

Is Hampton Roads Facing A Shortage Of Nurses?



IS HAMPTON ROADS FACING A SHORTAGE OF NURSES?

Few events grab our attention like the threat of an impending crisis. Documented claims that we (as a nation) will be facing a nursing shortage date as far back as the 1930s and seemingly reappear every few decades. The concern is so pervasive that it is easy to find scores of reports, news articles and proposed legislation, even a Wikipedia entry, on the topic.

The current arguments in support of a coming shortage are centered on changing demographics, a wave of nurse retirements, the recently passed Patient Protection and Affordable Care Act, the improving economy and nursing schools unable to train enough nurses to fill the gaps. In short, the aging population and increased insurance coverage are going to massively increase demand, while retirements and an improving economy reduce the supply as nursing schools struggle to make up the difference. This is all true, but the sky is not likely to fall.

In this chapter, we assess the future of the Hampton Roads nursing workforce by examining the local supply and demand for nurses. As you will see, Hampton Roads is reasonably well positioned for the future as long as we maintain our current level of hiring and training of nurses. We will also present suggestions based on experience and the research of industry analysts about how to secure our position, given the coming changes.

Background

For this chapter, a “nurse” is synonymous with a “registered nurse,” “professional nurse” or “RN.” If any other nurse occupation is considered, it will be referred to by its official title/abbreviation (e.g., licensed practical nurse or LPN, nursing assistant or NA).

We rely on two sources for information concerning the nursing profession: the Virginia Department of Health Professions (DHP) and the Bureau of Labor Statistics (BLS). The DHP administers a relatively new annual survey

of nurses renewing their license in Virginia. License renewal is completed every two years, so for any given year only half of the nurses will be eligible to complete the survey. More than 80 percent of nurses who are eligible do respond to the survey, providing an excellent look into our regional workforce. The BLS administers the Occupation Employment Survey, a semiannual nationwide survey that is conducted with state employment agencies. For the Virginia workforce, the DHP data are likely to be more reliable since the department has access to all registered nurses, whereas the BLS uses a random sample of individuals. We can use DHP data for comparing and describing Virginia, Hampton Roads, Richmond and Northern Virginia, but for descriptions of any other metropolitan areas, BLS data will need to be used. Any difference among the sources is likely due to the difference in access rather than methodology. We use the DHP data as often as possible but rely on the BLS data to capture and project broader national trends in the nursing workforce.

A registered nurse is a person whom the Virginia Board of Nursing deems qualified to provide “professional nursing service.” The key qualifications are the successful completion of an approved degree or diploma program and the passage of a board-approved competency exam. **The BLS lists typical nurses’ duties as recording patient medical data, performing diagnostic tests, administering medicines and equipment, establishing and implementing care plans, and explaining to patients their treatments. Registered nurses typically work under the direction of physicians.** Two similar professionals are the licensed practical nurse, who mostly monitors patients and provides basic care, and the nursing assistant, who performs the most

basic duties. The three professions can and often do work in the same facility, but RNs are more likely to work in a hospital, while the other two are primarily in long-term-care facilities. When they are in the same facility, LPNs and NAs typically work under the direction of an RN.

There are three pathways to becoming a registered nurse. The most common path is a four-year bachelor's degree, followed by a two-year associate degree and, lastly, a hospital-based diploma program. There are approximately 80 nursing programs in the Commonwealth, but currently only Riverside Health System, based in Newport News, operates a nursing diploma program. Hampton Roads has five baccalaureate and eight associate degree programs in addition to the Riverside diploma program.

The composition of degrees varies by area, as shown in Table 1. Interestingly, Northern Virginia has the most educated nursing workforce, while Hampton Roads features the smallest percentage of advanced nursing degrees and the highest percentage of diploma degrees (rightly or wrongly, considered a lower education level). The smaller percentage of advanced degrees in our region is a potential concern because advanced degree holders are often the instructors of future nurses. By having (relatively) fewer advanced-degree nurses, we may be constraining our region's ability to supply nurses in the future.

In 2014, Virginia employed approximately 73,038 registered nurses in either part- or full-time positions. Accounting for the hours worked by nurses, the Commonwealth had about 72,089 “full-time-equivalency units” of nurses in 2014. This measure adjusts for part-time and overtime hours to count how many full-time workers would be employed if everyone worked a standard 40-hour week for 50 weeks. Hampton Roads employed around 15,514 nurses and had about 14,396 FTEs, which represents approximately 20 percent of the state’s nurse workforce. As can be seen in Table 2, Northern Virginia employs the most nurses, but fewer nurses work full time compared to Hampton Roads and Richmond.

Demographics (%)	Virginia	Hampton Roads	Northern Virginia	Richmond
Hospital RN Diploma	13.2	19.3	7.0	16.7
Associate Degree	33.9	30.1	28.3	34.0
Bachelor's Degree	40.0	39.0	49.0	36.1
Master's + Doctorate	12.6	11.4	15.5	12.8
RN Education from VA	71.6	70.4	53.2	77.6
Under 40 w/ Debt Education	58.3	67.8	53.8	61.6
Wants to Pursue More Education	37.9	42.3	36.4	39.2
Diversity Index	35	50	43	35
Percent Non-white	20	32	33	23
Female	93	94	94	94

Source: VA DHP, VA Healthcare Workforce Data Center, *as of February 2014

In Virginia, about half of the nurses work in hospitals, with the rest distributed relatively evenly in other environments. Most nurses, 85 percent, work in metropolitan areas, which matches the 88 percent of Virginians living in metro areas. **Over 90 percent of nurses are female, roughly one-third are non-white and the median age is 48. The nursing workforce in Hampton Roads is more racially diverse than other metro areas, which is likely due to the military's influence.**

From the BLS survey, the 2014 median annual income for nurses is \$62,610 for Virginia, \$60,540 for Hampton Roads, \$63,770 for Richmond and \$74,680 for the entire Washington, D.C., metropolitan area. The average median income across all metro areas is \$64,119. Northern Virginia nurses may be paid more because of cost of living and their higher education level, despite the

fact that fewer work full time. Across Virginia, almost two-thirds of nurses are hourly-wage workers, slightly less than one-third are salaried and the rest have other arrangements (e.g., contractual, self-employed, volunteer, etc.). About two-thirds of nurses receive health care through their work and a similar percentage receives retirement benefits. More than 90 percent of nurses report overall job satisfaction, and 20-25 percent of nurses worked at their primary location for over 10 years.

About 21 percent of those who have a Virginia nursing license did not work as a nurse in Virginia in 2014; although, only about 0.7 percent of licensees report being involuntarily unemployed. This shows that the overwhelming majority of nurses who desire to work as nurses are able to find employment in their field. Additionally, this indicates that more nurses are available to work than are actively employed as nurses. Probably not all of these individuals will return to nursing, but by retaining and renewing their nursing license, they show that they *could* be lured back, given the right circumstances (i.e., higher wages, better working conditions, etc.).

TABLE 2				
EMPLOYMENT CHARACTERISTICS OF REGISTERED NURSES IN VIRGINIA AND SELECTED METRO AREAS, 2014*				
Employment	Virginia	Hampton Roads	Northern Virginia	Richmond
RN Licensees	82,998	17,432	20,821	16,786
New RN Licenses in 2014	5,124	803	1,155	681
Employed as RN	73,038	15,514	17,906	15,275
RN FTEs	72,089	14,396	15,320	13,942
FTEs/Employed	1.01	1.08	1.17	1.10
Unemployment Rate	0.71%	0.83%	0.63%	0.46%
Employed Outside of Nursing	3.48%	2.95%	4.67%	3.40%
Not Working	7.73%	7.07%	8.61%	5.26%
Works in Hospital (%)	52	54	50	54
Works in Long-Term Care Facility (%)	3.7	3.0	2.5	3.0
Private (%)	83.8	83.0	88.4	82.3
State Government (%)	11.2	7.8	7.3	12.8
Federal Government (%)	5.0	9.3	4.4	5.0

Source: VA DHP, VA Healthcare Workforce Data Center, *as of February 2014

Nursing Shortages And Their Cost

Few people may recall that until the mid-1960s, the country faced persistent nursing shortages. A Department of Labor report from 1947 described low pay, poor working conditions, long hours and lack of job satisfaction as the norm for nursing. Efforts to increase the number of nursing graduates did lead to more new nurse entrants, but the unattractive aspects associated with the profession kept the turnover rate high. However, in the mid-1960s, nursing changed as the health care industry began to blossom. The post-war economic gains gave many Americans the wealth needed to pursue more health care and the Medicare/Medicaid expansions helped many poorer Americans also seek out health care. Taken together, the increased demand for health services led to rising industry wages. Suddenly, nursing became a profession that paid a living wage and could elevate workers to a higher economic status. The better prospects, combined with the baby boom generation entering the workforce and the increased women's labor force participation, all led to the end of the nursing shortage by the mid 1970s.

Now these nurses are nearing retirement age, and there is no wave of nurses coming to replace them. In the early 2000s, nursing shortage reports began reappearing in the mass media. In 2002, the Bureau of Health Professions (BHP) issued national projections out to the year 2020 for full-time-equivalency units of nurses. For 2015, the BHP projected that demand would be 2.56 million FTE nurses, while supply would be 2.06 million FTE nurses, a projected nationwide shortage of 500,000 full-time nurses. In reality, the Bureau of Labor Statistics reports 2.7 million nurses are currently employed, several hundred thousand more than the BHP projections.

The current BHP projections, released in December 2014, now predict that the nation will have a national surplus of 340,000 FTE nurses by 2025. BHP divides its estimates by state, and predicts that Virginia will demand 87,300 FTE nurses, with a surplus of 19,400 FTE nurses, in 2025.

The BHP reports this reversal happened, in part, because of the near doubling of nursing graduates since its earlier report. The severity of the 2007-09 recession may also have kept the nation from a nursing shortage. The recession may have pushed potential retirees to delay retirement and convinced job seekers to aim for a health care career, since health care is always in demand. Also, since nurses are overwhelmingly female, increased male unemployment may have pushed more women to seek employment in a relatively well-paid (though hectic) career to sustain family budgets. Once the aftereffects of the recession are past, however, we may see a bigger than expected increase in retirements, causing a shortage to re-emerge. The 2009 American Recovery and Reinvestment Act and 2010 Affordable Care Act both had provisions to help mitigate a nursing shortage by offering educational reimbursement for nurses who work at designated short-staffed hospitals and increased funding to previous federal education programs. These two acts likely spurred some additional participation in the nursing workforce in recent years, but will not have much long-term impact on nursing supply.

If the country has faced shortages before and recovered, why are people so worried now? The answer is that this seemingly small employment-sector issue could become a major public health problem if left untreated. A national nursing shortage could be analogous to all hospitals being understaffed simultaneously. A plethora of studies have shown that the number of nurses working on a shift has a direct impact on reducing adverse patient outcomes. The same is true with nurses' skill level, measured in experience or education. Adverse patient outcomes include medication errors, infections, ulcers and patient falls, which can lead to an increase in the length of stay in hospitals, return visits to hospitals and doctors' offices, and patient mortality rates. If a single short-staffed shift is problematic, then countrywide shortages could cause an epidemic.

Human suffering is self-evident and reason enough to fear a shortage, but the monetary costs from mistakes are also staggering. The Center on Medicare and Medicaid Services calculated the cost of "hospital acquired conditions" and found that these add up to \$22 billion annually, roughly 5.8 percent of the programs' hospital expenditures. The average adverse-event cost is almost the same as the median income for a nurse, \$60,960.

Assuming that 5.8 percent is true for all patients (i.e., not just Medicare/Medicaid patients), then the total expenditure for hospital-acquired conditions is \$44 billion nationally and \$1.05 billion in Virginia.

In addition to the problems we can already see, a systemic nursing shortage would cause longer wait times to receive service, as health care facilities simply become unable to accommodate all incoming patients. This could cause prospective patients to look elsewhere for health care services, or reduced capacity elsewhere could cause patients from other locales to come to Hampton Roads and strain our health care resources. The United States typically has traded faster service for higher prices in the health sector, but with a shortage we may be left with only the higher prices.

None of this means we should start hiring as many nurses as possible right now or that more nurses are always better. Rather, this indicates that the stakes are high if Hampton Roads does face a nursing shortage in the coming decade. Currently, health care facilities can solve staffing problems with shift adjustments and a few extra hires. However, a shortage of a few hundred or few thousand nurses across the region would exacerbate these problems and be daunting to solve quickly due to education lags and increased competition for nurses in rival facilities. This issue is worth discussing because the consequences of not being prepared could be dire.

Nursing Supply

Predicting the supply of a profession is notoriously difficult (note the big swing in the national projections from earlier), so we are going to look at the three main determinants of the quantity of nurses supplied: wages, program graduation rates, and retirements and migration.

The average real wage for registered nurses in Hampton Roads rose from \$64,000 in 2007 to \$67,000 in 2010, then declined to \$60,800 in 2013. For the lowest 10 percent of the wage distribution, real income has steadily declined since 2008 and is at \$43,200 currently. Nurses have lost a real dollar from their hourly wages since 2007, from \$30.50 to \$29.39 per hour. These results are largely consistent with Hampton Roads wage data for

dental hygienists, office support staff, education and library employees, and sales professionals. Despite the near-zero nursing unemployment rate, the downward-wage pressure points to labor market slack. If the average wages are falling because high-wage individuals are working less or retiring, then we might expect low wages (the bottom 10 percent) to increase to attract more new workers. The opposite is happening. As long as nursing wages are not rising, there is less incentive for more nurses to keep working or for potential nurses to enter our market.

Let's now look at new nurse production. Using National Council Licensure Examination data over the last five years, on average the Commonwealth each year has 3,300 successful examinees (average pass rate of 86 percent) and Hampton Roads has about 711 who pass the test (average pass rate of 82 percent). The DHP, in its total license report, notes that 29,800 licenses were issued over the last five years; however, among renewing licensees in the DHP survey, we only see 20,900 survey respondents reporting that they were licensed in that period. This discrepancy could be from workers dropping out of the nursing workforce, moving and renewing with a different state, or just not responding correctly. Using the group that continues to be licensed, 14,200 responded that they received their nursing education in Virginia.

This means that although 71.6 percent of nurses were trained in the Commonwealth, about 85 percent of the nurses trained in Virginia likely decided to stay locally. For Hampton Roads, about 70.4 percent were trained in Virginia. Given that over the last five years 2,700 local nurses were trained in Virginia and that Hampton Roads graduated 3,600 nurses, potentially 77 percent of our nurses have remained in the area. We need more demographic information to be certain of these numbers, but this is a good indicator that our region supplies most of its nursing needs.

Of all the supply considerations, retirement expectations worry industry watchers the most. In Graph 1, the expected retirements by five-year period are presented for full study. Cumulatively, about 12 percent of the current nursing workforce expects to retire in five years, 26 percent in 10 years and 50 percent in 20 years. The five-year spans with the most retirements are the 2020-25 and 2025-30 periods for all areas.

This may seem very sudden and a little scary, so let's digest the information. First, we do not have much historical data to see if retirements are accelerating or not. In 2013, statewide only 10 percent of the nursing workforce indicated plans to retire in five years. However, in 2010, more than 20 percent indicated plans to leave the profession in five years when responding to a differently phrased version of the question. Perhaps this amount of turnover is more common than we think. Nurses typically begin decreasing work hours after turning 55, and after 60 they work the fewest hours of all other workers, based on DHP calculations. We cannot be certain that all workers will wait to retire until 55, but over 90 percent of nurses have indicated they expect this to be true. **Virginia and Hampton Roads face a 15-year critical period of elevated turnover from about now until 2030. Virginia will need to replace about 27,750 nurses and Hampton Roads about 6,130, approximately 39 percent of current nurses for each group.**

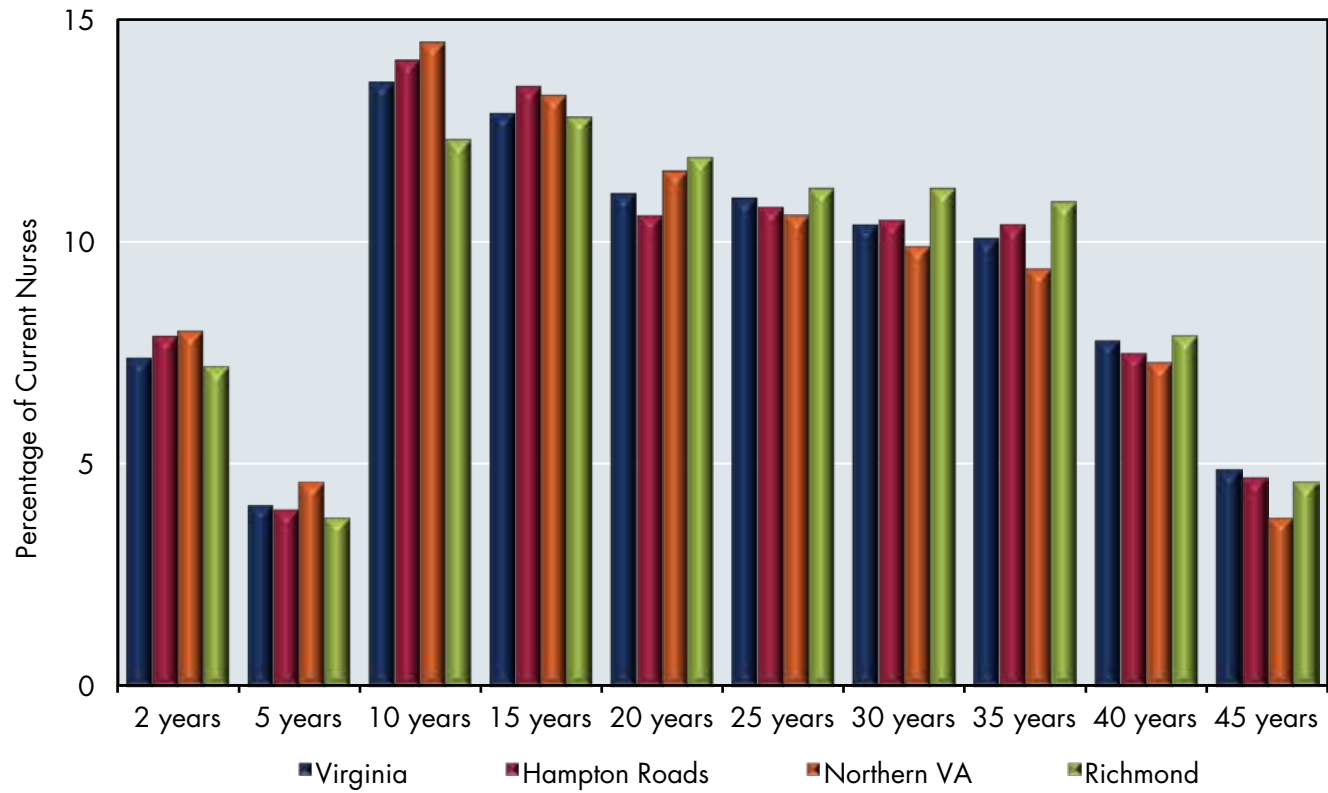
However, in the most recent five-year period, Virginia graduated 16,580 nurses, including 3,557 from Hampton Roads. As long as we do not lose any nursing schools (and none of them shrink), we can roughly expect to produce about 49,700 nurses in Virginia and about 10,700 locally over the next 15 years. Obviously, not all nurses will stay local or even in the profession, so using a conservative estimate of Virginia nurses who stay local and working, say 65 percent, we can expect that about 32,300 nurses will remain in Virginia, including 6,900 in our region. **Thus, our nurse supply estimates for Hampton Roads, based on retirements and local graduates, are 15,981 in 2020, 16,322 in 2030 and 17,619 in 2040. The big increase in the last decade comes from slowing retirements.**

Luckily, our area attracts nurses from other states and even other countries; more than 1,000 in the past five years have moved to our region. If we add a constant amount of "imported" nurses, say 1,000 every five years, to our local-only supply, then we have the following for an open-supply estimate: 16,981 in 2020, 19,322 in 2030 and 22,619 in 2040. The local and open-supply values are presented in Table 5 and Graph 2.

The takeaway: We should be able to manage the retirements if our nursing schools are filled *and* we make it worthwhile for our nurses to stay local. We have the structure in place to maintain the status quo. Though, just to make this clear, we are not saying we should only employ local nurses; rather, we are pointing out that our region produces enough nurses to handle the critical period of retirements. Once we acknowledge a mobile labor pool exists from other states and countries, we can see that we are even better positioned to replace retiring nurses. However, the status quo will go out the window with the heightened demand that is coming, which is the topic we take up next. To meet the new demand, we will need some combination of nurse imports and an expansion of our nursing programs.

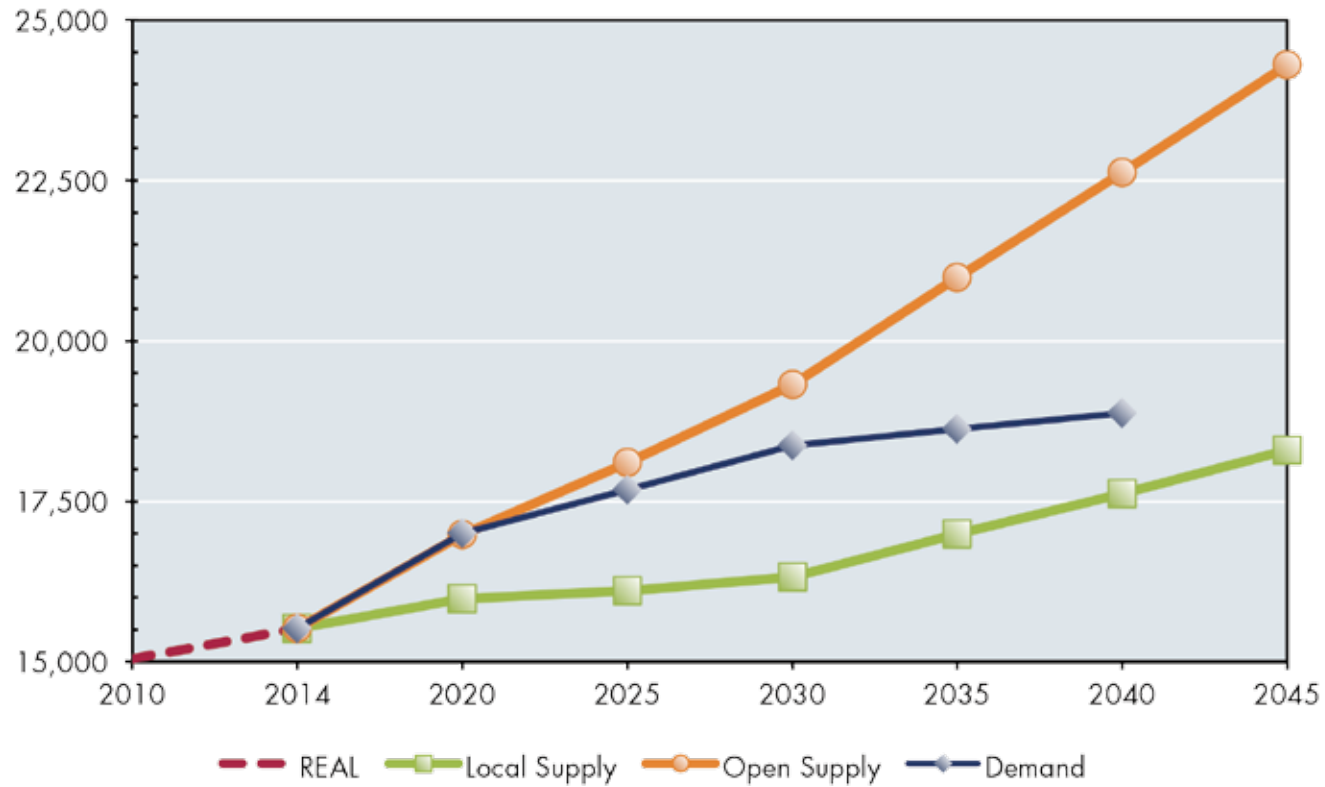


GRAPH 1
EXPECTED NURSE RETIREMENTS, 2014



Source: American Association of Colleges of Nursing, www.aacn.edu

GRAPH 2
PROJECTED SUPPLY AND DEMAND FOR HAMPTON ROADS NURSES



Source: Center for Economic Analysis and Policy, Old Dominion University, based upon American Association of Colleges of Nursing data

Nursing Demand

Now let's estimate the number of nurses our area will demand as various factors change over the next 20-25 years. But first, we need to think about what influences nursing demand and how we can measure this. **Our basic framework is that nursing demand rises with the population count and the populace's average age, but decreases as health care costs rise.**

We believe our framework is fairly self-evident, but to satisfy some burden of proof, we present some supporting information. We use standard age groups for our analysis: the young (those under 18 years), adults (those 18 to 64) and the elderly (those 65 and older).

When we make our predictions about the future, we will use the population projections by the Weldon Cooper Center's Demographics and Workforce Group. By 2030, they project that the Commonwealth population will increase by 20 percent and Hampton Roads by 12 percent. **For Virginia, the young population will grow by 15 percent, the adults by 10.8 percent and the elderly population by a staggering 80.9 percent. For Hampton Roads, the young population will grow by 3.6 percent, the adults by only 0.9 percent and the elderly by an even greater 89.5 percent.** The age group proportions for our area will go from 26.8 percent to 24.8 percent for the young, 61.7 percent to 55.6 percent for adults, and 11.5 percent to 19.6 percent for the elderly. We believe the shifting age demographics will cause the "average level of health" to decrease, so we expect an increase in demand for nurses. This is probably not a surprise, but seeing the numbers will help tune our understanding. For our area, the portion of nurses who primarily treat adults is 38 percent, followed by 15 percent for the elderly and 13 percent for the young, with the rest reporting equal time among groups. Using a quick "nurse time"-to-population ratio, adults use 0.62 and the young use 0.49 "units of nurse time," while the elderly use 1.30 units. Once the elderly population reaches 19 percent of the populace, around 25 percent of nurses might need to be devoted to elder care.

Another factor that may increase demand can be found in the Patient Protection and Affordable Care Act of 2010, widely expected to continue to increase insurance coverage and lower health care costs. We have no desire to debate the finer legal points or to issue definitive statements on its outcomes. For better or worse, we simply believe it will affect the area. From October 2013 to February 2015, more than 384,000 Virginia residents signed up for coverage under the federal marketplace, as Virginia chose not to establish its own state exchange. Hampton Roads and Richmond each had 64,000 signups (16.6 percent of the state total) and Northern Virginia (including Jefferson County, W.Va., due to reporting methods) had 151,000 (39 percent). With some back-of-the-envelope calculations, the Virginia and Hampton Roads uninsured rate could have fallen from 12 percent in 2013 to 8 percent now for each area. For Richmond, the rate could be about 7 percent and for Northern Virginia between 6.5 percent and 7 percent. This represents about a one-third decrease in the uninsured. In 2012, the Kaiser Family Foundation issued a report authored by members of the Urban Institute that projected Virginia uninsured numbers falling by 50 percent if all states adopted Medicaid expansion and 30 percent if no states adopted. Given the mix of state decisions, our quick numbers corroborate their projections.

Insurance is important for health care demand because it dramatically decreases the cost to consumers. As more people obtain health coverage, more of the population is willing *and able* to consume more health care services. Thus, the Affordable Care Act's (ACA) increase in coverage should lead to more demand for nurses. However, the aspiration of the law is to help people seek preventive care rather than more expensive reactive care. If the ACA succeeds in increasing coverage, then nursing demand might decrease because people will be in better health. Nevertheless, in the short run, we expect increased coverage to increase health care demand.

A way to quickly check our framework is to compare ourselves to areas right now. We have calculated MSA group averages based on the variables discussed above, to see how Hampton Roads compares, using BLS and ACS data from 2012. Table 3 has many different avenues we could discuss, but rather than traveling each one, we will simply point out some helpful facts.

TABLE 3

COMPARING HAMPTON ROADS TO OTHER METROPOLITAN AREAS

MSA Groups	Count	POP	RNs	Avg RN Income	% Elderly	Male Unemployment Rate	Uninsured Rate	Poverty Rate	LO.Q.	RN/POP	RN/Elderly
Hampton Roads		1,706,816	12,840	\$61,333	12.6	7.9	11.5	13.1	0.88	0.75%	5.97%
All MSA Avg	395	491,879	6,498	\$65,193	14.2	8.8	14.1	16.8	1.14	1.32%	9.29%
Pop > 1 Million	27	2,459,299	21,427	\$69,840	12.7	8.2	13.4	14.3	1.02	0.87%	6.87%
High Avg RN Income	70	970,140	13,927	\$83,695	13.9	10.6	14.1	15.3	1.07	1.44%	10.32%
Low Avg RN Income	70	236,743	2,174	\$54,230	14.3	8.1	14.1	17.2	1.12	0.92%	6.44%
Near HR Avg RN Income	118	434,934	4,206	\$60,431	14.8	8.6	13.8	16.5	1.16	0.97%	6.54%
High Elderly Portion	57	316,706	2,999	\$62,232	19.3	10.7	14.2	16.5	1.24	0.95%	4.92%
Low Elderly Portion	65	780,565	6,410	\$67,855	10.4	8.0	16.0	18.2	1.01	0.82%	7.87%
Near HR Elderly Portion	23	576,490	5,608	\$67,600	12.5	7.3	12.7	15.1	1.03	0.97%	7.77%
High Male Unemployment Rate	58	331,246	2,458	\$67,585	15.9	13.6	16.8	19.5	1.16	0.74%	4.66%
Low Male Unemployment Rate	58	353,440	3,345	\$60,435	12.5	4.8	13.1	15.3	1.14	0.95%	7.55%
Near HR Male Unemployment Rate	32	612,723	5,972	\$65,978	13.1	7.9	12.8	15.9	1.17	0.97%	7.45%
High Insurance Coverage	79	491,725	5,954	\$64,313	14.4	7.2	7.8	13.4	1.17	1.21%	8.38%
Low Insurance Coverage	79	514,961	4,350	\$64,752	13.8	9.9	21.2	20.3	1.06	0.84%	6.13%
Near HR Insurance Coverage	17	885,015	6,935	\$63,648	14.0	8.0	11.5	15.0	1.07	0.78%	5.58%
High LO.Q.	71	255,520	3,813	\$62,419	15.5	9.0	14.2	17.6	1.63	1.49%	9.64%
Low LO.Q.	72	475,937	4,534	\$66,214	12.2	8.2	15.1	17.2	0.76	0.95%	7.79%
Near HR LO.Q.	33	516,058	6,089	\$68,106	12.7	8.5	13.8	16.9	0.88	1.18%	9.28%

Source: BLS, ACS 2012-2013

BLS nurse amount differs from DHP, as discussed earlier.

LO.Q. is Location Quotient, compares area nurse employment to national average.

"High" = Top 20%; "Low" = Bottom 20%; "Near HR" = +/- 3 units from Hampton Roads current.

Hampton Roads employs a higher-than-average amount of nurses yet pays below average – \$8,000 less than other large MSAs. Comparing high-paying areas to low-paying ones, the higher-paying areas employ more nurses *per capita and per elderly person*, but the lowest-paying areas do not differ that much from the more-average-paying areas. Perhaps nurse pay is not a major determining factor in nurse location outside of the top areas. However, while we pay less, our poverty, uninsured and male unemployment rates are lower than many other areas. Interestingly, areas with large populations of elderly residents have a lower *nurse per elderly person* rate than other areas, when we would expect the opposite. If elderly people need more health care, why do areas with high concentrations of elderly residents have relatively fewer nurses? Perhaps the elderly require more health assistants and specialist physicians, but not more nurses. Alternatively, these areas could provide health care more efficiently because they have adapted to their elderly clients. While we are confident that the aging of the population will have an effect, we should not assume the effects will be catastrophic or that we cannot adapt to a larger elderly population. A location quotient (LO.Q.) below 1 indicates an area has a smaller nursing sector than would be expected, based on national averages. MSAs have on average 14 percent more nurses than expected, but we have 12 percent fewer. One possible explanation is that our area has a more diversified economy (i.e., all levels of government and shipbuilding, plus the usual sectors), which could disrupt this value since we have more sectors in our economy.

So will Hampton Roads need more nurses?

Yes.

How many?

That is harder to answer.

We know that population increases, demographic changes, insurance expansion and cost changes will move in such a way that we will need more nurses. Using metropolitan area data from 2007 to 2012, plus the projected demographics changes, we have quantified some of the relationships

discussed above for Hampton Roads' future nursing needs to answer how many.

In Table 4, we calculate how the three primary variables will affect our nursing requirements. **Population has a 5:2 relationship with nurses, so for every 5 percent increase in population we will need 2 percent more nurses. By 2040, we expect the population to increase by 17 percent, so roughly we will need slightly more than 1,000 more nurses due only to population growth. The elderly portion of the population has a 5:1 relationship. Given that this group will almost double, we expect to need about 2,000 more nurses by 2040. The uninsured relationship is actually the largest at 5:3, but since there isn't much room for the uninsured rate to decrease, this might not cause too much change in nursing demand. If the uninsured rate decreases by 10 points, then we believe this could raise our nursing requirements by another thousand.** We found other relationships that increase or decrease our nursing needs, but the above were the most prevailing relationships.

We predict that Hampton Roads, based on current estimates, will demand 10 percent more nurses by 2020, 18 percent more by 2030 and 22 percent more by 2040. Based on DHP reported nurses, this will take our area from 15,514 to about 17,000 nurses in 2020, about 18,371 in 2030 and about 18,880 in 2040.

Supply and demand estimates are shown in Table 5 and in Graph 2. Using our estimate of 65 percent staying local (about 460), our area will face a "local" shortage for the next 15 years. We would need more than 85 percent to stay in the area to not face a shortage. Again, Hampton Roads cannot meet its demand using only local nurse production. But, once we allow nurses from other areas to fill positions, we can easily meet demand. If we hire 200 out-of-area nurses every year (1,000 every five years), then we are near equilibrium until 2030, when we begin to have large surpluses due to decreasing retirements. This is why we say Hampton Roads is well positioned for the future. **As long as our nursing programs remain**

healthy and our area remains attractive to job seekers, we should not face any major hardships due to the increased demand for nurses.

Remember, these values depend on the projections we have been discussing and the assumption that certain economic characteristics of our area remain stable over the next 20-25 years. If the elderly population somehow decreases or a shift in military presence occurs, then these projections would change dramatically. Finally, the model assumes that we will employ nurses exactly the same way for the next 20 years, which we believe is unlikely and unwise.

TABLE 4		
THE RELATIONSHIP BETWEEN DEMOGRAPHICS AND REGISTERED NURSES IN HAMPTON ROADS		
Current Amounts		
RNs	15,514	-
Population	1,716,624	-
Elderly Population	216,295	12.6%
Uninsured Population	214,578	12.5%
Population	Change	RNs Needed
1% Increase	17,166	63
15% Increase	257,494	949
Elderly Portion		
Increase to 15%	2.4%	616
Increase to 20%	7.4%	1,913
Uninsured		
Decrease to 7%	-94,414	542
Decrease to 2%	-180,246	1,034
Source: ACS 2014 and 2013, DHP 2015, SOTR Estimates 2015		

TABLE 5					
HAMPTON ROADS NURSING SUPPLY AND DEMAND PROJECTIONS					
	Local Supply	Open Supply	Demand	Net Local	Net Open
2015	15,514	15,514	15,514	0.0	
2020	15,981	16,981	17,000	-1,019	-19
2025	16,102	18,102	17,685	-1,584	416
2030	16,322	19,322	18,371	-2,048	952
2035	16,988	20,988	18,625	-1,637	2,363
2040	17,619	22,619	18,880	-1,260	3,740
Local Supply: expected retirements + predicted new local nurses Open Supply: local supply + 200 imported nurses per year Demand is estimated using MSA trends from 2007 to 2012					

Concluding Remarks And Policy Implications

We now present options for confronting the coming increase in nursing demand. These options are viable and practical, whether one believes that we have grossly underestimated or overestimated the future supply and demand. If we are underestimating our need, then use multiple options and go big. If we are overestimating, these options are still useful because they do not harm our area or the nursing market. Note that none of this is new thinking, and versions of these options are already being pursued. We are simply presenting the ideas worth considering going forward.

The **first** option is the easiest: Make nursing more desirable. Either increase the benefits of a nursing career or reduce the cost. The economic way to deal with a worker shortage is to increase the wage, as increasing wages communicates to the market a need for more nurses. However, as we found, high wages are not the strong signal we would expect. Higher wages may be more likely to convince local students to stay and outside nurses to enter only if they are already considering the area.

An alternative to higher wages is to decrease the cost of becoming a nurse through educational subsidies. From a nurse's point of view, or that of a business, this may be almost as good if not better. Businesses may like this because they are agreeing to a specific time of service rather than committing to a career's length of higher pay. Similarly, nurses could reduce their debt burden, allowing them more financial freedom. In Hampton Roads, 68 percent of all nurses under age 40 are paying off educational debt. Providing debt relief for continued service may keep current nurses working longer and future cost relief may lure more nurses to our area. This is probably the tactic that has been most widely used in the past, because it seems to work. The strategy, while effective, has an obvious delay in that prospective nurses must still go through a two- or four-year process to realize the payoff. If this strategy is to be used, then it must start soon and be maintained for a decade or longer.

However, employers can make the job better in other ways, such as improving worker safety; offering flexible hours (especially for parents), stress reduction programs and social and recreation activities; and encouraging increased communication with management. Services that let nurses know they are valued, such as providing balanced meals for those who work over a certain number of hours per week, could vastly improve worker morale. Creating a "happy" work environment is important no matter the job. These approaches will not solve a nursing shortage, but can help an individual facility maintain nurses (and certainly make nurses happier).

Second, invest in local nursing programs so that we will be able to produce more nurses. This investment could provide grants for more teaching space and/or more instructors to expand class capacity. Nursing programs consistently turn down many qualified applicants because of lack of space in their programs. A major one-time investment for expansion could permanently increase our output potential. Once larger, the programs should become self-sustaining via increased tuition. Such a grant would likely need to come from either wealthy donors or governments, as education administrators are unlikely to invest for fear of overcapacity and lack of will to spend heavily on nursing programs. Expansion grants should be available both to those taking traditional nursing routes *and* to individuals with LPN licenses and nurse assistants taking advancement programs. Most nurses will come from traditional degree programs, but by promoting LPN to RN advancement programs, we strengthen the social ladder and increase the diversity of experience for nurses.

We do not think that the solution is a continuous subsidy to nursing schools. Investing to expand programs is not the same as giving them an allowance. The goal is to allow programs to admit more qualified applicants, not provide a stream of funding so programs do not need to compete for applicants.

Third, keeping the education-to-employment pipeline clear should be a priority. Employers should be explicit in communicating their expected need for nurses, especially to nursing schools. Retirements can easily be anticipated and immediate demand can be calculated by employers, so there is no reason not to be open with education programs or the

Commonwealth's employment commission. About a third of nurses say they plan on increasing their education over the next two years, presumably for some level of career advancement. Employers should track career goals to identify those planning on retiring and hoping to advance. In an ideal world, employers would communicate directly with their staff about expectations, then announce their anticipated job openings to nursing programs. Already, nursing programs have practical components where students work at health care facilities, so a dialogue is clearly possible. Still, such communication is difficult and many people are uncomfortable being upfront with career goals. Clearer communication between the main suppliers and employers of nurses can only be a good thing.

Fourth, our predictions show that Hampton Roads must import nurses to help meet its demand, so local employers need to reach out to job seekers in other areas. This can be as simple as fostering contacts in out-of-area nursing schools. Employers will need to be proactive about hiring nurses, especially if other areas also expect shortages similar to ours. This suggestion to advertise open jobs is the least groundbreaking, but based on our estimates it could be the most important.

Finally, if we believe we will face a sea change in health care because of population dynamics, then we should rethink how service is provided. The biggest obstacle to overcoming problems is assuming the current way is the only way forward. Promote workplace innovation; reward suggestions that work. Many ideas will be bad, but do not let that stop the search for the good (or at least the *better than it was*). Of course, having said that, economists do not have the answer to what employers should do (for once!). Some suggest giving nurses more control over staffing decisions, increasing LPN responsibilities to distribute the workload or shifting more work to machines rather than humans. If the problem is that we might not have enough nurses, then the best solution may be the one that does not require more nurses to implement.

Over the next 15 to 20 years, Hampton Roads will undergo major demographic changes that will touch upon different aspects of our community. In health care, these changes will affect both supply and demand. Demand is expected to increase as the population both grows

and ages, as insurance coverage increases to near universal levels and, inevitably, as health technology makes health care more available. However, the large baby boom cohort of nurses is set to retire in the next 15 years with no large group to follow them, and there is little immediate indication that nursing schools will expand in time to replace these nurses and fill demand.

Luckily, our area is in a good position to face the coming market changes. We produce enough local nurses that the retirements should not be a problem if graduation rates stay constant. However, we will either need to entice nurses from other areas or expand our nursing school capacity by a few hundred to meet the new demand. We benefit from several advantages, including a healthy economy, a favorable geographic location and a constant influx of individuals who call Hampton Roads home.



