nurses.

analysis is focused on determinants of the RN occupation choice among native men. Our final data contain observations for cohorts of US-born men turning 18 between 1972 and 2013.

Using our sample of cohorts matched to outside data, we apply descriptive regression analysis to a state-cohort level data set to understand the factors most associated with the rise of men in nursing. We first examine the trend drivers of the rising share of men in nursing. As expected, regression analysis of state-cohort rates of men in the RN occupation shows a strong time trend. We find that shifts toward greater high school completion, more urbanization, liberalizing gender role attitudes, and greater two-year college access all contribute to the rising share of men in nursing. Taken together, our estimates suggest that these trend factors can explain up to 52 percent of the rising share of men in the RN occupation nationally, in a regression accounting sense. The data also show a strong upward profile in age: men become more likely to report a nursing occupation as they age through their twenties and early thirties. This age profile is present across cohorts, indicating that men have a history of "opting-in" to nursing after a few years of labor market experience. Further analysis shows that women also opt-in to nursing over the course of their early careers suggesting that the RN occupation may provide a relatively long period in which new workers can join the occupation after completing high school.

Turning to cyclical factors, we find that poor early labor market conditions in a cohort's birth state are associated with *less* movement of men into nursing. The role for cyclical factors is also economically meaningful. Our estimates imply that the difference in the RN share of men in the cohort experiencing the highest early career unemployment rate and that experiencing the lowest could be as large as the overall trend rise in the RN share among men. In other words, the cross-cohort differences in men choosing nursing due to different business cycle conditions are as large as the overall increase in this choice between 1980 and 2013.

Our work contributes to three different literatures. It is most directly connected to the literature on gender segregation in occupations (Pan 2015; Goldin 2015 and 2006; Blau, Brummund and Yiu 2013), but it is particularly related to Goldin and Katz (2016). That paper uses pharmacy as a case study to understand long-run trend determinants of the gender wage and earnings gaps. Our paper uses the movement of men into the RN occupation as a case study to understand factors that draw men to non-traditional occupations. Understanding such factors may be critically important for designing policies to reduce inequality and long-term unemployment or non-participation among US men. Men once made up a large share of the nurse labor force. This trended downward for approximately a century following the US Civil War before turning upwards again beginning in 1970. The increasing presence of men in nursing therefore represents a change in the gender composition of this occupation after it had become nearly completely feminized. This is not only historically unusual – since most analysis finds that once occupations "tip" to predominantly female, they rarely tip back – but also potentially important as technical change continues to re-shape the traditionally male manufacturing sector in ways that necessitate moving men into new sectors where labor demand is stronger.

Our work also relates to a large literature on occupation and major choice. Papers like Arcidiacono (2004) and Altonji, Blom, and Meghir (2012) typically focus on building general models of occupation or major choice that focus on financial returns and sometimes also effort costs as inputs into an individual's choice, although Blom, Cadena and Keys (2015) examines the role of the business cycle in major choice. To our knowledge, such models have not been deployed to understand long-run changes in occupation choice. Our paper focuses on a single occupation, which allows us to take a longer-run view of the determinants of occupation choice. Because nursing is relatively well-identified as an occupation both in the data and over time, we are able to

consider whether relative social and labor market outcomes for men in nursing have changed over four decades in ways that encourage men to take up that occupation.

Finally, our work contributes to the literature on nurse labor markets. Nurse labor markets have been the focus of several papers, but to date the economics literature has not examined the rise of men in this field. Specifically, previous research on the nurse labor market has focused on registered nurse (RN) shortages (Buerhaus, Staiger, and Auerbach 2000 and 2003; Buerhaus, Auerbach, and Staiger 2007), as well as labor supply elasticity (Sullivan 1989; Staiger, Spetz, and Phibbs 1999) and monopsony (Matsudaira 2014, Adamache and Sloan 1982, Hirsch and Schumacher 1995) in the nurse labor market. Other research has examined the effects of legislated nurse-to-patient ratios on wages and employment (Munnich 2014; Tong 2011; Mark, Harless, and Spetz 2009). Within the nurse labor markets literature, our work most directly contributes to research that has documented the cyclicality of nursing employment. Several papers find that nursing employment is cyclical for women in particular (Buerhaus, Auerbach, and Staiger 2009; Staiger, Auerbach, and Buerhaus 2012; Blom, Cadena, and Keys 2015). Benson (2013a) showed that RN unemployment in the US is both lower than the national average and recovered more quickly following the Great Recession than the overall unemployment rate. We add to this literature by examining how RN labor supply among men has responded to economic factors and, more generally, providing insight into an important segment of the nurse labor force that has contributed to recent growth in the RN labor market.

We also anticipate that our work will be relevant to policymakers seeking ways to direct middle-skill workers into growing sectors. Research has documented the decline in the share of middle-skill jobs in the economy and shown that workers displaced from the middle of the skill distribution often end up competing for lower skill jobs (Autor, Katz, and Kearney 2008). There

has also been growing concern from both researchers and policymakers about the low participation rates among working aged US men, which appears at least related to declining opportunities for stable, well-paying jobs among workers without a college degree (Council of Economic Advisers 2016). The research in this paper provides guidance as to what factors most influence young men to move into occupations they may have not typically considered. Our findings are therefore relevant to current policies to improve labor market outcomes for workers who have been negatively affected by long-run changes in technology and trade.

2. Background: Changes in Nurse Training, Work Environments, and Relative Earnings

A number of factors affected the education and work environment for nurses in the mid-twentieth century. Nursing care, originally delivered by monks, was predominantly provided by men well into the nineteenth century.[5] Reforms to improve hospital conditions, led by Florence Nightingale at the end of the nineteenth century, targeted upper and middle class women to be trained nurses. During the Industrial Revolution, males increasingly left nursing for other opportunities in the workforce. Throughout this period, males were barred from admission to most nursing schools and prohibited from serving as nurses in the US Armed Forces. These factors together contributed to the lowest shares of men reporting a nursing occupation in 1930, as shown in Figure 2 Panel A.

Severe nurse shortages during and after World War II motivated reforms that increased opportunities for professional nurses in the US. However, programs designed to expand nurse supply at this time, such as the US Army and Nurse Cadet Corps, continued to target women (D'Antonio 2010). In 1955, after the Korean War, federal legislation signed by President Eisenhower lifted the ban on men joining the Army and Navy Nurse Corps. Still, by 1960 only 40 percent of

[5] Facts in this paragraph from O'Lynn and Tranbargar (2006) and D'Antonio (2010).

nursing programs accepted men, who made up one percent of all nursing students (United States Surgeon General's Consultant Group on Nursing 1963). President Johnson's Nurse Training Act of 1964 allocated an additional $288 billion towards programs to increase the number of nursing school graduates by 75 percent by 1970 (Yett 1966). One of the key features of the bill provided student loans for nursing school (Yett 1975). In 1982, a US Supreme Court decision, on a case brought forward by a licensed male nurse, for the first time prohibited publicly funded institutions from denying admission to men on the basis of gender alone.

Today, the amount of formal training required to become an RN may help draw men into nursing from other occupations later in their careers. Currently all states allow individuals to qualify for an RN license after earning an Associate Degree in Nursing (ADN). Other routes include a Bachelor of Science in Nursing (BSN) or a 3-year hospital-based diploma program, and some employers may favor or even require a BSN (Goode et al. 2001; Aiken 2010; Institute of Medicine 2010). Additionally, active duty RNs serving in the U.S. military must have a bachelor's degree, and the Veteran's Administration—the largest employer of RNs in the US—requires that RNs have a BSN for promotion beyond entry level positions (American Association of Colleges of Nursing 2010). Until the 1960s, the majority of nursing schools were hospital-based diploma programs. ADN programs were first introduced in 1951, and a surge in the number of community colleges in the 1960s contributed to shifting RN training away from hospitals and into colleges (Egenes 2009). Subsequently, the share of nursing students enrolled in hospital-based programs dropped from 80 percent in 1960 to 16 percent in 1970 (D'Antonio 2010). This change in training meant that individuals could obtain a nursing license through a two-year degree program, potentially while maintaining employment in another occupation throughout their studies. Hospital support for employees to obtain additional training is also common. In a 2009 hospital survey, Benson

(2013b) found that 20% of hospitals provided tuition reimbursement for non-employees in exchange for a subsequent work commitment, 85% provided tuition support for licensed vocational nurses (LVNs) enrolled in BSN programs, and 79% provided support for employees enrolled in Master of Science in Nursing (MSN) programs.

Accelerated nursing programs, 12- to 18-month programs that offer a BSN to students who have a bachelor's degree in a field other than nursing, are another route through which workers can obtain nurse training relatively quickly. The number of accelerated programs in the U.S. has grown dramatically since 1990: from 18 programs in 1994 to 135 programs in 2004 (Wink 2005). The growth appears to have continued in the 2000s. In 2013, the American Association of Colleges of Nursing listed 293 accelerated programs at the baccalaureate level and 62 at the masters' level (AACN 2015). Accelerated training has become particularly important because the American Nurses' Association (ANA) has advocated for greater utilization of baccalaureate programs, arguing that nursing has become more complex due to technological change in medicine (Friss 1994; Dillon 1997; Institute of Medicine 2011; Spetz and Bates 2013). Still, nearly 60 percent of nursing graduates today were trained through an associate's nursing degree program (National League for Nursing 2013).

Recent changes in the work environment may also contribute to men going into nursing at greater rates. While attitudes towards and stereotypes about male nurses have been a barrier to men going into nursing, national organizations such as the American Assembly of Men in Nursing, established in 1971, and the Robert Wood Johnson Foundation have placed greater emphasis on recruiting and retaining male nurses (Institute of Medicine 2011). Increasing physical demands have also changed the nature of nursing work. According to the Bureau of Labor Statistics (BLS), registered nursing is among the ten jobs with the highest levels of occupational injury or illness

requiring days away from work, and among the six professions with the highest injury incidence related to musculoskeletal disorders (US Department of Labor 2012). Previous research has attributed these injuries to inadequate staffing, poor organizational climates, and increased physical demands due to rising obesity rates among patients (Wunderlich et al. 1996; Lipscomb et al. 2004; Trinkoff et al. 2006; Humphreys 2007). In the face of increasing physical demands in nursing, research suggests that male nurses are more likely than female nurses to be asked to take on patient lifting tasks (Williams 1991). Finally, rates of unionization have been rising in registered nursing, although the change has been modest. Unionization rates among hospital-employed RNs rose from about 18 percent in the 1980s and 1990s to about 21 percent just before the Great Recession (Spetz et al. 2011).

Beyond these changes in nurse training and work environment, changes in the wider labor market may make nursing, and the RN occupation in particular, more attractive as a career. Figure 3a graphs median weekly earnings for RNs over time alongside median earnings for high school equivalent men (men with educational attainment of two years of college or less).[6] Both series are expressed relative to median earnings for US workers overall in each year. The changes over time are striking. High school equivalent men earned more than 1.2 times the US median in 1980. By the end of our data, this ratio had fallen to about 0.9. For RNs, the change was even more dramatic, and in the other direction. RNs earned the US median weekly wage in 1980, but by the early 1990s, their earnings exceeded 1.4 times the US median. In the 2000s, relative earnings for RNs crept up further, reaching 1.6 times the US median at their 2010 peak before ticking down in recent years.

[6] We use weekly earnings estimated from the March Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) data for this exercise. Results are similar using weekly earnings measured in the CPS Outgoing Rotation Groups, for the period in which the data overlap.

Figure 3b shows that the growth in relative earnings for RNs was in part a reflection of growth in earnings for skilled workers more generally. After 1990, median earnings (in levels) for RNs essentially match those for college equivalent workers (those with educational attainment of three of more years of college). Prior to 1990, earnings for RNs were growing more rapidly than those for skilled workers. Figures 3a and b suggest that since 1980, the RN occupation has become considerably more attractive relative to jobs not requiring a college degree. Figure 3b also shows that for high school equivalent men, this advance has been absolute, as their median weekly earnings have been stagnant over this period. For high school equivalent women, moderate increases in their median weekly earnings meant that the higher pay opportunities in registered nursing were offset by opportunities elsewhere that were also improving, if at a slower pace.

3. The Changing Presence of Men in Nursing: An Overview

We focus our analysis specifically on men in the registered nursing (RN) occupation. Nursing aides and orderlies make up a significant portion of the broader nursing workforce, but the training for RNs is sufficiently different from that for aides or orderlies that they might reasonably be considered different occupations. Specifically, RN licensure requires a bachelor's or associate's degree in nursing, or hospital-based nursing diploma, as well as passing the National Council of Licensure Examination for Registered Nurses (Bureau of Labor Statistics 2017a). In contrast, orderlies typically need only a high school diploma and nursing aides may be required to complete a state-approved program and pass a competency exam (Bureau of Labor Statistics 2017b). Before introducing our formal analysis, we provide an overview of the relevant patterns in the data, some of which allow a longer run historical perspective than will be possible with our regression sample.

Table 1 shows the share of the labor force reporting specific occupations in 1980 and 2013, the end points of our main estimating sample. The prevalence of men in the labor force who reported any nursing occupation rose substantially over this period, from about 0.4 percent to a little over 1 percent. Over a third of this increase was due to a rise in the share of men in the more skilled RN occupation, although nursing aides and orderlies, the other major nursing occupation, also saw substantial increases in the share of men reporting this occupation. There was also an increase in men reporting the LVN occupation, but this is a small share of the overall nursing occupation.

Much of the rise of men in nursing occurred in hospitals, where nearly 70 percent of male RNs worked in 2013. Table 1 also shows that the percent of men who reported working as RNs in hospitals more than tripled between 1980 and 2013. While the share of men working in personnel supply services (temporary employment), physician offices, and (non-residential) nursing care facilities also increased substantially during this period, these industries comprised only 1.8, 2.5, and 7.2 percent of male RNs in the labor force in 2013, respectively.

The pronounced rise of men going into nursing has not been paralleled in other female-dominated occupations. As examples, we consider a small set of occupations in which a high percentage of workers is traditionally female but which are also consistently identified over time in the data. These are primary teachers, secondary teachers, bank tellers, and physician's assistants. In 1980, men were much more likely to be primary or secondary teachers than RNs, bank tellers, or physician's assistants (Table 1). However, the rate at which men became bank tellers and physician's assistants was relatively constant throughout this period. [7] Men were nearly four times

[7] In contrast to nursing, recent growth in the physician's assistant (PA) market was driven by women becoming PAs. The share of men reporting a PA occupation climbed, but less dramati-

more likely to report RN as their occupation in 2013 than they were in 1980 – the same period over which the share of men reporting primary or secondary teacher as their occupation decreased and growth in the rates of men in the other female-dominated occupations was modest.

Table 2 breaks down the increase in the RN occupation among men into various demographic and regional groups. While the percent of men who were RNs increased across races, Hispanic males, 8.5 percent of male RNs in 2013, went into nursing at a slower rate than other race and ethnicity groups. Blacks and Asians followed similar trajectories to whites, as did foreign-born men. Similarly, growth was fairly uniform across regions within the US. Our conclusion from this rough analysis is that much of the rise of men in nursing came from within observable groups. Later, we will attempt to more carefully decompose the overall change in rates of men in nursing into contributions from various sources.

Taking a longer historical view, Figure 1 shows the share of US nurses that were male from 1900 to 2013, while Figure 2A graphs the share of men reporting a nursing occupation over the same long period. The share of nurses that were male was declining in the early part of the twentieth century, reaching its lowest point in 1930 and increasing steadily beginning in the 1960s. The likelihood that a man reports a nursing occupation follows a somewhat different path. Instead of a U-shape, the likelihood of a man in the US becoming a nurse was low and stable until about 1960, then it began a steep ascent so that this probability is higher in 2013 than ever before.

Figure 2A shows that the upward trend of men going into nursing begins in 1960, but the increases are more pronounced in the decades following 1970. This is true for men in nursing

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cally than the share of women who are PAs or the share of men in nursing (Table 1). Consequently, according to the ACS, the share of PAs that are male decreased from 0.64 in 1980 to 0.3 in 2013.

overall (Figure 2A) and for the RN occupation specifically (Figure 2B). Our analysis focuses on the period 1980 to 2013, due to data limitations in earlier years, but these figures show that even with this restriction, we are capturing the periods of marked increase of men in the RN occupation. We further restrict our analysis to men age 18 to 39 to capture a more complete set of age observations for men throughout their labor force experience as well as during the ages at which they are most likely to change occupations. The dotted lines in Figure 2B convey an even more stark contrast between the substantial growth in the RN share among men in these age groups between 1980 and 2013, and the relatively flat trend in the RN share among women.

The increasing RN share among men also appears to be unique to the US. Figure 4, Panel A, plots the probability that a man aged 18 to 65 lists nursing as his occupation for several countries where comparable data are available.[8] Although there is some variation in data availability and occupation definitions across countries, the US experience clearly stands out. The US participation rate of men in nursing was not much higher than the group of comparison countries in 1970, but the rate rose rapidly over the next several decades so that the US in 2010 had almost double the rate of men in nursing than the next highest country, which is actually Puerto Rico. Switzerland and Portugal both saw substantial increases of men in nursing of about 50 percent, but again, the US experience of a doubling of men in nursing over this period stands out. The story is similar when we restrict to men reporting the RN occupation specifically, in Panel B of Figure 4. Here it is more difficult to compare across countries, since the data are even sparser, but the threefold

[8] All international data drawn from IPUMS-I. These countries were selected because their data in IPUMS-I included occupation codes that separately identified nurses and were approximately consistent across years and with the US definition; and because they shared some cultural characteristics or developed country status with the US. Minnesota Population Center. *Integrated Public Use Microdata Series, International: Version 6.4* [dataset]. Minneapolis: University of Minnesota, 2015. http://doi.org/10.18128/D020.V6.4.

increase of men reporting an RN occupation in the US (and Puerto Rico) is not shared by the only other country (Brazil) for which a complete time series is available. By comparison, the share of men with an RN occupation in the US in 2010 is similar to that rate in the UK in 1990 but much higher than that for France in 2005. Ireland also had a relatively high rate of men in the RN occupation over the entire period, but there is no evidence of a trend in that country.[9] The international data are limited, but we conclude that the US – and to some extent Puerto Rico as well – has seen a rapid rise of men in nursing that is not widely shared by developed European or by one of its large southern hemisphere neighbors.

Finally, Figure 5 plots the probability that men report nursing as their occupation at different ages, by age group cohorts. As is clear from the figure, some of the growth of men in nursing comes from a rise in this probability across cohorts. The initial points, at ages 20-24 and especially ages 25-29, are higher for more recent cohorts, indicating that young men are more likely to choose nursing early in their careers in recent years than in previous decades. However, there is also substantial growth in this probability as a cohort ages. This could arise for two reasons. Most obviously, men could transition into nursing from other occupations as they age. On the other hand, the rise in nursing probabilities within cohorts could also reflect greater labor force attachment among men in nursing relative to men in other occupations. To address this possibility, we have verified that our analysis below is not sensitive to using all men to construct the RN share in these probabilities, as opposed to our preferred method of constructing the RN share among labor force participating men. We therefore conclude that the movement within cohorts in Figure 5 represents

[9] The general nursing code for Ireland shows a sharp level shift in the middle of the series that makes us suspect that the general nurse code originally included only RNs but was then expanded to include other types of nurses.

men joining the RN occupation as they age rather than greater persistence in labor force participation among male RNs.

4. Empirical Specification and Data: Determinants of Men in the Registered Nursing Occupation

We are interested in how the likelihood that men report nursing as their occupation has changed over time. To analyze this even descriptively, our data will force us to make two key econometric choices. The first is how to handle the well-known co-determination of age, time, and cohort effects in our data. This co-determination requires that we make a choice about which combination of year, cohort, and age variables will be most informative given our interest in understanding why men transition into nursing. Our interest in policy-relevant determinants of occupation also informs our choice of specification.

The second choice concerns the dependent variable, which in turn informs the form of the estimating equation. Occupation is a discrete choice in our data, so we can only observe an indicator for whether a man reports nursing as his occupation. Because the share of men choosing nursing is small, this is not an appropriate context for a linear probability model. However, to facilitate later decompositions of the trend and for general ease of interpretation of the coefficients, we prefer a linear estimating equation. We therefore aggregate the data to birth state, birth year, and Census year cells. We refer to a birth state and birth year combination as a cohort. The dependent variable becomes the average of the nursing indicator within each cell, which equates to the share of men in a state, cohort, and year who report nursing as an occupation. This variable theoretically has a range of [0,1]. In our data, the range is zero to 0.039 (Table A1). We then estimate the following specification using OLS on our data set of cell averages:

$$(1)\ \Pr(nurse)_{sct} = \gamma \bar{X}_{sct} + \tilde{\theta} d.age_{ct} + \beta conditions_{sc} + \ \theta d.year_t + \theta d.state_s + \varepsilon_{sct}$$

The dependent variable of interest is the probability that a man – born in state *s* and birth year cohort c – reports nursing as his occupation in Census year *t*.[10] This probability is conditional in being in the labor force, as we discuss in more detail below. $\bar{X}_{sct}$ are individual-level observable characteristics averaged to the *s-c-t* level. These include race, ethnicity, educational attainment, and urban residence. Of the three co-determined variables, we include dummy variables for age group and year of observation. In our preferred specification, $\tilde{\theta} d$ indicates coefficients on a full, exhaustive set of dummy variables for age and the constant is omitted; the other dummy sets necessarily omit one category. We include factors experienced by cohorts using direct measures of *conditions* at the state-cohort level. We exclude a constant from this model so that we can estimate coefficients for the full set of ages in our sample and interpret these independently of Census year.

Our approach allows us to answer several questions that will ultimately identify key determinants of why men move into nursing. The first question is, how much of the rise in men in nursing is explained by a general time trend? We include year dummies to capture a flexible time trend. Our specification also estimates the age profile of men moving into nursing, which allows us to answer the second question of whether there is a common age progression into registered nursing across all cohorts in our sample. Controls in $\bar{X}_{sct}$ and $conditions_{sc}$ allow us to examine a role for the trend and cyclical determinants of interest. This structure implies that any birth cohort

[10] Other means of expressing the changing presence of men in RN work include a relative likelihood of reporting RN work (relative to women) and the flow of new men reporting RN work each year. Analysis of these or other alternative measures would likely produce interesting additions to the conclusions we draw here. However, we believe our measure captures much of what could be learned from alternative measures. Since the share of women in RN work has been largely stable over the period of anlaysis, a relative measure would not substantively differ from our preferred measure. We also capture the net result of flows into and out of RN work, which cannot be constructed separately using Census/ACS data.

effects that are distinct from year effects will be reflected in the *conditions* controls, which vary at the *sc* (cohort) level. We think this is a reasonable modeling choice since factors that affect birth cohorts distinctly from time effects seem likely to also have geographic components. For example, cohorts might have experienced more or less traditional gender role attitudes. This could affect the rate of men choosing nursing for cohorts in a manner distinct from time effects. But such attitudes also have substantial geographic variation, so we include *sc* level controls for gender attitudes an *sc*-cohort faced at age 18. Our assumption is therefore that the role of any birth cohort determinants can be captured using *sc*-level controls for observables rather than a flexible set of birth cohort effects. This in turn implies that state-cohort determinants move the entire time and age profile of men entering nursing up or down.

We construct our dependent variable from the decennial US Census and the American Community Survey (ACS). We use data from 5 percent Census samples for 1980 through 2000; the ACS data are from 1 percent samples. ACS data are based on three-year aggregates for 2007 (2005-2007), 2010 (2008-2010), and 2013 (2011-2013). Both datasets come from the Integrated Public Use Micro-data Series (IPUMS) (Ruggles et al. 2015). These data allow us to calculate our outcome of interest: the share of labor force-participating men that reported being an RN by birth year and birth state, over time. These data also generate all the dummy variables in our main specification. Although it appears from the figures that the rise of men in nursing dates from sometime after 1960, our analysis begins with 1980 Census data because we cannot easily construct many of the state-level controls for our main specifications prior to 1972.

We restrict our main estimating sample to men ages 18 to 39, who were born between 1954 and 1995 and report being in the labor force.[11] We make this age restriction because of the inherent tradeoff between including many cohorts in our analysis and having a complete set of age observations on included cohorts. This also captures men in the labor force at the ages in which they are most likely to change occupations. Figure A1 shows the share of males age 18 to 65 who reported a different occupation in the previous year, from the March Current Population Survey (CPS) for years 1980 to 2013.[12] Men are most likely to report a different occupation in the previous year in their 20s, but this trend flattens out substantially by the late 30s.

Our main sample is not balanced in that we do not observe all ages for all cohorts in the sample. Table A2 provides the number of birth state and birth year cohorts by Census year for our full sample of cohorts. Our full sample includes 5,916 cohorts of men born in the U.S. between 1954 and 1995, whom we observe at some ages between 18 and 39 in Census years 1980 to 2013. Where practical, we assess robustness of our results to using a balanced panel that consists of the 20 birth year cohorts for which we observe the complete age profile. These include 2,754 cohorts of men born between 1954 and 1974, who were age 18 between 1972 and 1992 and age 39 between 1993 and 2013. We weight all estimates by the number of U.S. born males age 18 to 65 in the labor force for a state-birth year cohort.

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[11] For 43 percent of cohorts in our sample, no men reported RN as their occupation. This was particularly prevalent for cohorts with a small cell size for labor force participants. Because we weight all of our models by the size of the labor force, our results are not sensitive to excluding observations with an RN share of zero.

[12] March CPS data are obtained from the Integrated Public Use Micro-data Series (IPUMS.), Current Population Survey (Flood et al. 2015). For each survey year, the March CPS asks respondents to report their occupation and industry in both the current and previous calendar year. We identify workers who reported a previous occupation as those who reported a different occupation for these two variables, based on the survey-year occupation codes for current and last year's occupation. Respondents with missing observations for either variable were dropped.

The trend and cyclical determinants in our $\bar{X}_{sct}$ and $conditions_{sc}$ covariates are constructed in part from Census/ACS data and in part from other sources. Details of the construction of particular measures can be found in the Data Appendix. Controls in $\bar{X}_{sct}$ measure changes in demographics (race, ethnicity, high school completion, urban residence) and a range of trend demand conditions (the college/high school equivalent earnings ratio, per capita elderly share, service sector share, and Bartik-shock measures of the foreign-born share of the labor force and healthcare sector share of employment). Trend demand conditions are all contemporaneous (i.e., measured in the year of the survey) and are applied to all cohorts born in a given state. Later in our analysis we explore the role of cyclical demand conditions during a cohort's early career years. All our measures are matched to cohorts on birth state but vary over time. Their measured impact will therefore be attenuated by inter-state migration, but also less likely to be confounded by selection into state labor markets.[13] The measures in $conditions_{sc}$ reflect conditions faced by a cohort at a particular age. These include per capita access to various college types, gender role attitudes, and state unemployment rates.[14]

Our focus is on trend and cyclical determinants of men entering the RN occupation, but we could also classify our determinants into supply and demand factors. The demand-side factors in our analysis are straightforward: per capita elderly population, service sector employment, and predicted healthcare sector employment are intended to directly measure demand for healthcare

[13] Wozniak (2010) notes that migration of children prior to age 18 (a decision presumably made by parents) is uncorrelated with later state labor market conditions for NLSY79 cohorts. This set of cohorts is within our own set and may therefore be a reasonable proxy.

[14] Nursing is a licensed occupation in every state, hence it is reasonable to ask whether differences or changes in licensing requirements might play a role in the decision of men to join the RN occupation. Our review of the literature suggests that differences across states in licensing requirements for nurses are small and largely stable (DePasquale and Stange 2016). These are therefore absorbed by our state fixed effects.

workers, which includes RNs. Some supply factors are also straightforward: high school completion rates and two-year college access. However, these are more removed from RN work and even from healthcare work than our demand factors. For example, a high school degree is required to pursue an associate's degree in nursing, but it is also required for licensing in many other fields. Similarly, gender role attitudes may affect the supply of men willing to work as RNs, but they may also reflect men's willingness to spend prime years out of the labor force.

Finally, some factors are not readily classifiable into demand or supply. For example, business cycle conditions reflect a combination of changing demand both in and outside of healthcare, as well as changing supply as unemployment changes the pool of available workers and other workers make choices about which field to enter based on general economic conditions. Similarly, the predicted share of a cohort that is foreign-born affects overall supply of labor, but only affects the supply of native men in RN work indirectly. If immigrants are more likely to concentrate in certain occupations, this will affect the relative supply of workers to those occupations (like nursing), potentially reducing wages for natives considering those occupations. The observed share of foreign-born workers in a cohort will conflate supply and demand for foreign workers, so we focus on an exogenous measure of predicted foreign-born cohort share to isolate the effects of immigrant inflows on the decision of men to enter RN work.[15] There has been a well-documented rise in the share foreign-born in the US labor force since 1980, and we showed above that a large share of nurses is foreign-born. It is therefore important to include contemporaneous predicted immigrant

[15] Goldsmith-Pinkham, Sorkin and Swift (2017) provide a helpful discussion of best practices around the use of Bartik measures, which we follow as appropriate for our setting. In their terminology, we use the Bartik-style foreign-born share as a proxy that is relatively less confounded with local supply shifts than the observed foreign-born share.

shares in order to test whether immigrant inflows affect the rates at which native men choose RN work.

Descriptive statistics for our full cohort sample are presented in Table A1. We observe the greatest share (36 percent) of our sample between ages 18 to 24. In contrast, men age 35 to 39 are about half as likely to appear in our sample. Within our cohort sample of men ages 18 to 39 who reported being in the labor force, 84 percent are white, 9 percent are black, 5 percent are Asian, and 2 percent are another race; 6 percent (all races) are Hispanic. Additionally, 87 percent of our sample has completed high school.

5. Results: Determinants of Men in the RN Occupation

In this section, we report results from estimation of several variants of Equation 1. We explore the role of various sets of determinants in separate tables (Tables 3 through 6), building up to a full specification that retains determinants that were found to play a statistically significant role in the more parsimonious regressions. We then report regression accounting decomposition results from this full specification in Table 7. Finally, we examine the role of business cycle conditions in the rising share of men in nursing in Table 8.

To begin, Table 3 reports results from estimating versions of Equation (1) that include only the sets of dummy variables, in various configurations, along with the (*s,c,t)* level average demographic characteristics.[16] This allows us to see how much of the rise in the share of men working in nursing is related to a time trend versus the pattern of men transitioning into nursing early in

[16] Some of these controls are likely very stable for a cohort over time, but they are constructed at the *(s,c,t)* level. For example, the share of a cohort that reports being black is calculated separately for each year of the data. Other measures, like share urban, potentially change more for a cohort over time.

their careers and to examine whether these patterns change when our first set of trend controls are added. The first column of Table 3 reports results from regressing the *(s,c,t)* shares of labor force-participating men reporting nursing as their occupation on a set of year dummies only. The results show the strong time trend observed in our earlier figures. Relative to 1980, men in 2013 are 0.23 percentage points more likely to report nursing as an occupation.[17] This is a modest number, but it reflects substantial growth: the difference in the 2013 share relative to 1980 is about three times the difference between the 1990 share and 1980's. The R-squared shows that the flexible time trend alone explains a small amount of the variation in our data. The specification in column (2) adds state fixed effects to the first specification. This results in virtually no change in the profile of the time trend, and the year-over-year increases are very similar to those in column (1). The R-squared increases somewhat, but the robustness of the year effects to this addition implies that fixed state differences explain little of the increasing shares of men in nursing.

Column (4) reports estimates from a specification including all three sets of dummies from Equation (1) and omits the constant.[18] For comparison with column (1), column (3) omits the birth state dummies. Columns (3) and (4) both show strong movement of men into nursing in the first 10 to 15 years of their careers. The coefficients in both columns show that moving from the youngest to the oldest age group in our sample increases the share of men reporting RN as their occupation by 0.3 percentage points.

[17] This compares to an increase of 0.27 percentage points in the population aged 18 to 65 in Table 1, indicating that most of the increase of men in the RN occupation since 1980 came in the younger workers in this regression sample.

[18] The R-squared values from this specification are not directly comparable to those in column (1) and (2) due to the suppression of the constant term in column (3) onward.

Column (5) adds demographic controls for the share of a cohort that is black, Asian, or Hispanic, the share that has completed high school, and the share residing in an urban area. The inclusion of these controls leaves the estimated age profile and time trends essentially unchanged. However, several of these controls are significant and economically meaningful. In particular, men in cohorts with greater shares of Hispanic and black men are much less likely to report an RN occupation, whereas cohorts with higher high school completion and urbanization rates have greater shares of men reporting an RN occupation. In Appendix Table A3, we re-estimate the specifications of columns (4) and (5) on our balanced panel subset of cohorts. This greatly reduces the number of observations in our data but ensures that each coefficient is estimated from a consistent set of cohorts. Broadly, the results from this subsample are similar to previous estimates. There is both a steep time trend and a steep upward sloping age profile, although the age profile is somewhat less steep, and the time trend more steep, than in the full sample results.

In Table 4, we add contemporaneous (state-year varying) trend controls to the main specification. These are intended to account for contemporaneous state-level conditions that might influence the choice to take up a nursing career. We include three controls that measure demand for RNs via employment growth in the health and nursing fields, as well as the broader shift of employment into services. These are per capita state elderly population, share of state employment in the service sector (which includes the health care industry), and Bartik-style predicted share of state employment in health care specifically. Detail on construction of all controls is available in the Data Appendix. Per capita elderly population is, in our view, a reasonable measure for estimating growing relative demand over time for nursing services. Service sector share of employment captures relative expansion of the healthcare sector but also the broad shift into the full array of service sector activities. This may also broadly capture a decline in more male-dominated sectors

like manufacturing and construction.[19] The Bartik-style predicted employment share in healthcare measures expansion in the health employment sector that are exogenous to state conditions. We also include relative weekly earnings for college equivalent workers (relative to high to school equivalent workers).[20] This measure controls for demand for skilled workers relative to less skilled workers, but we also view it as a rough proxy for demand for RN-skills relative to skills for high school educated men. Figure 3b showed that weekly earnings for college equivalent workers tracks weekly earnings for RNs at the national level (the correlation between the series ranges from 0.89 to 0.95, depending on which CPS data set is used). Unfortunately, as discussed further in the Data Appendix, it is not possible to get precise earnings for RNs over time at the state level from any publicly available data sources.[21] Finally, we include the predicted share of foreign-born workers in a state and year, as discussed above, to control for contemporaneous changes in the state supply of foreign-born workers.

The first column of Table 4 repeats, for reference, the estimates from the final column of Table 3 (with coefficients from demographic controls suppressed). Columns (2) through (4) add the controls sequentially. Results from a full specification with all contemporaneous trend controls is reported in column (5). The results show that only some of the trend demand controls are significantly related to the share of men with an RN occupation. Of the measures of health sector

[19] Unfortunately we cannot include these directly, as we cannot match those industry designations across time in the BEA data that we use for state employment by industry.
[20] High school equivalents are defined as having two years or less of college education; college equivalents have three years of college or more.
[21] Other publicly available data sets that are commonly used to analyze nurse wages include the National Sample Survey of Registered Nurses (NSSRN) and the Online Survey, Certification and Reporting (OSCAR) database. The NSSRN was conducted every 4 years through 2008, which would reduce the number of birth cohorts we can include in our analysis. OSCAR is restricted to data on nursing facilities, which comprise a relatively small share of men in the RN workforce (Table 1); wages in this data set may therefore not be reflective of male RNs in other industries.

demand, only the Bartik-style healthcare share of employment is significant on its own and in combination. The broader service sector share of employment is not significantly related to our dependent variable, suggesting that a large *non-healthcare* service sector does not reduce the rate at which men go into nursing. Surprisingly, relative earnings is also not significantly related to the RN share; the coefficient on this measure is small and insignificant. However, the predicted share foreign-born is strongly negatively related to the share of men with an RN occupation when included alongside the health sector demand variables. This suggests that fewer native men enter nursing when there is an exogenous outward shift in the supply of foreign labor at the state level. This finding is similar to that of Cortés and Pan (2014), which showed that inflows of foreign-born nurses have a large negative effect on native RNs.[22] Remarkably, the addition of these controls does little to change the overall time trend reflected in the year effects.

The evidence so far shows that men move into nursing over the course of their late twenties and early thirties. This suggests that, for many men, the pipeline into nursing is not a direct route from high school to post-secondary education. Rather, they may try other jobs first, or they may take longer to acquire a nursing certification than a full-time schedule would require. If so, the availability of flexible certification programs, such as those offered by two year colleges, may be an important determinant of when and how men join the nursing occupation. A related point is that RN positions require post-secondary education. Therefore, access to more post-secondary options overall may increase the rates of men in nursing.

We assess both these possibilities using data on the number of colleges per capita available to a birth state and birth year cohort. As discussed in the Data Appendix, we construct this measure

[22] Cortés and Pan (2014) also indicated that the displacement of native workers is due to a reduction in perceived workplace environment quality.

by combining data on two- and four-year colleges from Currie and Moretti (2004) and the Integrated Post-secondary Educational Data System (IPEDS). In order to create a smooth count of colleges over time, we adjust the Currie-Moretti series to eliminate some large discontinuities in private college counts at the series break.[23] In our view, this is not necessary for the public colleges series, so we report analysis with only the public two- and four-year per capita colleges from the unadjusted series and then for the full set of college types using the smoothed versions of all series.

We add measures of per capita college availability to our main specification (from column 5 of Table 3) and report the results in Table 5. Column (1) shows results from adding the unadjusted measures of two- and four-year public colleges alone. The impact of our measure of four year college access is statistically insignificant, but two year college access is positively related to the share of men in the RN occupation. Subsequent columns switch to using the smoothed measures of public college access and incorporate the smoothed per capita measures of private college access. Again, two year public college access is significantly and positively related to the rates of men in the RN occupation. We discount the negative estimates on four-year college access, as these only appear for public colleges in the smoothed series, and as discussed above, our analysis of the two series that contribute to this measure indicates that it does not require smoothing. The smoothed series therefore removes some useful identifying variation. We nevertheless use it alongside other smoothed measures for consistency. The results in column (3) suggest that private two-year college access may also contribute to increasing the numbers of men in the RN occupation. However, as noted in our data discussion, we view this series as the most speculative due to the lack of comparability between sources for the early and later years of the data.

[23] We do this by taking the means within state of each series, then adjusting the Currie-Moretti series up by the difference in the series means by state.

In Table 6, we explore the role of gender attitudes on the rates of men in nursing. To assess this, we add controls for gender attitudes from the General Social Survey (GSS) developed in Fortin (2015), and described in the Data Appendix, to our main specification. The GSS variables are not available for all state-cohorts in our main sample, so we begin by re-estimating our main specification using the state-cohort cells for which we can merge in GSS measures from the year the cohort turned 18 (and suppressing demographics and schooling attainment from the results). The main results are not sensitive to the sample restrictions imposed by merging with the GSS. The next two columns add one of the two measures of gender role attitudes developed by Fortin. The results show that greater agreement with statements that it is better for women to occupy traditional roles (*itrad*) in a state at the time a cohort turned 18 is associated with lower rates of men in the RN occupation. Conversely, greater agreement on average with statements that men and women should occupy equal socioeconomic roles in the year a cohort turned 18 is associated with greater rates of men in the RN occupation. Finally, columns (4) and (5) repeat this exercise using only the measure indicating agreement with the statement that women are not suited for politics, FEPOL (and recoded to make agreement zero and disagreement one). This measure is available for somewhat more cohorts than the two Fortin indices; a re-estimate of the main specification using just the cohorts with FEPOL is shown in column (4). Again, more gender-tolerant attitudes are related to higher rates of men in the RN occupation. Principal components analysis (unreported) shows that a single factor drives over 78 percent of the variation in the three gender attitudes variables in Table 6. Hence, we view these controls as three different measures of the same underlying changes in gender attitudes.

The analysis in Tables 3 through 6 identified a number of statistical determinants of the frequency at which men choose a skilled nursing career. Across these analyses, the age profile of

men moving into nursing over the course of their early career years has remained relatively stable. The time trend has moderated slightly, although it remains statistically significant. Additionally, our analysis has focused on identifying statistically significant and economically meaningful determinants of the trend toward higher shares of men choosing an RN occupation, but we have said little about the magnitude of these relationships. To better assess the roles of the determinants for which we can identify a secular change over our data period, we perform a common decomposition exercise following, for example, Kearney and Levine (2015). We calculate the contribution of our determinants (X characteristics) to the overall increase in the share of US born men reporting an RN occupation since 1980.

Table 7 reports estimates of the amount of this change that could be explained by the important trend determinants identified in Tables 3 through 6. To generate these numbers, we first estimate a regression that includes all statistically significant determinants from Tables 3 through 6 as controls.[24] Table 7 reports all components used for this decomposition: the coefficient on various determinants from the full regression; the observed change in the determinant between 1980 and 2013; and the change in the RN share for men implied by the coefficient times the observed change in the determinant. From this we calculate the percent of the total 0.0019 increase in the RN share for men age 18 to 39 explained in a regression accounting sense by the various trend determinants.[25] Once this full set of determinants is included in a single regression, some

[24] Results from this regression are reported in Appendix Table A4.
[25] Results for our decomposition are similar if we instead calculate the change in trend determinants for men age 18 to 65, rather than limit our sample for this calculation to men age 18 to 39.

that were independently significant drop out of significance. We use an asterisk in Table 7 to indicate an explanatory share that is based on a statistically insignificant coefficient in the full regression.

We find that several trend determinants contribute positively to the overall increase, but to varying degrees. The predicted share of employment in healthcare drives the largest share of the change, 16 percent, but other factors also contribute importantly to the RN share for men. Educational attainment and 2-year college availability both contribute positively toward explaining the rising share of male RNs. However, the role for high school completion is much larger than that for two-year college availability, at least by our measures of college availability. Urbanization in the birth state contributes as well, slightly more than high school completion. We also find that a few trend factors worked against the overall rise of men in nursing, while others that were economically significant in the independent regressions become less so in the full regression. The increasing share of non-white men in the population is one of the former, since black men in particular are less likely than white men to enter nursing.[26] The increasing predicted foreign-born share also worked against men entering the RN occupation. The accounting impacts of these adverse trends are substantial, as shown in column (4).

Finally, Table 7 presents a range of estimates of the role for gender attitudes. Because we lose half our sample by restricting to cohorts where we have data on gender role attitudes, we

[26] Asian men are also less likely, although this is borderline statistically significant in the full regression and not significant in the Table 3 regression. Hispanic men are statistically significantly less likely than white men to enter the RN occupation in the Table 3 regression, but this reverses sign and is weakly significant in the full regression. Additionally, the reported demographic changes are not restricted to US born men, and much of the change in the share of Hispanic and Asian men that reported being an RN is driven by increasing rates of foreign-born men going into nusing.

prefer to estimate the full specification behind the Table 7 decomposition without the GSS measures from Table 6. Performing the same exercise, but using the coefficients from Table 6, we estimate contributions for changing gender role attitudes that range from 9 to 22 percent.[27] Taken together, increasing high school completion and better two-year college access can explain over 6 percent of the rise in the RN share for men. The expanding healthcare sector explains 16 percent, and trends toward greater urbanization contributes another 7 percent. All together these trends explain up to 52 percent of the rising RN share among US men.[28]

Most of the potential determinants we consider exhibit strong time trends over our period of interest. This is true even for the labor demand variables we have considered so far, namely the employment share of healthcare services and relative earnings of skilled workers. But the overall condition of the labor market is cyclical, and the general availability of opportunities may also influence occupation choice (Blom et al. 2015). To explore the role of the business cycle, we add *(s,c)* level controls for unemployment rate conditions a cohort would have experienced in its birth state over its early career years to our main specification from Table 3 column (5). In the first column of Table 8, we add the unemployment rate in a cohort's birth state in the year it turned 18, since conditions around the time of high school completion might be relevant for occupational choice. We find that the coefficient on age 18 unemployment rates is negative and statistically

[27] Estimating the full regression behind Table 7 but including FEPOL (the gender role variable for which we have data for the largest number of cohorts), we obtain an estimated contribution of 4.4 percent at marginal significance. However, estimated contributions of other trend determinants are less plausible than when our full set of over 2500 cohort-year observations is used.

[28] Because we are concerned that inclusion of year dummy controls may absorb much of the demograghic variation we are trying to explain, in Table A5, we present the same decomposition using coefficients from regressions that exclude year fixed effects. The results are almost always larger than those presented in Table 7. In particular, the estimated contributions of predicted share of employment in health care and urbanization are nearly three times as large when we exclude year fixed effects.

significant. In the second column, we instead use a control for unemployment conditions in the early career or college-going years (an average unemployment rate over the years a cohort was ages 18-24). Here the coefficient estimate is again negative but even larger.

The specification in column (3) adds controls for birth state unemployment rates for a cohort over all the ages we observe in our sample. This restricts the estimating sample to only those cohorts for whom we observe the complete age range in our data. Still, the impact of greater unemployment rates during the years a cohort was 18-24 is very similar to that from the full sample, giving us confidence that the experiences of the cohorts in the column (3) subsample are not very different from those in our main sample. The column (3) results indicate that higher unemployment rates are associated with *fewer* men choosing an RN career throughout their early thirties. After 35, the sign changes, and higher unemployment rates are associated with more men in the RN occupation. Interestingly, as we showed in Figure A1, age 35 is about when occupation switching drops off considerably. This pattern may indicate that occupation switching declines in downturns, limiting the flow of men into the RN field in their early career years during periods in which such a move might be most beneficial. Columns (4) and (5) interact our measure of two-year public community college access with very early career unemployment rates. The coefficient on this interaction is large and positive, although significance varies. Nevertheless, we view these results as suggesting that two-year colleges may ease occupation transitions, particularly during downturns.

The unemployment rates in our data set range from 2.6% in Nebraska in 1994, to 14% in West Virginia in 1982. This implies that moving from the worst state-cohort to the best in terms of early career unemployment rates would increase the share of men in the RN occupation between 0.0003 (based on column 1) and 0.0018 (based on the largest estimate in column 3), relative to a mean of 0.002 for the entire sample period. It is difficult to calculate a total contribution of business

cycle fluctuations to the overall change in the RN share of men, as we did for other factors in Table 7, but these comparisons suggest that business cycle fluctuations of men entering the nursing occupation are also substantial.

6. Comparisons with Women in the RN Occupation

We have thus far focused on the choice of men to pursue the RN occupation, but to gain insight into which factors are particular to men and which are more general to the RN occupation, we repeat some of our analysis using a sample of women. We first re-estimate our Table 8 specifications exploring the role of business cycle conditions using a sample of women and report the results in Table 9.[29] Two differences emerge. First, the role of business cycle conditions for women is more sensitive to sample and specification than that for men. For men, we find consistent negative impacts of state unemployment rates on rates of entry in the RN occupation; rates of entry into registered nursing therefore appear to be strongly pro-cyclical among men. Among women, entry is procyclical overall, but countercyclical for the older group of cohorts for whom we have observations through age 39. These findings are similar to those in Buerhaus, Auerbach, and Staiger (2009) and Staiger, Auerbach, and Buerhaus (2012), which showed that the observed countercyclical trends in nursing have been particularly pronounced in recent years. Entry into the RN occupation is also countercyclical for women once we control for and allow interactions of unemployment with two-year public college access. Perhaps most surprisingly, two-year college access dampens this countercyclical effect. This is similar to the "moderating" influence of community colleges on the cyclical movement of men into nursing, but in this case, the moderation moves

[29] The cohort-level sample of women is constructed identically to that for men in the prior analysis. To parallel that analysis, we restrict our sample to women in the labor force when constructing our cohort-level rates of women in the RN occupation. In most cases results are similar when the full sample of all women is used. Results are available from the authors upon request.

against the business cycle. Taken together, these results are suggestive of a retreat to traditional occupations when the business cycle deteriorates, but more work is needed to understand the mechanisms behind these cyclical patterns. Alternatively, nursing may be a more competitive field during recessions as women have greater labor supply elasticity than men (Killingsworth and Heckman 1986; Heckman 1993; Blau and Kahn 2007) and their participation in the nursing labor force is historically countercyclical (Blom, Cadena, and Keys 2015).[30] Finally, the cyclical impacts are an order of magnitude larger for women than for men, but this is consistent with the fact that women enter the RN occupation at rates that are about an order of magnitude greater than for men.

We also re-estimate the full specification behind our decomposition analysis and present the results for women in the last column of Appendix Table A4. We find both similarities and differences with men in terms of the trend determinants of entry into the RN occupation. First, as expected, the year effects show no meaningful trend in women entering the RN occupation over time. However, the age effects show that men and women are similar in that entry into the RN occupation increases with age into the late thirties. This suggests that the pathways into nursing for working adults are relevant for both women and men. The impacts of some demographic factors are similar for men and women (black race, urbanization) but not for others (Asian race and Hispanic ethnicity). High school completion rates and access to two-year public colleges also have similar relationships to RN work for women and men. Interestingly, the role of contemporaneous demand measures in determining rates of RN work seem to differ somewhat between men and women. Most surprisingly, the sign on predicted health sector employment is negative for women

[30] In contrast to our results, Blom, Cadena and Keys (2015) find that college-completing men move into nursing at higher rates in recessions. This difference may be related to the fact that their sample consists of 4-year college completers while ours includes those with less education, and hence all men working as RNs.

in RN work, as compared to positive for men. This may reflect expanded opportunities for women outside nursing as the broader health sector grows. A state's predicted foreign-born share appears to have similar impacts for men and women. In unreported results (available upon request), we also estimated an expanded specification for women, which includes two controls that are dropped from the specification for men due to insignificance. These are relative earnings of college equivalents and service sector share. Both are significant when added to the specification in the final column of Table A4 and estimated on the sample of women, in contrast to the results for the variables among men. Relative earnings of college equivalents (which may proxy for RN relative earnings) is positively related to women entering RN work, while a broader non-health service sector is negatively related.

There are also important differences between women and men in terms of the types of nursing careers they pursue. The data here are more limited, so it is not possible to examine differential trends across genders over time by state, but the National Sample Survey of Registered Nurses (NSSRN) provides a point-in-time picture for 2008, the most recent year available. Tabulations from the NSSRN are presented in Table 10. First, men differ from women in their path to RN work. Men are much more likely than women to have held a health-related job prior to entering RN work; 32 percent of women working as RNs had no prior health-related experience, as compared to 23 percent of men (Panel A). Prior fields for men include EMT work, military nursing, and lab tech or related work. A large share of both women and men work as nursing aides prior to advancing to an RN position. The 2008 data also show that among a sample of working RNs, men are much more likely than women to work in a hospital setting and less likely to work in ambulatory care settings (e.g. primary care; Panel B). Consistent with this, men in registered nursing are

more likely than women to work in more acute settings, such as surgery, intensive care, and emergency care (Panel C). Men are also much more likely to work as nurse anesthetists (CRNAs) than women. Almost 10 percent of men in RN jobs are CRNAs as compared to less than one percent of women (Panel D).

Taken together, these results suggest both important similarities and differences between men and women entering RN work.[31] RN work increases for both men and women over the early career years of the late twenties and the thirties. The likelihood of RN work also increases for both groups when preparation in the form of high school completion and access to post-secondary training – particularly at the community college level – improves. On the other hand, men and women respond differently to business cycle and other demand conditions. This suggests that opportunities outside RN work may differ for men and women in ways that correlate with the business cycle and the growth of healthcare more generally.

7. Lessons and Concluding Discussion

The rise of US men choosing RN careers provides a timely and policy-relevant case study in what determines take up of new middle-skill careers in expanding occupations among men. In this paper, we have documented the decades-long increase in the chances that a US born man chooses a career in registered nursing and examined some of the possible drivers behind this change. Over the period of our data, 1980 to 2013, the share of men reporting an RN occupation

[31] We find the differences in these determinants informative. However, we have stopped short of reporting a decomposition analysis for women similar to that in Table 7 for men. As is clear from column (6) of Appendix Table A4, there is comparatively little change over time in rates of women in RN work. A decomposition analysis in this context would be sensitive to endpoints and would contribute little to our understanding of where and when rates of women in RN work are higher or lower. We also note that rates of women in RN work are much better explained by our included covariates than those for men, as can be seen by the R-squared values in the final row of Appendix Table A4.

increased four-fold, from 0.09 percent to 0.36 percent of labor force-participating men. Men now comprise about 10 percent of the RN workforce, and their increasing share in this workforce has unfolded while the rate of women choosing nursing has increased much less dramatically.

We used US Census/ACS data to assemble a sample of over 2500 birth state and birth year cohorts of US-born men, for which we have a combined total of over 5500 observations. We combined these data with a range of measures from other sources to identify factors associated with higher rates of men reporting RN careers. Some factors that encourage men to choose RN careers are relatively unsurprising. For example, higher rates of educational attainment—particularly high school completion—and expansion in the local healthcare sector both explain large portions of the increasing RN share among men. Higher rates of urbanization are also strongly related to men choosing RN jobs. However, rising shares of immigrants in the local labor force are strong (negative) predictors of US men entering nursing, potentially due to relatively greater competition from immigrants in nursing relative to other fields. Changing gender role attitudes also potentially play a large role in explaining the shift, but data here are sparser. Taking all these factors together, we can explain over 50 percent of the rising share of men in the RN occupation. If we exclude the more speculative contribution of gender role attitudes, this share is still nearly one third.

In addition to a strong time trend, we have shown that a large part of the rise of men in nursing has occurred within cohorts over time. Specifically, within cohorts, both men and women are increasingly likely to report nursing as an occupation as they age from their twenties to their thirties. This suggests that it is common to delay entry into nursing or switch into nursing from other occupations. It is important for policymakers to recognize this delayed path into nursing, and to preserve access to this occupation for workers into their late twenties and early thirties. Accel-

erated RN training programs and hospital-employer support for employees pursuing further training (including RN courses) are examples of policies that facilitate such access and could be expanded. Advocates of stricter licensing requirements for RNs – requiring all RNs to hold a Bachelor's degree, for example – should be aware of the potential for adverse consequences of these requirements on RN labor supply. This seems to be of particular concern since nursing continues to attract workers through the first 10 to 15 years of their work lives. Imposing a BA requirement on workers who would like to transition into RN work could constitute a substantial barrier.

The role of high school completion in the rise of US men in the RN occupation is also of potential importance to policymakers. We find a larger role for high school completion than for two-year community college access, although the latter may also be important during downturns. This suggests that policymakers seeking to encourage men in particular to choose from a broader set of occupations may want to start by simply focusing on successful high school completion.

We also examine the role of local business cycle conditions on the likelihood that men choose an RN career. Interestingly, the unemployment rate facing a cohort prior to age 35 has a negative association with participation in nursing work among men. This suggests that when labor market conditions are poor and employment prospects are fewer, men are less likely to choose nursing as an occupation. Alternatively, nursing may be a more competitive field during recessions as women have greater labor supply elasticity than men. We find that two-year community college access mitigates the negative impact of unemployment rates considerably. Although community college access plays a modest role in the overall trend toward greater numbers of men in skilled nursing, these colleges appear to be important for preserving this career path during local downturns.

Overall, we find that longer-run demographic and economic trend factors play an important role in the rising share of US men choosing an RN career, but there are many options for policy-makers interested in encouraging more men to enter the nursing field. If our results generalize, these may also be options for moving men into other high growth-middle skill careers. The first option is to recognize and reinforce features of the existing RN-training system that are associated with more men in these jobs. This starts with high school completion but includes two-year community college access and employer subsidized training that can help adults who are past college age obtain the necessary training to move into these jobs.[32] The second set of options is to recognize and respond to demographic and economic factors that might slow the rate of men choosing RN jobs. Non-white men, particularly black men, are less likely to be found in RN jobs, as are men in rural areas. Both offer opportunities for training policies to target these groups specifically. And lastly, local downturns – rather than encouraging men to join a higher growth occupation like registered nursing – instead seem to slow this transition. Policymakers might do well to consider targeting training outreach around such fluctuations.

[32] A quote from the IOM report echoes this, "Nursing is unique among the health care professions in the United States in that it has multiple educational pathways leading to an entry-level license to practice… These various pathways provide numerous opportunities for women and men of modest means and diverse backgrounds to access careers in an economically stable field." (Institute of Medicine 2011)

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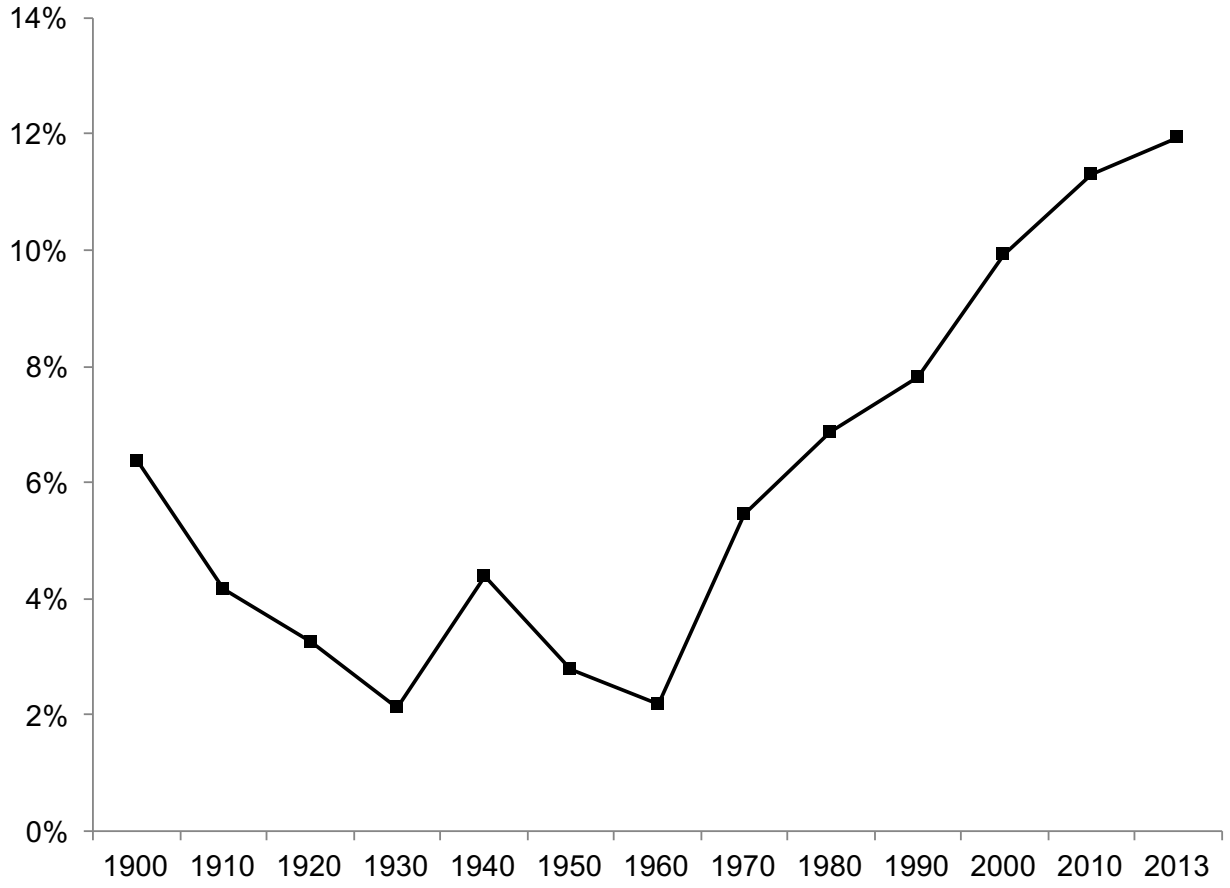

Figure 1. Share of nurses who are male in the US, 1900-2013. Source: Decadal US Censuses 1900-2000 and American Community Survey 2008-2010 and 2011-2013 (3-year averages). Data are based on individuals who reported being a professional, student, or practical nurse.

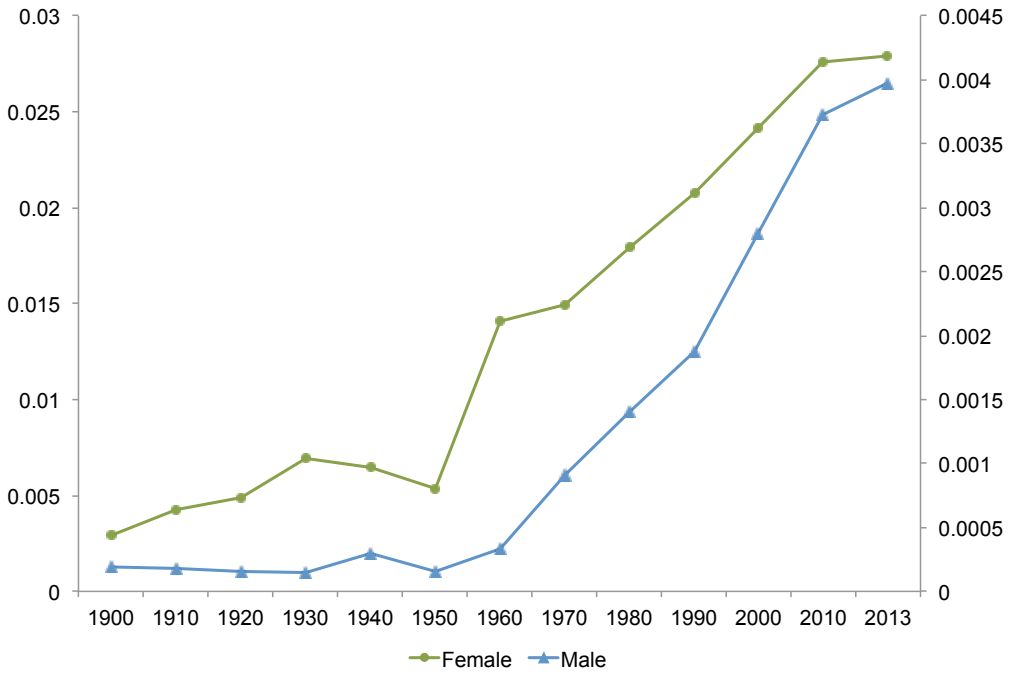

Figure 2. Panel A. Probability that US men and women report nurse as their occupation, 1900-2013. Source: Decadal US Censuses 1900-2000 and American Community Survey 2008-2010 and 2011-2013 (3-year averages). Rates for women on left axis, men on right axis.

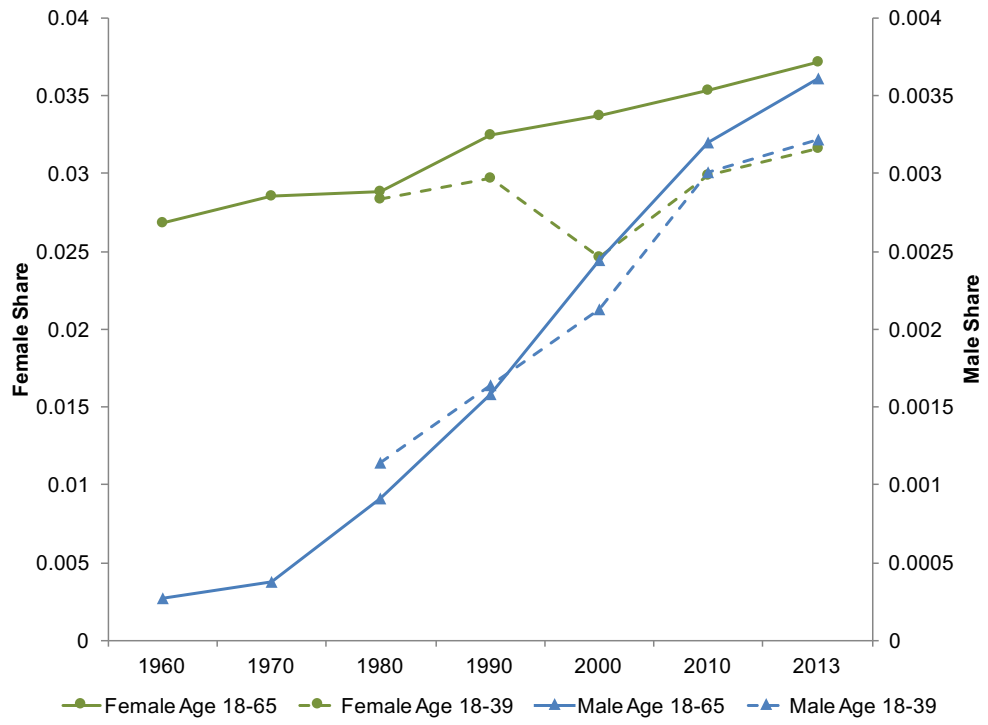

Figure 2. Panel B. Probability that US men and women report RN as their occupation, 1960-2013. Source: Decadal US Censuses 1960-2000 and American Community Survey 2008-2010 and 2011-2013 (3-year averages). Sample is all individuals aged 18-65 or 18-39 who report being in the labor force. Rates for women on left axis, men on right axis.

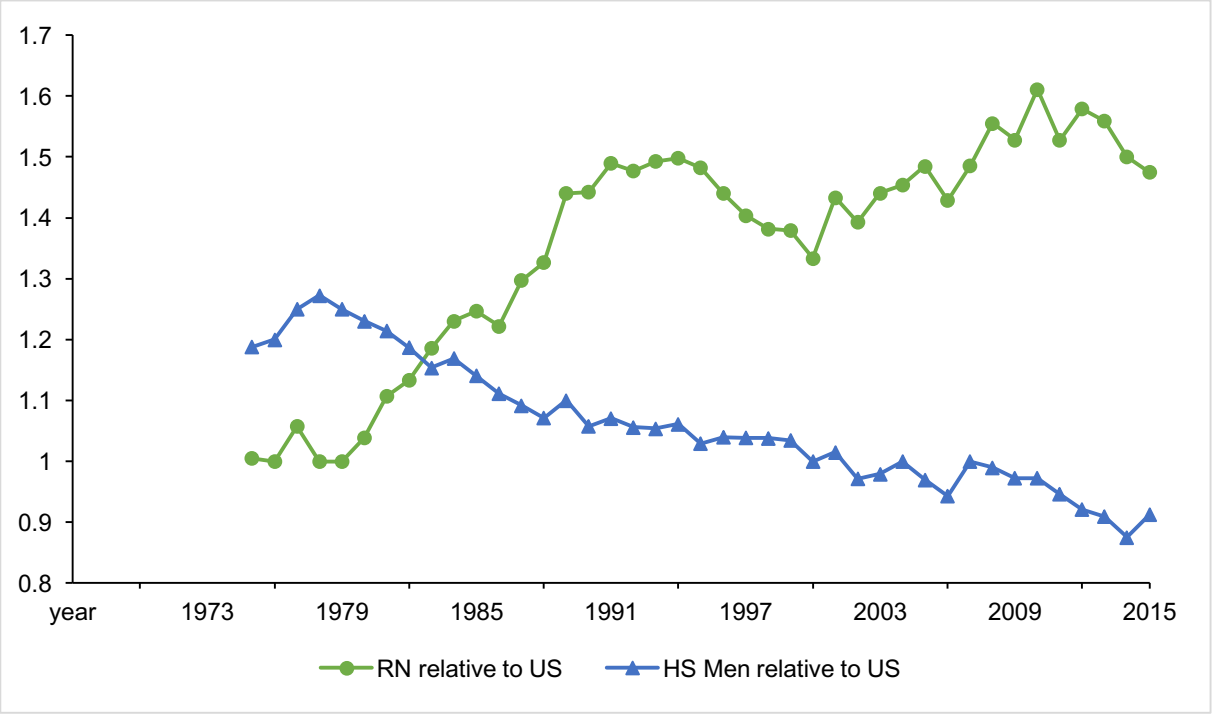

Figure 3. Panel A. Relative weekly earnings for RNs and high school men. Source: Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) of the. Data include all labor force participants age 25 to 55. Earnings in 2009 dollars (PCE deflated).

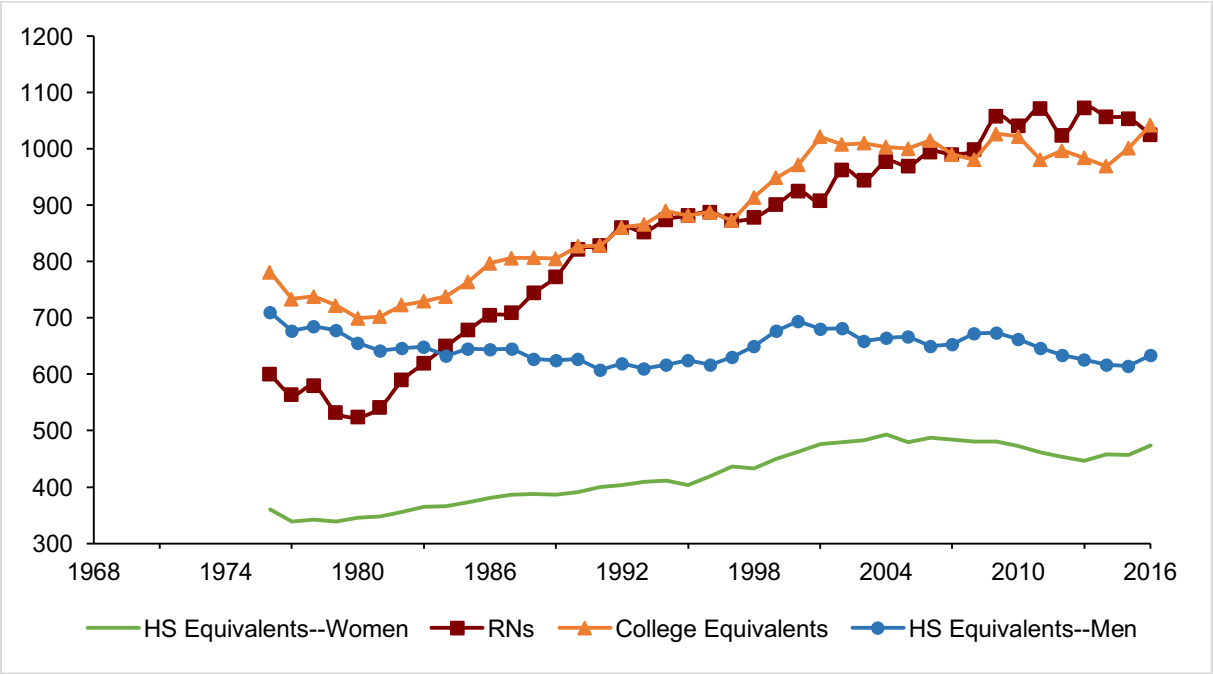

Figure 3. Panel B. Earnings by gender, education, and RN status. Source: Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) of the. Data include all labor force participants age 25 to 55. Earnings in 2009 dollars (PCE deflated).

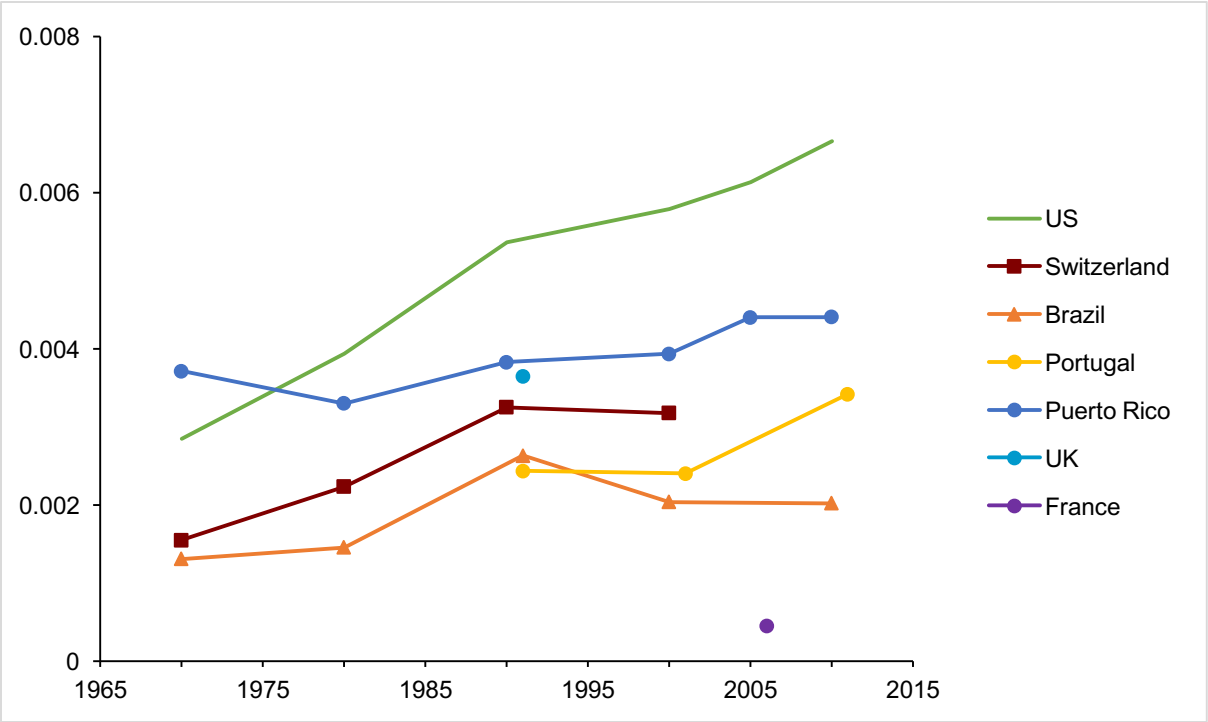

Figure 4. Panel A. Share of men reporting nursing as their occupation, by country. Source: IPUMS International data by country. Sample is 18-65 year old males. Nursing codes derived from country-specific occupation codes.

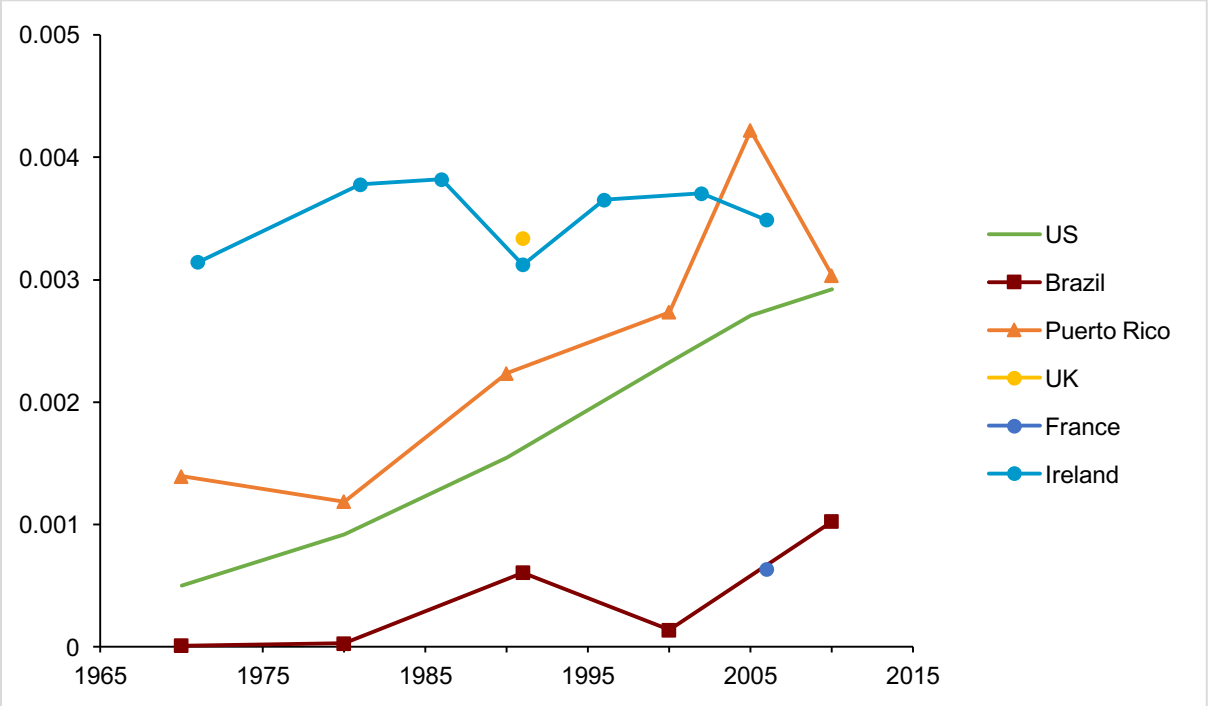

Figure 4. Panel B. Share of men reporting RN as their occupation, by country. Source: IPUMS International data by country. Sample is 18-65 year old males. Nursing codes derived from country-specific occupation codes.

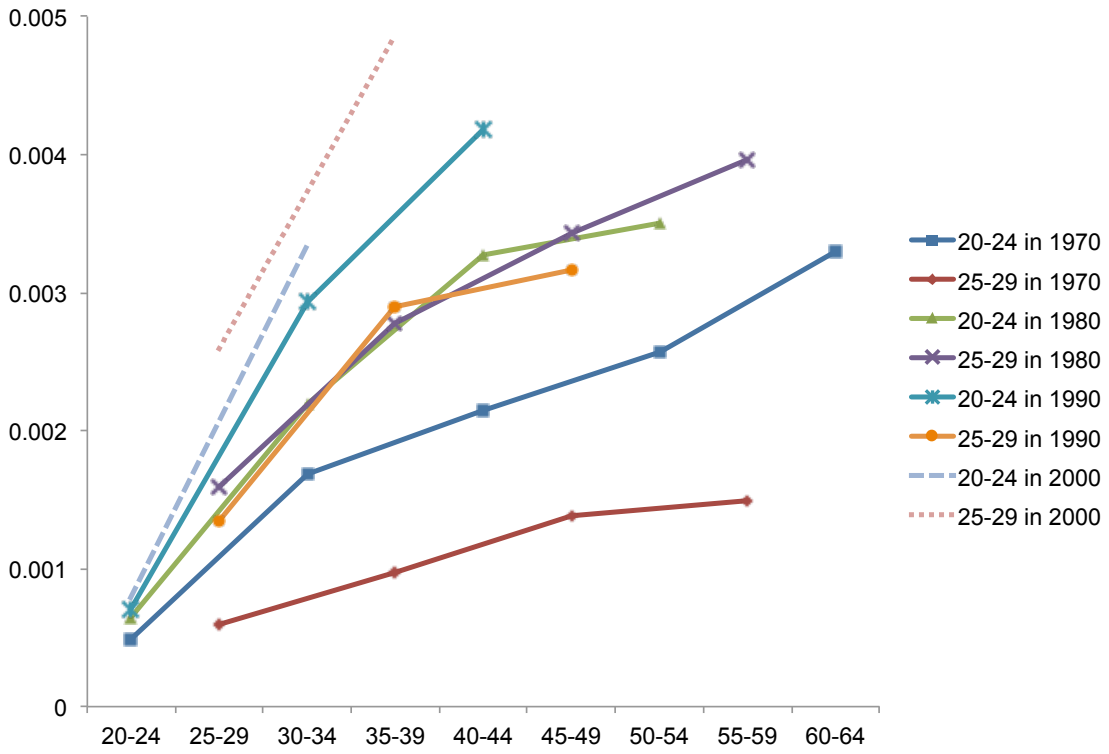

Figure 5. Probability that men in the labor force report nursing as their occupation at a given age, by cohort. Data sources and sample reported in notes to Figure 2, Panel B.

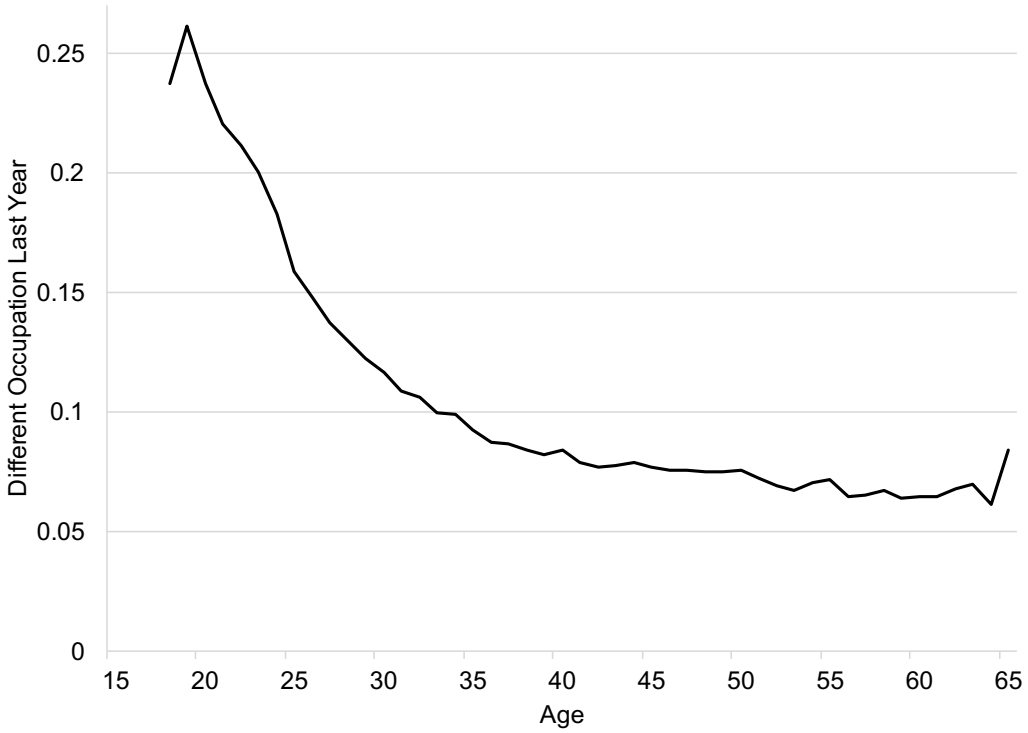

Figure A1. Share of males in the labor force who reported a different occupation the previous year, by age. Source: March Current Population Survey (CPS) for 1980-2013. March CPS data are obtained from the Integrated Public Use Micro-data Series (IPUMS.), Current Population Survey (Flood et al, 2015). For each survey year, the March CPS asks respondents to report their occupation and industry in both the current and previous calendar year. We identify workers who reported a previous occupation as those who reported a different occupation for these two variables; respondents with missing observations for either variable were dropped.

Table 1
Percent of Labor Force Reporting Specific Occupations, 1980-2013

	Males			Females		
	1980	2013	Change	1980	2013	Change
Nursing Occupations						
All Nursing Staff	0.392	1.096	0.704	6.563	8.937	2.374
RN	0.091	0.361	0.270	2.882	3.709	0.827
LVN	0.025	0.074	0.049	0.971	0.851	-0.120
Aide	0.275	0.661	0.386	2.710	4.377	1.667
RN by Industry						
Hospitals	0.074	0.250	0.176	2.084	2.351	0.267
Personnel Supply Services	0.001	0.007	0.006	0.044	0.056	0.012
Physician Offices & Clinics	0.002	0.009	0.007	0.154	0.183	0.029
Nursing Care Facilities	0.004	0.026	0.022	0.206	0.289	0.083
Health Services, N.E.C.	0.002	0.001	-0.001	0.108	0.014	-0.094
Primary/Secondary Schools	0.001	0.001	0.000	0.070	0.078	0.008
Female-Dominated Occupations						
Physician's Assistant	0.032	0.049	0.017	0.025	0.119	0.094
Primary Teacher	0.985	0.913	-0.072	4.504	4.646	0.142
Secondary Teacher	0.641	0.406	-0.235	1.140	0.622	-0.518
Bank Teller	0.076	0.126	0.050	1.094	0.576	-0.518

Source: Decadal US Censuses 1980-2010 and American Community Survey 2008-2010 and 2011-2013 (3-year averages). Notes: Sample is all respondents aged 18-65 who report being in the labor force.

Table 2
Percent of Labor Force Reporting RN as Occupation by Demographics and Industry, 1980-2013

	Males			Females		
	1980	2013	Change	1980	2013	Change
Race, Ethnicity, and Birth Country						
Black	0.11	0.34	0.23	1.77	2.78	1.01
White	0.09	0.35	0.26	3.01	3.95	0.91
Hispanic	0.09	0.18	0.09	1.07	1.33	0.26
Asian	0.20	0.46	0.26	4.99	3.33	-1.66
Foreign Born	0.14	0.41	0.27	3.24	3.35	0.11
Region						
Northeast	0.09	0.34	0.25	3.57	3.934	0.36
Midwest	0.08	0.32	0.24	3.07	4.21	1.14
South	0.09	0.38	0.29	2.41	3.69	1.29
West	0.10	0.38	0.28	2.65	3.07	0.42
Educational Attainment						
High School or Higher	0.12	0.40	0.28	3.52	3.96	0.44
Associate's or Higher	0.23	0.93	0.70	8.48	8.05	-0.43
Age Group						
18-24	0.05	0.10	0.05	1.61	0.97	-0.64
25-29	0.16	0.33	0.17	3.81	3.50	-0.31
30-34	0.17	0.39	0.22	3.40	3.83	0.43
35-39	0.10	0.46	0.37	3.34	4.27	0.93

Source: Decadal US Censuses 1980-2010 and American Community Survey 2008-2010 and 2011-2013 (3-year averages). Notes: Sample is all respondents aged 18-65 who report being in the labor force.

Table 3
Relationship of Trend Factors to the Share of US Men Reporting an RN Occupation, 1980-2013

	(1)	(2)	(3)	(4)	(5)
1990	0.0008***	0.0008***	-0.0002***	-0.0002***	-0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2000	0.0015***	0.0015***	0.0003***	0.0003***	0.0004***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2007	0.0018***	0.0019***	0.0006***	0.0007***	0.0007***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2010	0.0020***	0.0021***	0.0008***	0.0009***	0.0010***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2013	0.0023***	0.0024***	0.0012***	0.0012***	0.0014***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age 18-24			0.0003***	0.0014***	0.0021***
			(0.0000)	(0.0003)	(0.0006)
Age 25-29			0.0017***	0.0028***	0.0032***
			(0.0001)	(0.0003)	(0.0006)
Age 30-34			0.0025***	0.0036***	0.0039***
			(0.0001)	(0.0003)	(0.0006)
Age 35-39			0.0030***	0.0041***	0.0043***
			(0.0001)	(0.0003)	(0.0006)
Black					-0.0099***
					(0.0013)
Asian					-0.0008
					(0.0012)
Hispanic					-0.0025**
					(0.0011)
High School					0.0015***
					(0.0002)
Urban					0.0013**
					(0.0006)
Constant	0.0006***	0.0018***			
	(0.0000)	(0.0003)			
Birth State FE	No	Yes	No	Yes	Yes
Observations	5,916	5,916	5,916	5,916	5,916
R-squared	0.1152	0.1645	0.3561	0.4011	0.4162

Notes: Dependent variable is share of US born men from a given state and birth year cohort reporting RN as their occupation in a given year of the Census/ACS; hereafter "RN share among US men." Standard errors, clustered by birth state and birth year, in parentheses. Regressions are weighted by the number of U.S. born males age 18 to 64 in the labor force in each state-birth year cohort. Constant suppressed in columns 3 through 9. *** p<0.01, ** p<0.05, * p<0.1

Table 4
The Role of Contemporaneous Labor Demand Conditions in RN Share among US Men

	(1)	(2)	(3)	(4)	(5)
1990	-0.0001*	-0.0002	-0.0002*	-0.0001*	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2000	0.0004***	0.0004***	0.0003**	0.0005***	0.0004**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
2007	0.0007***	0.0006***	0.0005***	0.0007***	0.0005**
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0002)
2010	0.0010***	0.0009***	0.0008***	0.0010***	0.0007***
	(0.0001)	(0.0003)	(0.0002)	(0.0001)	(0.0003)
2013	0.0014***	0.0014***	0.0013***	0.0014***	0.0012***
	(0.0001)	(0.0003)	(0.0002)	(0.0001)	(0.0003)
Age 18-24	0.0021***	0.0025***	0.0022***	0.0020***	0.0024***
	(0.0006)	(0.0008)	(0.0006)	(0.0006)	(0.0008)
Age 25-29	0.0032***	0.0036***	0.0033***	0.0031***	0.0035***
	(0.0006)	(0.0008)	(0.0006)	(0.0006)	(0.0008)
Age 30-34	0.0039***	0.0043***	0.0040***	0.0038***	0.0042***
	(0.0006)	(0.0008)	(0.0006)	(0.0006)	(0.0008)
Age 35-39	0.0043***	0.0046***	0.0044***	0.0042***	0.0046***
	(0.0006)	(0.0008)	(0.0006)	(0.0006)	(0.0008)
Per Capita Elderly		-0.0003			-0.0027
Population		(0.0047)			(0.0048)
Share of Employment		-0.0020			-0.0012
in Service Sector		(0.0015)			(0.0016)
Share of Employment in		0.0080***			0.0089***
Health Care (predicted)		(0.0028)			(0.0029)
Ln(HS Equivalent Relative			-0.0002		-0.0002
Weekly Earnings)			(0.0003)		(0.0003)
Share Foreign Born (predicted)				-0.0008	-0.0017*
				(0.0008)	(0.0009)
Observations	5,916	5,916	5,916	5,916	5,916
R-squared	0.4162	0.4172	0.4163	0.4163	0.4175

Notes: Dependent variable is RN share among US men. Standard errors, clustered by birth state and birth year, in parentheses. Regressions are weighted by the number of U.S. born males in the labor force in each state-birth year cohort. Constant suppressed in all specifications. *** p<0.01, ** p<0.05, * p<0.1

Table 5
The Role of College Access at Age 18 in RN Share among US Men

	(1)	(2)	(3)
1990	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)
2000	0.0004***	0.0006***	0.0006***
	(0.0001)	(0.0001)	(0.0001)
2007	0.0006***	0.0009***	0.0009***
	(0.0001)	(0.0001)	(0.0001)
2010	0.0009***	0.0012***	0.0012***
	(0.0001)	(0.0001)	(0.0001)
2013	0.0015***	0.0018***	0.0019***
	(0.0001)	(0.0002)	(0.0002)
Age 18-24	0.0007	0.0016***	0.0018***
	(0.0006)	(0.0006)	(0.0006)
Age 25-29	0.0018***	0.0027***	0.0027***
	(0.0006)	(0.0006)	(0.0006)
Age 30-34	0.0025***	0.0033***	0.0034***
	(0.0006)	(0.0006)	(0.0006)
Age 35-39	0.0029***	0.0037***	0.0037***
	(0.0006)	(0.0007)	(0.0006)
Number of Public 4-Year	0.0007		
Colleges Per Capita	(0.0007)		
Number of Public 2-Year	0.0012***		
Colleges Per Capita	(0.0003)		
Number of Public 4-Year		-0.0010	-0.0016*
Colleges Per Capita (Smoothed)		(0.0008)	(0.0009)
Number of Public 2-Year		0.0011***	0.0009***
Colleges Per Capita (Smoothed)		(0.0003)	(0.0003)
Number of Private 4-Year			0.0002
Colleges Per Capita (Smoothed)			(0.0003)
Number of Private 2-Year			0.0006**
Colleges Per Capita (Smoothed)			(0.0003)
Observations	5,542	5,542	5,542
R-squared	0.4198	0.4171	0.4183

Notes: Dependent variable is RN share among US men. Standard errors, clustered by birth state and birth year, in parentheses. All regressions control for share of cohort that is black, Asian, Hispanic, urban, and has completed high school or more education, and are weighted by the number of U.S. born males in the labor force in each state-birth year cohort. Constant suppressed in all specifications. *** p<0.01, ** p<0.05, * p<0.1

Table 6
The Role of Gender Role Attitudes at Age 18 in RN Share among US Men

	(1)	(2)	(3)	(4)	(5)
1990	0.0001	-0.0001	-0.0002	-0.0001	-0.0002**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2000	0.0006***	0.0003	0.0001	0.0004***	0.0002
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
2007	0.0008***	0.0004*	0.0003	0.0006***	0.0004**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
2010	0.0011***	0.0007***	0.0005**	0.0009***	0.0006***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0002)
2013	0.0015***	0.0010***	0.0009***	0.0012***	0.0010***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Age 18-24	0.0013*	0.0026***	0.0004	0.0013*	0.0010
	(0.0008)	(0.0008)	(0.0008)	(0.0007)	(0.0007)
Age 25-29	0.0024***	0.0038***	0.0016**	0.0024***	0.0022***
	(0.0008)	(0.0008)	(0.0008)	(0.0007)	(0.0007)
Age 30-34	0.0029***	0.0044***	0.0022***	0.0030***	0.0027***
	(0.0007)	(0.0008)	(0.0008)	(0.0007)	(0.0007)
Age 35-39	0.0035***	0.0050***	0.0028***	0.0035***	0.0033***
	(0.0007)	(0.0008)	(0.0007)	(0.0007)	(0.0007)
Traditional Attitudes		-0.0021***			
		(0.0005)			
Egalitarian Attitudes			0.0022***		
			(0.0005)		
FEPOL					0.0007**
					(0.0003)
Observations	2,565	2,565	2,565	2,796	2,796
R-squared	0.4720	0.4747	0.4766	0.4716	0.4729

Notes: Dependent variable is RN share among US men. Standard errors, clustered by birth state and birth year, in parentheses. All regressions control for share of cohort that is black, Asian, Hispanic, urban, and has completed high school or more education, and are weighted by the number of U.S. born males in the labor force in each state-birth year cohort. Constant suppressed in all specifications. *** p<0.01, ** p<0.05, * p<0.1

Table 7
Regression Decomposition of RN Share among US Men into Components due to Trend Factors

Characteristic (X)	(1) Coeffi-cient	(2) Change in X	(3) Predicted Change in RN Share for Males	(4) % Change Explained
Demographics				
Black	-0.0095	0.0269	-0.00026	-13.3%
Asian	-0.0006	0.1296	-0.00008	-4.1%*
Hispanic	-0.0005	0.1490	-0.00007	-3.9%*
Completed High School	0.0016	0.0601	0.00010	5.0%
Urban	0.0015	0.0938	0.00014	7.3%
Contemporaneous Demand				
Predicted Health Employment Share	0.0067	0.0458	0.00031	16.0%
Predicted Foreign Born Share	-0.0015	0.1078	-0.00016	-8.4%
College Access at Age 18				
Per Capita Number of Public 2-Year Colleges	0.0012	0.0204	0.00002	1.3%
Gender Attitudes at Age 18 (Based on Regressions from Table 6)				
Traditional Attitudes	-0.0021	-0.1587	0.00033	17.4%
Egalitarian Attitudes	0.0022	0.1956	0.00043	22.4%
FEPOL	0.0007	0.2435	0.00017	8.9%

Notes: Column 1 of this table copies coefficients from column 5 of Appendix Table A4 unless otherwise noted. Column 2 is based on the authors' calculations. Column 3 is the product of columns 1 and 2. The share of men age 18-39 who reported RN as their occupation increased by .0019 (.0011 to .0031) between 1980 and 2013. Column 4 is column 3's share of this total increase. Asterisks indicate that the coefficient from the full regression was not statistically significant at the 10% level.

Table 8
The Role of Business Cycle Conditions in RN Share among US Men

	(1)	(2)	(3)	(4)	(5)
1990	-0.0001*	-0.0001*	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2000	0.0004***	0.0004***	0.0004***	0.0004***	0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2007	0.0006***	0.0005***	0.0009***	0.0006***	0.0005***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
2010	0.0009***	0.0008***	0.0013***	0.0009***	0.0008***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
2013	0.0014***	0.0013***	0.0018***	0.0015***	0.0014***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
Age 18-24	0.0023***	0.0029***	0.0037***	0.0012*	0.0012*
	(0.0006)	(0.0006)	(0.0009)	(0.0007)	(0.0007)
Age 25-29	0.0034***	0.0041***	0.0046***	0.0022***	0.0022***
	(0.0006)	(0.0006)	(0.0009)	(0.0007)	(0.0007)
Age 30-34	0.0042***	0.0047***	0.0051***	0.0029***	0.0029***
	(0.0006)	(0.0006)	(0.0009)	(0.0007)	(0.0007)
Age 35-39	0.0045***	0.0052***	0.0054***	0.0033***	0.0034***
	(0.0006)	(0.0006)	(0.0009)	(0.0007)	(0.0007)
Age 18 UR	-0.0029**			-0.0040	
	(0.0014)			(0.0033)	
Age 18-24 UR		-0.0089***	-0.0064**		-0.0079**
		(0.0016)	(0.0028)		(0.0035)
Age 25-29 UR			-0.0060**		
			(0.0030)		
Age 30-34 UR			-0.0178***		
			(0.0024)		
Age 35-39 UR			0.0067***		
			(0.0024)		
Number of Public 2-Year				0.0004	0.0011**
Colleges Per Capita				(0.0005)	(0.0005)
Age 18/18-24 UR X				0.0142*	0.0097
2-Year Colleges PC				(0.0080)	(0.0086)
Observations	5,916	5,916	3,774	5,542	5,605
R-squared	0.4166	0.4190	0.4425	0.4203	0.4232

Notes: Dependent variable is RN share among US men. Standard errors, clustered by birth state and birth year, in parentheses. All regressions control for share of cohort that is black, Asian, Hispanic, urban, and has completed high school or more education, and are weighted by the number of U.S. born males in the labor force in each state-birth year cohort. Constant suppressed in all specifications. *** p<0.01, ** p<0.05, * p<0.1

Table 9
The Role of Business Cycle Conditions in RN Share among US Women

	(1)	(2)	(3)	(4)	(5)
1990	-0.0035***	-0.0036***	0.0015*	-0.0030***	-0.0031***
	(0.0009)	(0.0009)	(0.0008)	(0.0009)	(0.0009)
2000	-0.0072***	-0.0077***	0.0028***	-0.0070***	-0.0072***
	(0.0010)	(0.0009)	(0.0011)	(0.0010)	(0.0010)
2007	-0.0077***	-0.0086***	0.0059***	-0.0070***	-0.0077***
	(0.0011)	(0.0010)	(0.0013)	(0.0011)	(0.0010)
2010	-0.0041***	-0.0048***	0.0097***	-0.0034***	-0.0039***
	(0.0010)	(0.0010)	(0.0014)	(0.0011)	(0.0010)
2013	-0.0003	-0.0010	0.0136***	0.0017	0.0011
	(0.0010)	(0.0010)	(0.0015)	(0.0011)	(0.0010)
Age 18-24	0.0059	0.0124***	-0.0268***	-0.0080	0.0012
	(0.0045)	(0.0043)	(0.0048)	(0.0050)	(0.0046)
Age 25-29	0.0245***	0.0312***	-0.0119**	0.0100**	0.0195***
	(0.0046)	(0.0043)	(0.0050)	(0.0050)	(0.0047)
Age 30-34	0.0319***	0.0383***	-0.0068	0.0172***	0.0265***
	(0.0046)	(0.0044)	(0.0050)	(0.0051)	(0.0047)
Age 35-39	0.0354***	0.0423***	-0.0049	0.0206***	0.0303***
	(0.0046)	(0.0043)	(0.0050)	(0.0050)	(0.0047)
Age 18 UR	-0.0087			0.1079***	
	(0.0107)			(0.0213)	
Age 18-24 UR		-0.0604***	0.1079***		0.0565**
		(0.0120)	(0.0186)		(0.0245)
Age 25-29 UR			0.2679***		
			(0.0191)		
Age 30-34 UR			-0.0053		
			(0.0159)		
Age 35-39 UR			0.2027***		
			(0.0201)		
Number of Public 2-Year				0.0199***	0.0185***
Colleges Per Capita				(0.0026)	(0.0030)
Age 18/18-24 UR X				-0.2172***	-0.2443***
2-Year Colleges PC				(0.0411)	(0.0493)
Observations	5,916	5,916	3,774	5,542	5,605
R-squared	0.7651	0.7670	0.7683	0.7681	0.7668

Notes: Dependent variable is RN share among US women. Standard errors, clustered by birth state and birth year, in parentheses. All regressions control for share of cohort that is black, Asian, Hispanic, urban, and has completed high school or more education, and are weighted by the number of U.S. born females in the labor force in each state-birth year cohort. Constant suppressed in all specifications. *** p<0.01, ** p<0.05, * p<0.1

Table 10

Characteristics of the RN Workforce (Percent), 2008 National Sample Survey of Registered Nurses

Panel A: Previous Health-Related Employment	Males	Females
No health-related position	23.38	32.36
Nursing aide/assistant	44.72	47.51
EMT	18.31	2.76
LPN/LVN	14.01	15.15
Military medical corps	12.39	0.86
Allied health/lab technician	11.37	5.00
Other health-related position	18.06	23.15

Panel B: Employment Setting	Males	Females
Hospital	74.16	58.83
Ambulatory Care	6.21	10.58
Nursing Home/Extended Care	4.36	5.9
Home Health	3.89	6.64
Public/Community Health	3.22	4.01
Other	8.16	14.02

Panel C: Level of Care	Males	Females
General/specialty inpatient	22.97	26.82
Critical/intensive care	21.39	12.31
Surgery	20.92	14.17
Emergency care	16.24	7.19
Ambulatory care	9.89	15.28
Other	47.56	55.24

Panel D: Job Title	Males	Females
Staff Nurse	63.82	64.07
Management/Administration	12.78	12.83
Nurse Anesthetist	9.48	0.93
Nurse Practitioner	3.25	3.90
Patient Coordinator	2.64	6.35
Other	8.02	11.93

Note: All estimates are unweighted and reported as percentages for a sample of 2,348 men and 31,004 women. Response catagories were not mutually exlusive and therefore do not total to 100. All differences are statistically significant at the 1 percent level except LPN/LVN (Panel A); Public/Community Health (Panel B); and Staff Nurse, Management/Administration, and Nurse Practictioner (Panel D).

Table A1
Descriptive Statistics for Full Cohort Sample, 1980-2013

Variable	N	Mean	Std. Dev.	Min	Max
RN	5916	0.002	0.003	0	0.039
Birth Year	5916	1974.75	10.57	1954	1995
Age	5916	27.75	6.25	18	39
Age 18-24	5916	0.36	0.48	0.00	1.00
Age 25-29	5916	0.23	0.42	0.00	1.00
Age 30-34	5916	0.22	0.41	0.00	1.00
Age 35-39	5916	0.19	0.39	0.00	1.00
White	5916	0.84	0.14	0.12	1.00
Black	5916	0.09	0.10	0.00	0.82
Asian	5916	0.05	0.10	0.00	0.81
Hispanic	5916	0.06	0.09	0.00	0.52
High School	5916	0.87	0.12	0.03	1.00
Urban	5916	0.62	0.17	0.00	0.99
Per Capita Elderly Population	5916	0.13	0.02	0.03	0.19
Share of Employment in Service Sector	5916	0.47	0.07	0.21	0.67
Relative Earnings	5916	0.88	0.18	0.39	1.68
Foreign Born Share (predicted)	5916	0.09	0.09	0.12	0.49
Health Employment Share (predicted)	5916	0.10	0.04	0.02	0.20
Age 18 Unemployment Rate	5916	0.06	0.02	0.03	0.16
Per Capita Enrollment in Public 4-Year Colleges	5542	0.32	0.21	0.00	1.32
Per Capita Enrollment in Public 2-Year Colleges	5542	0.50	0.32	0.00	1.74
Per Capita Enrollment in Private 4-Year Colleges	5542	0.90	0.54	0.00	3.88
Per Capita Enrollment in Private 2-Year Colleges	5542	0.59	0.37	0.00	2.03
Traditional Attitudes	2565	0.47	0.08	0.07	0.83
Egalitarian Attitudes	2565	0.65	0.10	0.20	1.00
FEPOL	2796	0.69	0.16	0.00	1.00

Note: Descriptive statistics based on data collapsed by state, birth year, and Census year for U.S. born males age 18 to 39 that report being in the labor force.

Table A2
Number of State-Birth Year Cohorts by Census Year, Full and Balanced Cohort Samples, 1980-2013

Panel A: Full Cohort Sample

Census Year	Number of State-Birth Year Cohorts	Birth Year	Age
1980	459	1954-1962	18-26
1990	969	1954-1972	18-36
2000	1,122	1961-1982	18-39
2007	1,122	1968-1989	18-39
2010	1,122	1971-1992	18-39
2013	1,122	1974-1995	18-39
Total	5,916		

Panel B: "Balanced" Cohort Sample

Census Year	Number of State-Birth Year Cohorts	Birth Year	Age
1980	459	1954-1962	18-26
1990	969	1954-1972	18-36
2000	714	1961-1974	26-39
2007	357	1968-1974	33-39
2010	204	1971-1974	36-39
2013	51	1974-1974	39
Total	2,754		

Note: Cohort sizes based on data collapsed by state, birth year, and Census year for U.S. born males age 18 to 39 that report being in the labor force.

Table A3
The Role of Business Cycle Conditions in RN Share among US Men, Balanced Panel

	(1)	(2)	(3)	(4)	(5)
1990	0.0002***	0.0001*	0.0001*	0.0001	0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
2000	0.0010***	0.0010***	0.0011***	0.0010***	0.0008***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
2007	0.0020***	0.0019***	0.0019***	0.0019***	0.0015***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)
2010	0.0024***	0.0024***	0.0024***	0.0023***	0.0019***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)
2013	0.0030***	0.0031***	0.0031***	0.0030***	0.0026***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Age 18-24	0.0012***	0.0025***	0.0029***	0.0032***	0.0030***
	(0.0003)	(0.0008)	(0.0008)	(0.0009)	(0.0011)
Age 25-29	0.0021***	0.0031***	0.0035***	0.0039***	0.0038***
	(0.0003)	(0.0008)	(0.0008)	(0.0009)	(0.0012)
Age 30-34	0.0027***	0.0036***	0.0040***	0.0044***	0.0043***
	(0.0003)	(0.0008)	(0.0008)	(0.0009)	(0.0012)
Age 35-39	0.0028***	0.0037***	0.0040***	0.0045***	0.0045***
	(0.0003)	(0.0008)	(0.0008)	(0.0009)	(0.0012)
Age 18 UR			-0.0032*		
			(0.0018)		
Age 18-24 UR				-0.0051**	-0.0048
				(0.0024)	(0.0031)
Age 25-29 UR					-0.0016
					(0.0032)
Age 30-24 UR					-0.0073*
					(0.0039)
Age 35-39 UR					0.0079***
					(0.0027)
Observations	2,754	2,754	2,754	2,754	2,754
R-squared	0.4562	0.4660	0.4666	0.4668	0.4693

Notes: Dependent variable is RN share among US men. Standard errors, clustered by birth state and birth year, in parentheses. All regressions control for share of cohort that is black, Asian, Hispanic, urban, and has completed high school or more education, and are weighted by the number of U.S. born males age 18 to 64 in the labor force in each state-birth year cohort. *** p<0.01, ** p<0.05, * p<0.1.

Table A4

Trends in the Share of US Men and Women that Report RN as their Occupation, All Significant Variables

	(1)	(2)	(3)	(4)	(5)	(6)
1990	-0.0002	-0.0002*	-0.0001	-0.0002**		-0.0018**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)		(0.0008)
2000	0.0001	0.0002	0.0004**	0.0003***		-0.0048***
	(0.0002)	(0.0002)	(0.0001)	(0.0001)		(0.0009)
2007	0.0002	0.0003	0.0005**	0.0004***		-0.0032***
	(0.0003)	(0.0002)	(0.0002)	(0.0001)		(0.0010)
2010	0.0003	0.0004	0.0006**	0.0006***		0.0011
	(0.0003)	(0.0003)	(0.0002)	(0.0002)		(0.0011)
2013	0.0007**	0.0008***	0.0010***	0.0012***		0.0055***
	(0.0003)	(0.0003)	(0.0002)	(0.0002)		(0.0011)
Age 18-24	-0.0005	-0.0006	-0.0004	0.0007	-0.0022***	-0.0064
	(0.0011)	(0.0008)	(0.0008)	(0.0006)	(0.0005)	(0.0041)
Age 25-29	0.0006	0.0005	0.0006	0.0017***	-0.0012**	0.0120***
	(0.0011)	(0.0008)	(0.0008)	(0.0006)	(0.0005)	(0.0042)
Age 30-34	0.0013	0.0011	0.0013	0.0025***	-0.0004	0.0195***
	(0.0011)	(0.0008)	(0.0008)	(0.0006)	(0.0005)	(0.0042)
Age 35-39	0.0019*	0.0017**	0.0018**	0.0029***	0.0001	0.0234***
	(0.0010)	(0.0008)	(0.0008)	(0.0006)	(0.0005)	(0.0042)
Black	-0.0074***	-0.0071***	-0.0073***	-0.0095***	-0.0085***	-0.0649***
	(0.0021)	(0.0019)	(0.0019)	(0.0014)	(0.0013)	(0.0077)
Asian	-0.0018	-0.0009	-0.0011	-0.0006	-0.0000	0.0429***
	(0.0021)	(0.0018)	(0.0018)	(0.0013)	(0.0012)	(0.0087)
Hispanic	0.0019	0.0018	0.0018	-0.0005	0.0017	-0.0409***
	(0.0020)	(0.0019)	(0.0019)	(0.0012)	(0.0012)	(0.0066)
High School	0.0016***	0.0018***	0.0017***	0.0016***	0.0020***	0.0336***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0023)
Urban	0.0019**	0.0019**	0.0020***	0.0015***	0.0041***	0.0225***
	(0.0008)	(0.0008)	(0.0008)	(0.0006)	(0.0005)	(0.0041)
Share of Employment in	0.0077*	0.0073*	0.0073*	0.0067**	0.0191***	-0.0650***
Health Care (predicted)	(0.0043)	(0.0041)	(0.0041)	(0.0029)	(0.0017)	(0.0242)
Foreign Born Share	-0.0028**	-0.0028***	-0.0028**	-0.0015*	-0.0024***	-0.0320***
(predicted)	(0.0011)	(0.0011)	(0.0011)	(0.0009)	(0.0008)	(0.0092)
Number of Public 2-Year	0.0008**	0.0010***	0.0011***	0.0012***	0.0013***	0.0063***
Colleges Per Capita	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0002)	(0.0010)
Traditional Attitudes	-0.0005					
	(0.0007)					
Egalitarian Attitudes	0.0018***					
	(0.0006)					
FEPOL		0.0006**				
		(0.0003)				
Sample	Men	Men	Men	Men	Men	Women
Observations	2,481	2,706	2,706	5,542	5,542	5,542
R-squared	0.4794	0.4776	0.4767	0.4205	0.4065	0.7688

Notes: Dependent variable is RN share among US men (columns 1 through 5) and women (column 6). Standard errors, clustered by birth state and birth year, in parentheses. All regressions control for share of cohort that is black, Asian, Hispanic, urban, and has completed high school or more education, and are weighted by the number of US born men or women age 18 to 64 in the labor force in each state-birth year cohort. *** p<0.01, ** p<0.05, * p<0.1.

Table A5
Regression Decomposition of RN Share among US Men into Components due to Trend Factors Excluding Year Dummy Controls

Characteristic (X)	(1) Coeffi-cient	(2) Change in X	(3) Predicted Change in RN Share for Males	(4) % Change Explained
Demographics				
Black	-0.0085	0.0269	-0.00023	-11.9%
Asian	0.0000	0.1296	0.00000	0.0%*
Hispanic	0.0017	0.1490	0.00025	13.2%*
Completed High School	0.002	0.0601	0.00012	6.3%
Urban	0.0041	0.0938	0.00038	20.0%
Contemporaneous Demand				
Health Employment Share (predicted)	0.0191	0.0458	0.00087	45.6%
Foreign Born Share (predicted)	-0.0024	0.1078	-0.00026	-13.5%
College Access at Age 18				
Per Capita Number of Public 2-Year Colleges	0.0013	0.0204	0.00003	1.4%
Gender Attitudes at Age 18 (Based on Regressions from Table 6, Excluding Year Dummy Controls)				
Traditional Attitudes	-0.0034	-0.1587	0.00054	28.1%
Egalitarian Attitudes	0.0032	0.1956	0.00063	32.6%
FEPOL	0.0015	0.2435	0.00037	19.0%

Notes: Column 1 of this table copies coefficients from column 6 of Appendix Table A4 unless otherwise noted. Column 2 is based on the authors' calculations. Column 3 is the product of columns 1 and 2. The share of men age 18-39 who reported RN as their occupation increased by .0019 (.0011 to .0031) between 1980 and 2013. Column 4 is column 3's share of this total increase. Asterisks indicate that the coefficient from the full regression was not statistically significant at the 10% level.

Data Appendix

This appendix provides additional detail on the sources for and construction of control variables introduced in Tables 3 through 8 of the main text.

Demographic trends: Percent black, Hispanic, Asian, urban residence, and high school completion.

These measures control for changing cohort (defined as a birth state and birth year combination) composition. They are constructed from Census/ACS data at the birth state, birth year, Census year (*s,c,t)* level, although persistence across time is high. Since our goal is a regression accounting decomposition of the trend RN share among men, we allow these measures to vary over time to capture coincident trends that may be related to RN share. For example, greater urbanization within a cohort over time may relate to more men choosing an RN career. Changes in labor force participation over time or differential mortality can also generate changes in these measures over time, for example, in high school completion.

Measures of labor demand: per capita elderly population, services employment share, predicted healthcare employment share, college-equivalent relative earnings, and predicted foreign-born share of the labor force.

These measures control for contemporaneous labor demand conditions and all vary at the state and year level only. Cohorts are matched to these conditions on the basis of birth state and Census/ACS year, so all cohorts from a common birth state experience the same contemporaneous demand conditions. Per capita state elderly population is constructed using state population estimates from the Surveillance, Epidemiology, and End Results (SEER) Program. For service sector employment, we use the Bureau of Economic Analysis' (BEA) SA-25 and SA-25N series of state

employment totals by industry as a share of total state employment.[33] After controlling for health sector demand directly (as noted below), our service sector employment share measure reflects the shift away from a goods-producing state economy towards a services economy.

In addition to per capita elderly population as a measure of demand for RNs, we control for changing demand for healthcare sector workers using employment data. We measure healthcare sector employment using the same SA-25 and SA-25N series from the BEA that were used to construct service sector employment. Our analysis finds that SIC code 80 (healthcare services) is very close to NAICS2002 code 62. This is based on a comparison of the sub-industries in those two-digit codes using the Census SIC87 to NAICS 2002 concordance.[34] BEA also produced employment-by-industry estimates using both classification schemes for a three year overlap period during which employment in both definitions of the healthcare sector can be directly compared. We find that they deviate by 7 to 9 percent. We mean adjust the series state-by-state to account for that discrepancy at the series break.

Because healthcare sector employment may reflect supply of RNs as well as demand, we use a Bartik-style predicted measure of healthcare sector employment to isolate changes in healthcare's share of employment that are demand driven.[35] We use a three-year average of state level healthcare employment as the base employment level, then grow that forward for all years in our data at the national healthcare employment growth rate, calculated by excluding each state's

[33] We harmonize service sector employment for the change from SIC to NAICS across the two series by consolidating several service-related NAICS industries into a single category, to be consistent with how services appear in the SIC coding. Unfortunately this means we cannot harmonize the two series for other major industry categories (see Yuskavage 2007). We further smooth the resulting series by eliminating a jump in the trend that occurs at the coding change, between 2000 and 2001. Total employment is not affected by this coding change.
[34] https://www.census.gov/eos/www/naics/concordances/concordances.html
[35] Per capita elderly share is likely unresponsive to RN supply.

own contribution to national healthcare employment. We then calculate the predicted health care share of employment by dividing predicted state healthcare employment by total actual state employment in a year.

Relative earnings are calculated as the ratio between weekly earnings for high school equivalent men and (divided by) weekly earnings for college equivalent women. Weekly earnings are calculated from the March Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) by state and year for workers aged 25 to 55. Using national aggregates, we found that weekly earnings for RNs are very highly correlated (0.98) with those for college equivalent women, so we use the latter weekly wage as a proxy for RN wages in a state. Small sample sizes make direct computation of RN earnings at the state-year level inadvisable. Under the assumption that state labor markets for workers defined by gender and skill are competitive, this proxy should strongly influence RN earnings. This relative earnings measure is trending down over time and higher values should be associated with fewer men choosing nursing if contemporaneous relative wages determine occupation choice.

We construct a predicted measure of exposure to immigrant workers as the share foreign-born in the age 18-65 labor force of a cohort's birth state over time. Similar to the health sector employment variable, we construct a Bartik-style measure of immigration using a state's population of foreign-born workers age 18 to 39 in 1980 and growing it forward at the national growth rate, calculated by excluding each state's own contribution to the national foreign-born population. To caltulate predicted foreign-born share, we divide each state's predicted foreign-born population by actual state population in a year. Since this measure reflects contemporaneous conditions facing a cohort, we group it with the contemporaneous demand measures. But as discussed in the text,

the share foreign-born in a cohort reflects a shift out in labor supply, which may have only indirect effects on native occupation choices or local demand.

Post-secondary education access (per capital college availability) at age 18.

We merge our cohorts to data on opportunities for post-secondary education in their birth state at the time of college-going. Specifically, these are measures of per capita college availability at the state level in the year a cohort turned 18. To obtain these measures for our complete set of cohorts, we combine two separate data series on the number of local colleges. The first is a series of number of two- and four-year colleges at the county level assembled by Currie and Moretti (2004) and spanning 1940 to 1996. The second is data on number of colleges of various types by state, which we assembled form the IPEDS (Integrated Post-secondary Educational Data System) website for 1990- to 2013.[36]

As discussed in the text, we harmonize these series where needed. Specifically, inspection of the Currie-Moretti series and the IPEDS series show that there is a smooth transition between series at the state-level for the number of four year public colleges. This makes sense, as Currie and Moretti collected their data on numbers of colleges from guides listing college options, and it is likely that any existing state four year colleges were represented in both those guides and in the IPEDs survey of all higher education institutions. The series still match reasonably well for public two-year colleges, but less well for private colleges. For two-year private colleges, there is a substantial discrepancy between the two series, with the Currie-Moretti series reporting smaller num-

[36] https://nces.ed.gov/ipeds/Home/UseTheData

bers of such colleges than the IPEDs survey. This may be because IPEDs more exhaustively surveys such colleges, while guides may fail to include some short-lived or very small private two-year colleges.

Gender role attitudes.

We are also interested in the role that social attitudes might play in encouraging men to take on a non-traditional occupation like nursing. To measure these, we use four questions from the General Social Survey (GSS) on gender roles (Fortin 2015). Following Fortin, we construct an index of agreement with traditional gender role assignments and another indicating agreement with gender-egalitarian roles. Each index averages together two related questions on their respective approaches to gender roles.[37] We use one of the questions contributing to the egalitarian sentiments measure, *felpol*, as an independent measure, since it is available for several waves of the GSS when the other component measures were not asked. Finally, the GSS survey design places some further limitations on our main sample when we add these measures to our data. The GSS does not provide estimates at the state level for all 50 states. We typically observe responses for 30 to 40 states on these measures in a given wave. Also, the GSS is not administered annually, and these questions were not always asked in a given wave. We assume these measures change smoothly over time

[37] From Fortin: "*The index of traditional attitudes (**TRAD**) is derived as an average agreement with the statements "It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family" (FEFAM) and "A preschool child is likely to suffer if his or her mother works" (FEPRESCH). In the GSS, the better statement meant to capture egalitarian attitudes "If your party nominated a woman for President, would you vote for her if she were qualified for the job?" (FEPRES) was not asked in the 2000s. I thus use as second best disagreement with the statement "Most men are better suited emotionally for politics than are most women" (**FEPOL**) and agreement with the statement "A working mother can establish just as warm and secure a relationship with her children as a mother who does not work" (FECHLD) to capture egalitarian attitudes (**EGAL**).[19] As shown in Panel B of Table 1, there are sizeable differences (denoted Δ), of at least 10 points, between non-participating and participating women in these traditional and egalitarian attitudes."*

and linearly interpolate our measures at the state level for intervening survey years in which these measures were not available.

Contemporaneous state unemployment rates.

We construct measures of early career labor market conditions cohorts faced using annual data from the Bureau of Labor Statistics state unemployment rate series, which is based on the Current Population Survey (CPS). We assign to each cohort the unemployment conditions in its birth state in the year it turned 18. We also match each birth state - birth year *(s,c)* cohort to the unemployment rate it would have experienced in state *s* as it aged.[38]

[38] To deal with noisiness associated with the sometimes small state-level cell sizes in the CPS, we generate non-overlapping three-year averages of all state-level unemployment rate variables.