ADDRESSING THE PRIMARY CARE PROVIDER SHORTAGE

PREPARED FOR THE OFFICE OF THE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION

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Disclaimer:
The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, the University of Virginia, or by any other entity.

Honor Statement:
On my honor as a student, I have neither given nor received unauthorized aid on this assignment.

Acronyms

AACN	American Association of Colleges of Nursing
AAFP	American Association of Family Physicians
AAMC	Association of American Medical Colleges
ANA	American Nurses Association
APRN	Advanced Practice Registered Nurses
ASPE	Office of the Assistant Secretary for Planning and Evaluation
BSN	Bachelor of Science of Nursing
CCS	Partner Community-based Care Setting
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare and Medicaid Services
DY	Demonstration Year
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GME	Graduate Medical Education
GNE	Graduate Nurse Education Demonstration
HHS	US Department of Health and Human Services
HPSA	Health Professional Shortage Area
HRSA	Health Resources and Services Administration
MedPAC	Medicare Payment Advisory Commission
NPP	Non-Physician Practitioner
NP	Nurse Practitioner
PFS	Physician Fee Schedule

PA	Physicians Assistant
RN	Registered Nurse
SON	School of Nursing
VA	Department of Veteran Affairs

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Executive Summary

By 2030, it is estimated that there will be a primary care provider shortage in the United States which will likely have the most significant effect on rural areas. Considering approaches to mitigating and solving this primary care shortage is absolutely critical to ensure that the Baby Boomer generation, those with chronic conditions, and those living in rural areas are able to receive high quality care without driving long distances or waiting extensively.

Many of the reasons, such as physical or professional isolation, that physicians cite to explain why they choose not to practice in rural areas cannot be solved by Medicare. As such, this analysis will focus on nursing as a solution to the primary care shortage since first, problems inhibiting advanced practice registered nurses are issues Medicare can help address and second, advanced practice registered nurses are more likely than physicians to choose to practice in a rural area.

Through my analysis, I propose and examine three different policy alternatives:

1. Allow Medicare to Fund APRN University-degree Programs that Did Not Receive Funding Prior to 1989,
2. Reconsider APRN-provided PFS Services Medicare Cannot Cover Despite Falling Under a State's Scope of Practice Law, and
3. Expand the Graduate Nurse Education Demonstration.

I evaluated each of these options using four different criteria: cost, effectiveness at addressing the primary care shortage, geographic equity, and stances of stakeholders. Based on this analysis, I recommended Option 3: Expand the Nurse Education Demonstration. This policy alternative draws on the success of the Graduate Nurse Education Demonstration and proposes its reauthorization and expansion in order to collect further data. This policy option would require congressional approval and therefore, would entail the Office of the Assistant Secretary for Planning and Evaluation to submit a proposal through the Department of Health and Human Services' A-19 legislative proposal process for Option 3 to be included in the President's Budget.

Background

It is estimated that by 2030, there will be a primary care provider shortage in the United States which will likely have the most significant effect on rural areas. US health care spending accounts for close to 18 percent of Gross Domestic Product (GDP) (Centers for Medicare & Medicaid Services, 2018). In comparison to other member nations of the Organisation for Economic Co-operation and Development (OECD), the United States spends more per capita on health. On average, the US health expenditure per person is $9,892 per year which is more than double the average spent by the other 35 OECD countries ($4,003) (OECD, 2017). Despite spending significantly more, the US is lagging behind on access to care. One problem concerning access to care is that, even when people have insurance, they may still struggle to find a primary care provider. Across the US, a shortage of primary care providers has increased the time it takes for patients to see a physician by over 30 percent since 2014. It now takes approximately 24 days to schedule a new patient-physician appointment in a large city market and approximately 32 days in a mid-sized metro or smaller market (Merritt Hawkins Team, 2017). However, accessing providers is even more challenging in rural areas. Twenty-three percent of rural residents surveyed by the Pew Research Center reported that access to good doctors and hospitals is a major problem. In the same survey, only 18 percent of urban residents and nine percent of suburban residents had the same response (Tran, 2018). Rural residents have to travel farther to access hospital care. On average, it takes a rural resident about 17 minutes to reach the closest hospital. This is higher than the average travel time in suburban and urban areas, which are 12 minutes and 10 minutes respectively (Tran, 2018). Of course, there is variation in the distance rural residents have to travel in order to reach a hospital. The lowest percentile in the Pew Research Center survey reported traveling six minutes, while the highest percentile reported traveling more than half an hour.

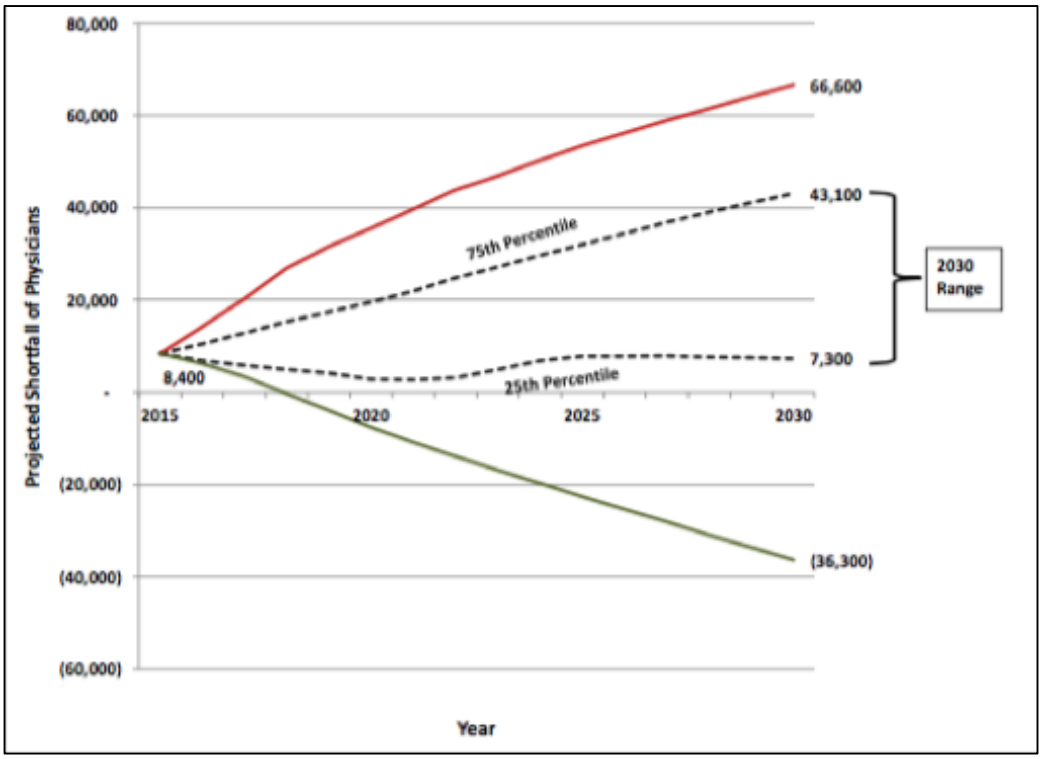
Limited access to care in rural areas is problematic because rural Americans are more likely to face inequities caused by the social determinants of health and longer wait times or travel distance can lead to worsened health outcomes. "Rural African Americans have higher rates of cancer morbidity and mortality than other rural residents and have higher rates of comorbid conditions," said Monica Baskin, a professor in the Division of Preventive Medicine at the University of Alabama at Birmingham School of Medicine (Warshaw, 2017). While mortality rates have decreased nationwide, they are declining at a slower rate in rural areas compared to non-rural areas (Warshaw, 2017). According to the Centers for Disease Control and Prevention (CDC), rural Americans are more likely to die from heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke than non-rural Americans (CDC, 2017a). Of these five, unintentional injury deaths were 50 percent higher in rural areas because rural residents have a higher risk of automobile accidents and opioid overdoses (CDC, 2017b). These major causes of death can be prevented, or when discovered early enough, can be treated and managed. In order to do so, the CDC recommends activities such as screening patients for high blood pressure, early detection and screening for cancer, and promoting physical activity and healthy eating, all of which fall under the scope of a primary care provider (CDC, 2017a; CDC, 2017b). In light of the role primary care plays in ensuring the health of the population, this analysis focuses on methods to increase the number of primary care providers and mitigate the expected 2030 shortage.

Literature Review

Health Professional Shortage Areas

The US Health Resources and Services Administration (HRSA) defines Health Professional Shortage Areas (HPSAs) as "having shortages of primary care, dental care, or mental health providers and may be geographic (a county or service area), population (e.g., low income or Medicaid eligible) or facilities (e.g., federally qualified health centers, or state federal prisons)" (HRSA, n.d.). An area receives an HPSA classification if the population-to-provider ratio is at least 3,500 to 1. The threshold is 3,000 to 1 if the area has also been classified as "unusually high needs" (HRSA, 2018). As of January 2019, HRSA had designated 7,027 HPSAs. Fifty-nine percent of primary medical HPSA designations are classified as rural, roughly 34 percent are classified as non-rural, and over six percent are classified as partially rural (HRSA, 2018).

Figure 1: Projected Total Physician Shortfall Range, 2015-2030



Source: IHS Inc., 2018

Physician Shortages

Currently, there are approximately 223,125 primary care physicians in the US (Petterson et al., 2018). The Centers for Medicare & Medicaid Services (CMS) estimates that by 2025, an additional 23,640 primary care physicians or full time equivalents (FTEs) will be needed (CMS, 2017). The Association of American Medical Colleges (AAMC) is another notable organization that commissions a physician workforce analysis each year. The 2018 report found that, by 2030, there could be a physician shortage in the US ranging from 42,600 to 121,300 (Figure 1). It also estimated that there could be a primary care physician shortage of between 14,800 and 49,300 (IHS Inc., 2018). Currently, approximately 10 percent of all physicians practice in rural areas (American Association of Family Physicians, 2014). As such, in rural areas, there are about 68

primary care physicians per 100,000 people. In comparison, there are about 80 primary care physicians per 100,000 people in urban areas (Petterson et al., 2013b).

Physicians cite professional isolation, lack of non-metropolitan experience, physical isolation, and an intent to pursue a specialty career as reasons not to practice in a rural area (Azer, Simmons, & Elliot, 2001; Brems et al., 2007; Colwill & Cultice, 2003; Weeks & Wallace, 2008). Medical schools have found evidence that having rural experience makes medical students more likely to choose to practice in a rural area (Pelletier, 2016; AAFP, 2014). Such experience includes attending a rural-based medical school, completing rural rotations in medical school or in a residency program, or coming from a rural background (AAFP, 2014). One study found that, on average, medical students are three times more likely to choose to practice in a rural area if they completed a rural rotation (Barrett, Lipsky, & Lutfiyya, 2011). Another analysis of 29 medical schools found that 44 percent of rural track medical students ended up in rural practices (Deutchman, 2013).

APRNs and PAs Shortages

According to the AAMC, the ratio of physicians to Advanced Practice Registered Nurses (APRNs) and Physicians Assistants (PAs) is decreasing. In 2015, the physician-to-APRN-to-PA ratio was 7 to 2 to 1. The AAMC estimates that by 2030, it will reach 3 to 5 to 1 (HIS Inc., 2018). This shows that the number of APRNs and PAs may be growing faster than that of physicians.

In order to put some of these numbers in context, here is a hypothetical example. In areas that are considered a HPSA, the primary care provider ratio is at least 3,500 individuals per primary care physician. Assuming that 40 percent of the primary care physician's patients visit their primary care physician at least twice per year (once for their annual check-up and once when they get sick) and the rest only visit once for their annual checkup, this primary care physician will have 4,900 appointment requests per year. There are 261 working days per year and, if you assume at least two weeks (10 working days off) for vacation, that number becomes 251 working days per year. This would result in close to 20 appointments per day or close to 3 patients per hour. This is a highly demanding workload and, as a result, many rural patients have difficulty booking appointments with primary care physicians in their area.

This hypothetical example feels familiar in many areas of Alabama and other highly rural states. Fifty-four of Alabama's 56 rural counties are considered at least a partial primary care shortage area. There are approximately 4.1 primary care physicians per 10,000 people in the state's rural counties (Specker, 2018). As a result, many rural residents are forced to travel longer distances or to an urban area to see a primary care physician. The Robert Graham Center estimates that by 2030, Alabama will need an additional 612 primary care providers in order to ensure an adequate level of primary care (Petterson et al., 2013a).

What is Driving the Shortage

There are three main potential drivers of the primary care provider shortage: a growing aging population, high demand for care for chronic conditions, and workforce retirement. In 2016, there were approximately 74 million Baby Boomers (Fry, 2018). First, in 2030, all of the Baby Boomers will be age 65 or older and over 20 percent of the population will be over the age of 65 (US Census Bureau, 2018; Colby & Ortman, 2014). As the Baby Boomer generation ages, it will increasingly

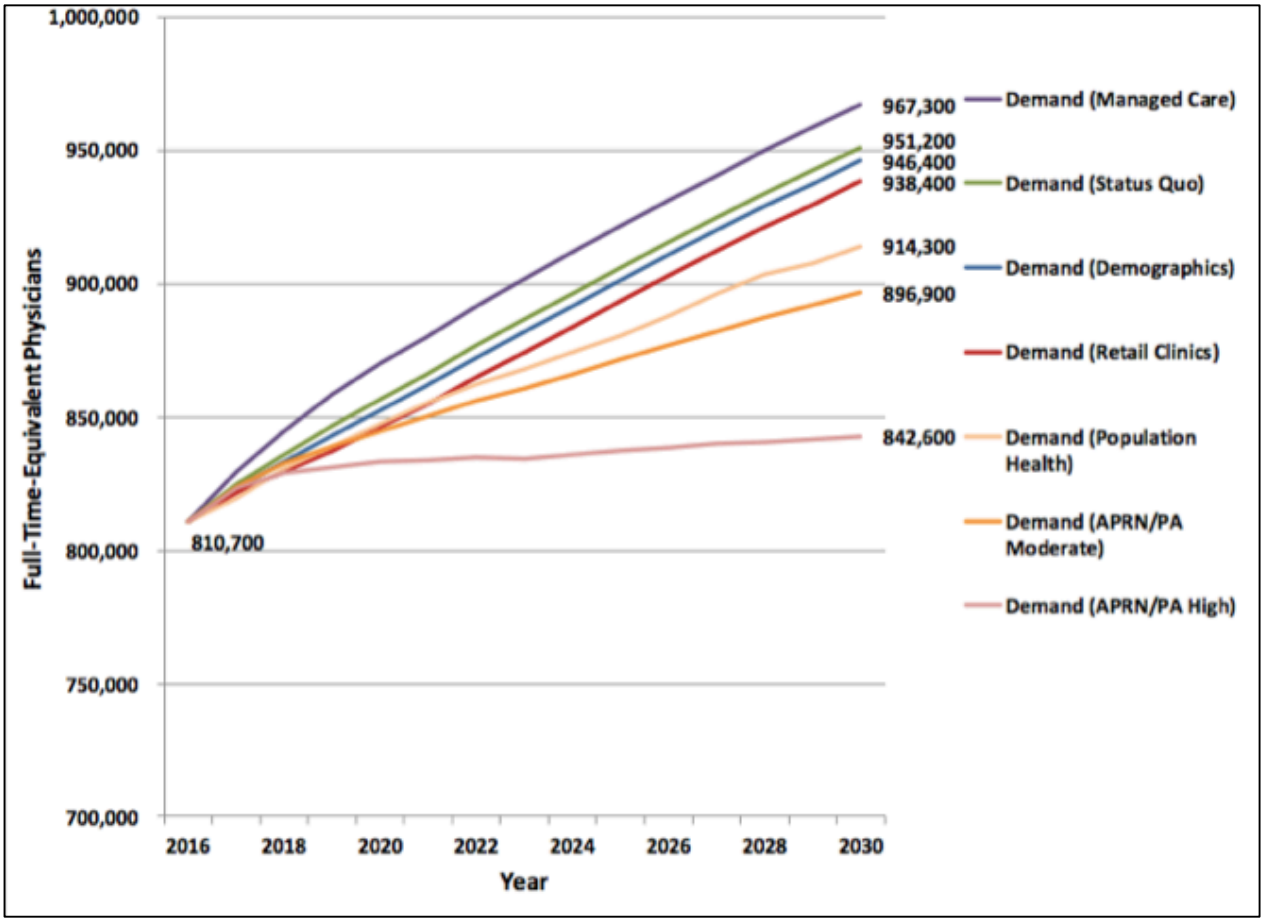
demand more health care services related to primary care and aging. Second, 60 percent of adult Americans have at least one chronic condition. Individuals are more likely to develop or experience worsening chronic conditions with age. Even though Americans with five or more chronic conditions make up only 12 percent of the population, they account for 41 percent of total health care spending, which reflects their high demand on the health care system (Buttorff, Ruder, & Bauman, 2014). The effect of both the aging Baby Boomers and low-income high utilization of health care may have a greater effect on rural areas. This is because rural Americans tend to be older, low-income, have poor or no health insurance coverage, and have higher rates of cigarette smoking and obesity (Baernholdt et al., 2012; Burton et al., 2013; Moy et al., 2017). Third, the retirement of physicians is concerning in all medical specialties. Ten percent of the active physician workforce is between the ages of 65 and 75 years old and 26 percent of the workforce is between the ages of 55 and 64 years old (IHS Inc., 2018). This means that in less than 10 years, one-third of the active physician workforce will be over the age of 65, the majority of whom, will likely choose to retire (Mann, 2017). This trend is troubling because it will only exacerbate the existing physician shortage since the supply of doctors is expected to increase only by seven percent (Cheney, 2011).

Role of Non-Physician Practitioners in Rural Areas

Increased waiting times, avoidance of care due to provider shortages, and increased distances to see a provider could all lead to negative health outcomes. In order to prepare for the effects of a physician shortage, especially in rural areas, non-physician practitioners (NPPs) can play an important role in the provision of primary care. Increasing the use of NPPs, such as nurse practitioners (NPs), could help alleviate the overall strain of a future primary care provider shortage. In fact, many patients end up seeing NPPs, such as a physicians assistant (PA) or some type of an APRN, for example, a NP.

In 2011, 14 percent of Medicare beneficiaries saw a PA or NP for all of their primary care and 24 percent saw a PA or NP for some of their care (Medicare Payment Advisory Commission, 2012b). It is important to note that while NPPs can fill the need for primary care physicians, there may not be a sufficient number of NPs and PAs to make up completely for the physician shortage (MedPAC, 2012a). However, the AAMC found through its models that maximizing the use of NPPs in a "high use" scenario resulted in a decreased physician demand of over 108,000 physicians (See Figure 2) (IHS Inc., 2018). In addition, in 2013, HRSA estimated a primary care physician shortage and found that, by 2020, there could be a shortage of 20,400 primary care physicians. However, with the full use of NPs and PAs, the shortage decreases to 6,400 physicians (Heisler et al., 2018). Thus, NPPs can play a considerable role in addressing the primary care provider shortage.

Figure 2: Projected Total Physician Shortfall Range, 2015-2030



Source: IHS Inc., 2018

Nurses as Primary Care Providers

There are over 270,000 NPs licensed to practice in the US (American Association of Nurse Practitioners, 2019). Close to 90 percent of NPs are educated in primary care and about 75 percent of active NPs work in primary care (AANP, n.d.a). Nationwide, 18 percent of NPs practice in rural areas (Pohl et al., 2018; AANP, n.d.a). NPs account for over 25 percent of rural primary care providers (AANP, n.d.a). Vermont has the highest percentage of NPs in rural areas (56 percent) and South Dakota is the second highest with 50 percent practicing in rural areas (AANP, n.d.a).

Evidence shows that the quality of primary care provided by APRNs is as good as that provided by physicians (Office of Technology Assessment, 1986). A randomized controlled trial with over 1,300 patients did not find any statistically significant difference between the health status of patients who saw an NP and those who saw a physician. The researchers used patient interview data, health status, and physiological tests (Mundinger et al., 2000). Another study conducted by University of Maastricht researchers also found that NPs provided quality of care similar to that of physicians (Dierick-van Daele et al., 2009). Some studies have found that NPs provided better care than physicians (Ohman-Strickland et al., 2008; Seale, Anderson, & Kinnersley, 2006; Wilson

et al., 2005). It is relevant to note that the Ohman-Strickland et al. study compared the quality of diabetes care at physician practices with and without NPPs (2008).

Two major barriers to APRNs acting as a substitute for primary care physicians are scope of practice limitations and the size of nursing schools.

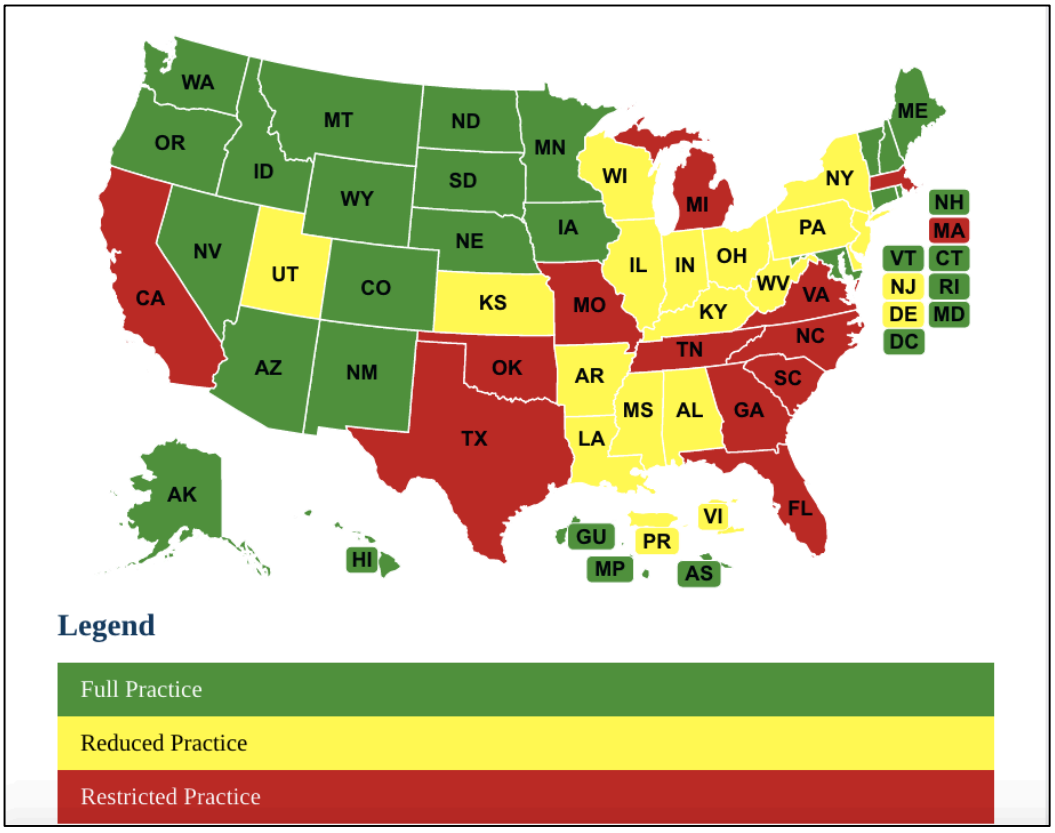
Scope of Practice Limitations

Scope of practice refers to the legal limit to the services and actions a health care practitioner can perform. Since the role of a PA is based on a physician-led team, PAs must practice under a physician's supervision. The level of supervision can vary by state or even within a state since some states allow scope of practice to be determined at the practice level (Adams & Markowitz, 2018).

Recently, many states have chosen to extend the scope of practice for NPPs. Currently, NPs have full practice authority in 21 states and the District of Columbia. See Figure 3 for a map of the NPs' practice environment by state. In states that grant NPs full practice authority, NPs are able "to evaluate patients; diagnose, order and interpret diagnostic tests; and initiate and manage treatments, including prescribing medications and controlled substances, under the exclusive licensure authority of the state board of nursing" (AANP, n.d.b). In April 2018, Virginia passed a law that allows NPs to practice without a physician's supervision if they have at least five years of full-time clinical experience under physician supervision (McGraw, 2018). This law did not grant NPs prescribing authority (Scope of Practice Policy, n.d.). The American Association of Nurse Practitioners does not recognize Virginia as a full practice authority state because nurses are regulated jointly by the Board of Nursing and the Board of Medicine (AANP, n.d.b).

Because most state legislatures determine scope of practice for NPPs, lobbying can have an influence on policies regarding the level of authority granted to NPPs. The main opponents to extending NPs' scope of practice are physician associations, such as the American Medical Association (AMA), the American Academy of Family Medicine (AAFM), and the American Academy of Family Physicians (AAFP) (American Medical Association, 2018; Jaspen, 2017; Knestrick, 2017). Physicians' groups have also formed a coalition called the Scope of Practice Partnership (SOPP). Its purpose is to prevent the expansion of NPPs' authority (AMA, 2018). Their primary argument is that the NPs receive less education than physicians (5.5-7 years versus 11 years) and that this results in poorer quality of care, as well as placing patients at risk (American Academy of Family Physicians, 2012; American Medical Association, 2018). However, evidence does not support these claims and actually indicates that NPs provide the same level of care as that provided by primary care physicians (Munidnger et al., 2000; Ohman-Strickland et al., 200; Seale, Anderson, & Kinnersley, 2006; Wilson et al., 2005).

Figure 3: State Practice Environment



Source: American Association of Nurse Practitioners, n.d.b

In 2016, the Department of Veteran Affairs (VA) published a Final Rule granting full practice authority to three types of VA APRN employees: Certified Nurse Practitioner, Nurse Specialist, and Certified Nurse-Midwife (81 Fed. Reg. 90198, 2016). This means that, even if a state restricts APRNs' practice authority, APRNs have full scope of practice on VA cases. However, the VA will recognize states' restrictions on APRNs' authority to administer and prescribe controlled substances (VA, 2016). When the rule was first proposed by the VA, the AMA issued a statement opposing it (AMA, 2016). During the comment period, the VA received over 45,000 comments in support of full practice authority for VA APRNs (81 Fed. Reg. 90198, 2016). It received over 100,000 comments opposed to full practice authority for VA Certified Nurse Anesthetists, which were ultimately excluded from the Final Rule (81 Fed. Reg. 90198, 2016). In his former role as the VA Undersecretary for Health, Dr. David Shulkin stated that this regulation would improve the VA's ability to provide "timely, efficient, effective and safe primary care" (VA, 2016).

Because of the evidence indicating that APRNs are capable of providing quality primary care to patients, it appears as if policies expanding APRNs' scope of practice may be reasonable approaches to addressing the primary care provider shortage. In fact, many states and the VA have chosen to expand APRNs' scope of practice despite concerns from physicians' groups. Beside opposition from physicians' advocacy groups, another barrier to APRNs filling the gap in primary care providers is the reduced capacity of nurse training programs due to funding and resource concerns.

Nurse Training Programs' Size Limitations

In 2014, total enrollment in all baccalaureate nursing programs was over 320,074 and total enrollment in Master programs was 113,788 (JONAS Philanthropies, 2015). The American Association of Colleges of Nursing (AACN) reported that, in 2016, baccalaureate and graduate nursing programs were forced to refuse 64,067 qualified applicants because of faculty shortages, budgetary constraints, clinical sites shortages, and problems with classroom space (AACN, 2017). Graduate degree nursing programs turned away close to 11,000 qualified individuals, which is approximately ten percent of total applicants, because of these limitations (AACN, 2017). In comparison, 94 percent of fourth year medical students participating in the National Residency Matching program were matched to postgraduate year one residency positions in 2017 (Murphy, 2018).

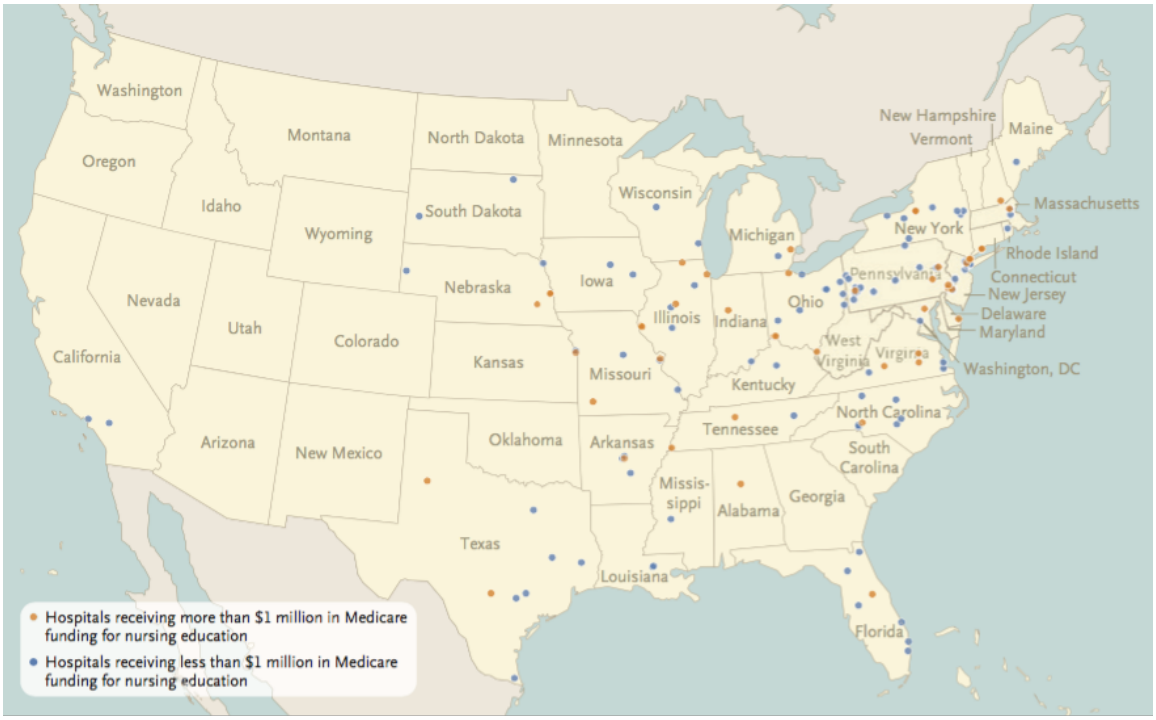
Nursing school faculty shortages may be due, in part, to less competitive salaries. In 2016, nurse practitioners made roughly $97,000 annually, while assistant professors in nursing education with a Master degree made, on average, a little over $78,000 per year (AACN, 2017). The AACN posits that qualified individuals enter private practice rather than teach because of this salary difference. In addition, nursing schools face the problem of aging faculty. One-third of both baccalaureate and graduate nursing programs' faculty are expected to retire by 2025, which will only exacerbate the existing faculty shortage. Another issue regarding nursing faculty is that 138 nursing schools have indicated that they do not have any vacant full-time teaching positions, although they need to create them in order to accommodate student demand (Li, Turinetti, & Fang, 2018). This could be because of budgetary restrictions, which will be discussed further in the next section. It is important to address the issue of faculty shortages because it is affecting the number of APRNs entering the workforce. Moreover, increasing the number of individuals with a Master degree or Doctoral degree in nursing could help address the faculty shortage by increasing the replacement work pool.

Medicare Funding of Nursing Training Programs

Since the program began, Medicare has helped defray hospitals' costs of educating physicians, nurses, and other types of health professionals. However, Medicare reimburses for post-graduate physician programs differently than nurse training programs. For predominantly historical reasons, the majority of Medicare funding for nurse training goes to hospital-operated nursing diploma programs. This rule does not apply to medical residency programs. This is a problem because less than five percent of registered nurses (RNs) receive training from a non-university associated program (Aiken et al., 2018). As a result, Medicare's reimbursement for nurse training programs has fallen from $174 million in 1991 to $122 million in 2015 (Aiken et al., 2018). The majority of RNs receive a Bachelor of Science in Nursing (BSN) from a university-degree program. CMS does not provide funding for university-degree nursing programs unless they received nurse training funds in 1989 (66 Fed. Reg. 3357, 2001). All APRN programs are university-degree programs, the vast majority of which did not exist in 1989, therefore making them ineligible for Medicare funds (Aiken et al., 2018). As a result of these Medicare regulations, Illinois, Missouri, Ohio, New York, Pennsylvania, and Virginia receive the majority of Medicare nurse training funds (53 percent in 2015) (Aiken et al., 2018). See Figure 4 for a map of hospitals receiving Medicare reimbursement for nurse training.

The other major federal funding source for nurse training programs is through Title VIII of the Public Health Service Act. In 2017, Title VIII funding for nurse training programs totaled $146 million (Aiken et al., 2018). Title VIII has been used to establish workforce diversity grants, student loan programs, and scholarship programs (American Organization of Nurse Executives, 2014).

Figure 4: Geographic Distribution of Hospitals Receiving Medicare Reimbursement for Nurse Training, 2015



Source: Aiken et al., 2018

Graduate Medical Education

In comparison, Medicare spends roughly $15 billion each year on Graduate Medical Education (GME) for physician residency training programs (Aiken et al., 2018). Federal funding for GME is approximately 78 percent of government health workforce funding (Heisler et al., 2018). Unlike Medicare's funding for nurse training, Medicare's GME funds can go toward residency programs associated with a university. Direct Graduate Medical Education (DGME) payments can be used to pay for costs directly related to teaching residents, such as teacher salaries, residents' salaries, and building maintenance (AAMC, n.d.). In FY 2015, there were roughly 85,712 to 87,980 FTE DGME spots. Medicare paid $112,000 to $129,000 per resident trainee (Heisler et al., 2018). The range in number of trainees is due to different estimates by the Congressional Research Services and the Government Accountability Office. This difference also affects the estimated amount Medicare paid per resident trainee (Heisler et al., 2018).

Medicare Reimbursement for Services Provided by APRNs

Medicare uses the physician fee schedule (PFS) to determine the rate at which physicians will be reimbursed for their services. Medicare pays 80 percent of the PFS rate and the Medicare beneficiary pays 20 percent. Medicare reimburses APRNs at 85 percent of the physician fee schedule rate (CMS, 2016). Medicare pays 80 percent and the beneficiary pays 20 percent of the 85 percent of the PFS rate. This means that for a service provided by a physician with a PFS rate of $1,000, Medicare would pay $800 and the beneficiary would pay $200. If that service was provided by an NP, Medicare would pay $680 and the beneficiary would pay $170.

There are some services, such as the prescription of home health care, that Medicare will reimburse if provided by a physician but will not if it is provided by a NP. In 2014, the American Nurses Association (ANA) and American Association of Nurse Practitioners (AANP) contracted Dobson DaVAnzo and Associates to assess the impact of reimbursing NPs for the prescription of home health care. Using the 2014 PFS, the rate for a physician to certify a Medicare home health episode was $53.38 and the rate for recertification was $41.20. Presuming the 2014 PFS rates, the report concluded a ten year (2015 - 2024) savings estimate of $252.6 million (Dobson & El-Gamil, 2014).

Graduate Nurse Education Demonstration

Section 5509 of the Patient Protection and Affordable Care Act of 2010, Pub. L. 111-18 amended the Social Security Act by adding 42 USC 1395ww note in order to establish the Graduate Nurse Education Demonstration (HHS, 2018). Because the Demonstration was authorized under Section 5509, rather than Section 3021, if HHS wanted to expand or reauthorize the Demonstration past the four-year period, it would need congressional approval.

In 2012, CMS announced $200 million in funding for a four-year demonstration to increase the number of APRNs. The total estimated cost to CMS for Demonstration Year (DY) 2012 to DY 2015 was over $120.47 million (CMS, 2018). Total per year payments to the hospitals ranged from $17.87 million to $41.82 million, which fall below the statutorily authorized amount of $50 million per year (HHS, 2018). The Demonstration included five eligible hospitals in five different states: Scottsdale Health Care Medical Center (Arizona), University of Pennsylvania Hospital (Pennsylvania), Memorial Hermann-Texas Medical Center Hospital (Texas), Duke University Hospital (North Carolina), and Rush University Medical Center (Illinois) (Figure 5). CMS reimbursed the five hospitals' reasonable costs for providing clinical training for APRN students. In order to participate in the GNE Demonstration, the hospitals had to work with accredited schools of nursing and non-hospital community-based care settings (HHS, 2018). Two of the five hospitals, Rush University Medical Center and Scottsdale Healthcare Osborne Medical Center, included rural care settings. Further details about each eligible hospital's network, such as total cost, can be seen in Figures 5 through 7.

The 2017 report to Congress indicates an increase in APRN enrollment and graduation. Enrollment in GNE schools of nursing increased by about 87 students per year, while non-GNE schools of nursing saw an enrollment increase of 28 students per year (Department of Health and Human Services, 2018). The total number of additional APRN students who graduated ranged from about 2,098 to 4,265 (Figure 7). The difference in numbers is because CMS looked at three different data sources (Figure 7). CMS estimated that the training for each APRN program graduate ranged from $28,247 to $57,434 (Department of Health and Human Services, 2018). This

is significantly less than the average annual cost for training a primary care resident ($157,602) through CMS' Teaching Health Center program (Aiken et al., 2018) or in comparison to Medicare's per resident GME payment, which ranged from $112,000 to $129,000 in FY 2015 (Heisler et al., 2018).

Figure 5: Summary of Characteristics of the GNE Demonstration

	Duke University Hospital	Hospital of the University of Pennsylvania	Memorial Herman-Texas Medical Center	Rush University Medical Center	Scottsdale Healthcare Osborne Medical Center
Partner Hospitals	5	8	2	3	4
Partner Schools of Nursing	1	9	4	1	4
Partner Community-Based Care Settings (CCS)	More than 150 CCS, affiliated practice primary care network, community clinics, free clinic, other CCS	More than 150 hospital- and non-hospital-affiliated CCS, stand nurse-managed primary-care clinics, FQHCs	More than 150 CCS, clinics surrounding SONs, FQHCs, physician group primary-care practices, hospice, home health	25 CCS in greater Chicago area and adjoining rural counties; initially 5 large community organizations	More than 1,000 CCS, FQHCs, RHCs, primary-care practices, nurse-run clinics, home health, long-term care
Geographic Area	Regional, generally within approximately a 60-mile radius	Greater Philadelphia area with regional reach; 44 northern and central counties served by 1 partner	Southeastern Texas, near the Gulf Coast	Greater Chicago area and adjoining counties in Illinois	Large region across Arizona, other southwest border states, and part of Mexico
APRN Specialty	NP, CNS, CRNA	NP, CNS, CRNA, CNM	NP, CRNA	NP, CNS, CRNA	NP, CNS
Total Payment	$10,0696,200	$42,942,600	$35,750,600	$9,243,400	$21,841,700

Source: HHS, 2018

Figure 6: Total CMS Payments to the GNE Network by Demonstration Year (DY)

GNE Demonstration Network	Audited Cost			Budgeted Cost	Total Payment
	DY1	**DY2**	**DY3**	**DY4**	**DY1-4**
Duke University Hospital	$1,478,100	$2,215,400	$3,591,700	$3,411,000	$10,696,200
Hospital of the University of Pennsylvania	$6,426,000	$9,749,400	$10,676,600	$16,090,600	$42,942,600
Memorial Hermann-Texas Medical Center	$4,928,600	$8,409,100	$11,001,600	$11,411,300	$35,750,600
Rush University Medical Center	$2,035,800	$2,356,400	$2,103,300	$2,747,900	$9,243,400
Scottsdale Healthcare Osborn Medical Center	$3,005,000	$4,852,900	$5,821,400	$8,162,700	$21,841,700
Total Payment	$17,873,500	$27,582,900	$33,194,600	$41,823,500	$120,474,500

Source: HHS, 2018

Figure 7: Cost to CMS for Supporting an Incremental APRN Student to Graduate

	Estimate 1	Estimate 2	Estimate 3
Total cost of the GNE demonstration project (DY1 - DY4)	$120,474,500		
Estimated number of additional APRN student graduates	4,264.7	3,832	2,097.6
Data Source	Audit data for GNE SONs	AACN survey data for GNE SONs	AACN survey data for GNE and non-GNE SONs
Cost to CMS per APRN student	**$28,249**	**$31,439**	**$57,434**

Source: HHS, 2018

Evaluative Criteria

The mission of the Office of the Assistant Secretary for Planning and Evaluation (ASPE) is to advise:

> the Secretary of the Department of Health and Human Services (HHS) on policy development in health, disability, human services, data, and science; and provides advice and analysis on economic policy. The ASPE leads special initiatives; coordinates the Department's evaluation, research, and demonstration activities; and manages cross-Department planning activities such as strategic planning, legislative planning, and review of regulations. Integral to this role, The ASPE conducts research and evaluation studies; develops policy analyses; and estimates the cost and benefits of policy alternatives under consideration by the Department or Congress (ASPE, n.d.).

ASPE has five main offices that support its work. They are (1) the Office of Disability, Aging and Long-term Care Policy, (2) the Office of Health Policy, (3) the Office of Human Services Policy/ HHS' Chief Economist, (4) the Office of Science and Data Policy, and (5) the Office of Planning and Policy Support (ASPE, n.d.). It is anticipated that this analysis will assist ASPE in its research and legislative planning efforts. The goal of this paper is to evaluate the potential impact of these policy options using the following criteria: (1) Cost, (2) Effectiveness at Addressing the Primary Care Shortage, (3) Geographic Equity, and (4) Stances of Relevant Stakeholders.

(1) *Cost - 40 percent*

Cost is an important criterion to include in this analysis. This is because national health expenditures as a percentage of GDP are rapidly increasing. In 2017, national health expenditures increased by almost four percent. As a result, this brought the total national health expenditures to $3.5 trillion and accounted for close to 18 percent of GDP. Medicare already accounts for a significant fraction of national health expenditures. In 2017, Medicare spending grew by about three percent. As a result, this brought total Medicare spending to $581.9 billion, which accounted for 17 percent of national health expenditures (CMS, 2018). The amount of money that Medicare devotes toward nurse training programs currently exceeds $100 million. If CMS plans on increasing the amount it spends on nursing programs, it will want to take into account the monetary cost of each proposal. This criterion has a weight of 40 percent.

(2) *Effectiveness at Addressing the Primary Care Shortage - 30 percent*

Policymakers are worried by the increasing primary care physician shortage. Medicare is particularly concerned because by 2030, all of the Baby Boomer generation will be age 65 or older. A shortage in primary care providers could seriously affect the quality of care and individuals' access to care. Delayed care or an access problem is particularly problematic in the case of older

beneficiaries with multiple chronic conditions requiring constant management. This is why it is important to assess whether a policy option has the potential to create more primary care providers and thereby, alleviate the strain caused by the physician shortage. Effectiveness at addressing the primary care shortage will be measured by the number of additional APRNs created. This criterion has a weight of 30 percent.

(3) *Geographic Equity - 20 percent*

Approximately 59 percent of HPSAs are classified as rural, which means that there are more rural than urban HPSAs. This is concerning because the population in rural areas tends to be older and low-income, both of which typically demand more from the health care sector. Thus, it is of interest for CMS to ensure that the ratio of the population to primary care provider is close to equitable between urban and rural areas. Geographic equity will be measured based on the number of additional APRNs who choose to practice in a rural area. This criterion has a weight of 20 percent.

(4) *Stances of Relevant Stakeholders - 10 percent*

When considering new policy ideas, it is important to analyze the expected stances of relevant stakeholders because they represent the expertise and opinions of those affected by these policies. In addition, for legislative proposals, the role these groups play when lobbying Congress can have a significant impact on whether a bill is passed. For this analysis, I will look at the stances of the American Nurses Association (ANA), American Association of Nurse Practitioners (ANP), American Association of Colleges of Nursing (AACN), American Association of Family Physicians (AAFP), the American Medical Association (AMA), and the Centers for Medicare & Medicaid Services (CMS). For my stakeholder analysis, I have assigned the following weights to each stakeholder based on level of political advocacy and relevance to this analysis:

- ANA = 0.5
- AANP = 0.5
- AACN = 2
- AAFP = 1
- AMA = 2
- CMS = 2

Stances of stakeholders will be scored in the following manner:

- No support - 0 points,
- Low support - 1 point,
- Medium support - 2 points, and
- High support - 3 points.

Intermediate categories, such as Low-medium do exist and result in half point scores. For example, Low-medium support is worth 1.5 points. This criterion has a weight of 10 percent.

Option 1: Allow Medicare to Fund APRN University-degree Programs that Did Not Receive Funding Prior to 1989

This option would allow Medicare to fund APRN university-degree programs that did not exist prior to 1989, which it currently cannot do. Increasing the number of NPs could help address future shortages of primary care providers. HRSA's models found that the full use of NPs and PAs caused the physician shortage to decrease from 20,400 to 6,400 physicians (Heisler et al., 2018; HIS Inc., 2018). Defraying the cost of APRN training programs would make it easier for many nursing schools to expand the number of applicants they accept and ideally make the programs more affordable to students. As stated previously, according to the AACN, nursing programs have had to turn down qualified applicants because of budgetary and clinical limitations, as well as faculty shortages.

Currently, Medicare is unable to provide funding for university-degree nursing programs unless they received nurse training funds in 1989. All APRN programs are university-degree programs and the majority did not exist before 1989, thus making them ineligible for Medicare funding (66 Fed. Reg. 3357, 2001). Medicare funding for medical residency programs for physicians, even those associated with a university, helps pay for the teaching costs hospitals incur when training residents. These funds can be used to pay for resident stipends and faculty salaries. Allowing Medicare to fund APRN university-degree programs would be a significant help in alleviating the training cost on schools and enable them to admit more students.

Cost

Currently, Medicare spends approximately $15 billion per year to support GME (Aiken et al., 2018). It spends around $112,000 to $129,000 per resident trainee each year (Heisler et al., 2018). Training an APRNs is dramatically less costly than training a medical resident. The cost per individual graduate of the GNE program ranged from $28,248 to $57,434 for a four-year period (HHS, 2018). CMS calculated this by dividing the total estimated cost to CMS for the four-year period by the range in estimated number of graduate APRN students (HHS, 2018). This means that it costs $7,062 to a little over $14,358 per APRN graduate per year.

Using these numbers and the total number of Master of Nursing students in 2014, which was 113,788, the total cost to train APRN students would range from about $0.8 billion to $1.63 billion per year. See Appendix A for the full calculations.

Effectiveness at Addressing the Primary Care Shortage

Increasing funding for graduate nurse training programs will eliminate the number of qualified applicants turned down due to institutional limitations (10 percent) or at least create parity with the number of medical students who are not matched with a residency program (six percent). Option 1 could result in an increase in APRN students ranging from 4,552 to 11,379 (see Appendix X). Based on CMS' estimate that by 2025, the US will need an additional 23,640 primary care physicians or full time equivalents, this option would help account for 19 percent to 48 percent of the needed health care workforce, assuming all of the students complete a graduate program. See Appendix A for the full calculations.

Geographic Equity

Approximately 18 percent of APRN graduates choose to practice in a rural area (Pohl et al., 2018; AANP, n.d.a). This means that, in the status quo, approximately 20,482 graduates per year will likely end up practicing in such communities. As a reminder, Option 1's intervention will probably result in an increase of about 4,552 to 11,379 APRN students per year. Of these new APRN students, roughly 819 to 2,048 might choose to practice in a rural area. As such, in Option 1, we may see a total number of APRNs choosing to practice in a rural area ranging from about 21,301 to 22,530 per year. See Appendix A for the full calculations.

Stances of Relevant Stakeholders

Option 1 receives a total score of 13.5 out of 24 points. This option received the lowest stances of relevant stakeholder score. The total point value is a reflection of No-low support from physicians' groups, High support from nurses' groups, and Low-medium support from CMS. In order to see the full breakdown for each stakeholder, see Appendix C.

Option 2: Evaluate APRN-provided PFS Services Medicare Cannot Cover

This option involves Medicare reevaluating policies that prevent it from reimbursing NP-provided procedures even if a state's scope of practice laws do not inhibit the NP from performing these. Enabling Medicare to reimburse for NP-provided services, which it previously could not do, would require Congress to amend Title VIII of the Social Security Act.

In 2016, the VA published a Final Rule granting full practice authority to three types of VA APRN employees: Certified Nurse Practitioner, Nurse Specialist, and Certified Nurse-Midwife (81 Fed. Reg. 90198, 2016). Since NPP scope of practice laws are determined at the state level, it would be challenging for a similar law to be passed regarding APRNs or other types of NPPs providing care to Medicare patients. However, in states where NPPs have full scope of practice, Medicare should consider reimbursing care provided by NPs for primary care services that it is willing to reimburse if provided by a physician. In some instances, such as the prescription of home health care, even if a state's scope of practice law permits an NP to provide a service, Medicare will only pay for it only if it is provided by a physician. Removing rules, such as the one on home health care prescription, would basically increase the number of services primary care providers can offer in some states. A drawback to this option is that it has the potential to increase significantly the amount Medicare spends on reimbursement. For Option 2, ASPE would have to submit a proposal through HHS' A-19 process.

Cost

Because NPs are reimbursed at 85 percent of the PFS rate, allowing Medicare to reimburse for services such as the prescription of home health care could actually save Medicare money. The ten-year savings estimate for allowing Medicare to reimburse for home health care prescribed by NPs is $252.6 million (Dobson & El-Gamil, 2014).

Effectiveness at Addressing the Primary Care Shortage

This option will not increase the number of APRNs, however, it will increase the number of services APRNs can provide. This may make it easier for Medicare beneficiaries if they can now

see an NPP for a service that they could not obtain before. However, if there is a primary care provider shortage in an area, a beneficiary may still struggle to see an NPP because of wait time.

Geographic Equity

This option likely will not affect the number of APRNs who choose to practice in a rural area, however, it may increase access to services, such as the prescription of home health care. This could create parity between the number of services available in rural and urban areas. If so, the change may not be felt by patients since Option 2 does not affect the population to provider ratio or the total number of providers in a rural area compared to an urban area.

Stances of Relevant Stakeholders

Option 2 receives a total score of 14 points out of a maximum of 24 points. This is the second highest score. Because Option 2 would essentially increase NPs' authority by allowing Medicare to reimburse NPs for services it previously could not, physicians' groups would not support this option. In fact, they may actively work to prevent Option 2 from going into effect. In order to see the full breakdown for each stakeholder, see Appendix C.

Option 3: Expand Graduate Nurse Education Demonstration

This option would expand the size of the Graduate Nurse Education (GNE) Demonstration. Evaluations of the GNE Demonstration indicate that the program has the ability to increase the number of APRN graduates. Based on this, Option 3 advocates for CMS to continue the Demonstration in the current five eligible hospitals, while also expanding the program to include more eligible hospitals. Doing so would enable CMS to gather more data on the effectiveness of the Demonstration and to learn more about how to sustain the program in the long run. Since Section 5509, rather than Section 3021, of the PPACA established the GNE Demonstration, reauthorization and expansion require congressional action. Therefore, ASPE would have to submit a proposal using HHS' A-19 legislative process.

Cost

It is useful to use the GNE Demonstration hospital awardees and their networks to estimate the cost of additional hospital awardees. For DY 2012 to DY 2015, the total estimated cost of the GNE Demonstration was over $120.47 million for the five GNE Demonstration networks (HHS, 2018). The per year total payments for an additional five hospital awardees may range from $17.87 million to $41.82 million.

Effectiveness at Addressing the Primary Care Shortage

The estimated number of additional APRN student graduates from the GNE Demonstration ranged from approximately 524 to 1,066 student graduates per year. Based on CMS' estimate that by 2025 we will need an additional 23,640 primary care physicians or full time equivalents, the GNE Demonstration graduated students account for about two percent to five percent of the needed health care workforce.

Geographic Equity

In general, approximately 18 percent of APRN graduates choose to practice in a rural area (Pohl et al., 2018; AANP, n.d.a). Roughly 44 percent of medical students choose to practice in a rural

area if they received rural experience before graduation (Deutchman, 2013). This number is a good estimate for the effect of rural training on APRN graduates because APRN students are as or more likely than medical students to choose to practice in a rural setting. Therefore, the effect of rural experience will have the same or more of an effect on APRN graduates choice to practice in a rural area.

The GNE demonstration required participating hospitals to dedicate half of their students' clinical education time for non-hospital community-based care settings, such as a rural health clinic or federally qualified health center. Only two of the five hospitals (Rush University Medical Center and Scottsdale Healthcare Osborne Medical Center) had rural partner community-based care settings (HHS, 2018). Because of this, we can expect roughly 44 percent of graduates from those two hospitals to practice in a rural setting and 18 percent of APRN graduates at the other three hospitals to choose to practice in a rural care setting. Therefore, the GNE Demonstration probably resulted in a total of about 149 to 303 APRN graduates choosing to practice in a rural setting.

Stances of Relevant Stakeholders

Option 3 receives a total score of 16.5 out of 24 total points. Option 3 received the highest score on stances of relevant stakeholder. This option was least likely to upset physicians' groups. However, it would still receive a High level of support from nurses' groups. In order to see the full breakdown for each stakeholder, see Appendix C.

Outcomes Matrix

In order to make the results of the different evaluative criteria comparable, I have converted each criterion to a 24-point scale with one-point increments. The points each option received for each criterion is written in parenthesis.

Cost: the scale ranges from -24 points to 24 points. Twenty-four points equals $2.40 billion. Each incremental point has an absolute value of $100 million. Options that cost money result in a negative point value, while options that result in savings will receive a positive point value.

Effectiveness at Addressing the Primary Care Shortage: the scale ranges from 0 to 24 points. Twenty-four points equals 24,000 new primary care providers. Each incremental point has a value of 1,000 new primary care providers. Having no effect results in -1 points.

Geographic Equity: the scale ranges from 0 to 24 points. Twenty-four points equals 2,400 new APRN rural providers. Each incremental point has a value of 100 new rural APRNs. Having no effect results in -1 points.

The following outcomes matrix details how each of the three options ranks against the evaluative criteria.

	Option 1	**Option 2**	**Option 3**
Cost (40%)	$0.8 billion - $1.63 billion per year (-16.3 points)	$252.6 million in savings (2.53 points)	$17.87 million - $41.82 million per year (-0.42 points)
Effectiveness at Addressing the Primary Care Shortage (30%)	4,552 - 11,379 new APRNs per year (4.55 points)	-- (-1 points)	524 - 1,066 new APRNs per year (0.52)
Geographic Equity (20%)	819 - 2,048 new rural APRNs (8.19)	-- (-1 points)	149 - 303 rural APRNs (1.49)
Stance of Relevant Stakeholders (10%)	13.5 points	14 points	16.5 points
	Total Points= -2.167	**Total Points= 1.912**	**Total Points= 1.936**

Recommendation

Based on this analysis, I recommend Option 3: Expand the Graduate Nurse Education Demonstration. Out of the three alternatives, Option 3 had the lowest cost ($17.87 million - $41.82 million per year) and the highest stances of stakeholder score. While it may have scored less well compared to Option 1 on effectiveness at addressing the primary care shortage and geographic equity, it still has the potential to increase the number of APRNs and those who decide to practice in a rural area.

The report to Congress and other analysis shows that the GNE Demonstration was a success and the total cost estimate ($120.47 million) was less than the amount Congress appropriated for the Demonstration ($150 million). Approximately 2,098 to 4,265 APRN students graduated from the program. Overall, it cost Medicare $28,249 to $57,434 per APRN student graduate. The amount of money Medicare spent on the GNE Demonstration seems small in comparison to the $150 billion per year it spends on Graduate Medical Education and the $120,000 to $150,000 that it spends per year on each resident trainee.

Next Steps

Since the GNE Demonstration was authorized through Section 5509 of the Affordable Care Act, not Section 3021, reauthorizing or expanding the GNE Demonstration would require congressional action (CMS, 2012). If ASPE decides that the GNE Demonstration is worth reauthorizing and expanding, the department would have to submit a proposal using the HHS'A-19 process. If it is approved through the A-19 process, the proposal would be included as a suggestion in the President's Budget which may be taken up by a member of Congress. One can hope that discussing the success of the GNE Demonstration and nursing as a solution to the primary care shortage in the President's Budget will help to persuade Congress to consider the program's expansion. Option 3 scored the best on stances of stakeholders, which means that it has the lowest level of opposition from physicians' groups, while maintaining a high level of support from nurses' groups. This means that Congress may be more supportive of expanding the GNE Demonstration since its members are less likely to have to deal with opposition lobbying from the AMA and other physicians' advocacy groups.

Having to expand the GNE Demonstration through the legislative process is a challenge. First, few proposals in the President's Budget are sponsored by members of Congress. Second, if a proposal is acted upon by a member, it is very challenging to pass legislation because of partisan gridlock. The likeliest chance for success occurs if the reauthorization and expansion of the GNE Demonstration is included in Congress' yearly appropriations bill for HHS. If this does occur, ASPE can use the data from the new iteration of the Demonstration to determine whether or not it wants to support a more drastic increase in nurse funding, such as that described in Option 1.

Appendix A: Calculations for Option 1

Option 1: Alter How Medicare Funds Nurse Training Programs
Short Description: This option would allow Medicare to fund APRN university-degree programs, which it currently cannot do.

Cost - $3.19 billion to $6.49 billion per year

- Cost per individual graduate of the GNE program ranged from $28,248 to $57,434 (cost for entire program not per year) (HHS, 2018)
- CMS calculated this by dividing the total estimated cost to CMS for the four-year period by the number of APRN students
- Per year cost calculated by dividing the range $28,248 to $57,434 by 4 = **$7,062 to $14,358.5** per APRN graduate per year
- Multiplied this range by the total number of graduate nursing students in the US (113,788). The result was **$803,570,856 to $1,633,824,998**.

Effectiveness at Addressing the Primary Care Shortage

- Total enrollment in Master of Nursing programs = 113,788 (JONAS Philanthropies, 2015)
    - 10 percent = 11,378.8 rounded to **11,379**
    - 6 percent = 4,551.52 rounded to **4,552**

Geographic Equity 23,668 to 25,034 new rural APRNs

- 18 percent of APRN graduates choose to practice in a rural area (Pohl et al., 2018; AANP, n.d.a)
- Total current enrollment x 18% = 113,788 x .18 = 20,481.84 rounded to **20,482**
- Intervention will result in an increase in APRN graduates ranging from 4,552 to 11,379.
    - Multiply each by .18% (4,552 x .18 = **819.36** and 11,379 x .18 = **2048.22**)
    - **819 to 2048**
- I then added each of these new numbers to the status quo amount of 22,758
    - 819.36 + 20,481.84= 21,301.2 rounded to 21,301
    - 2,048.22 + 20,481.84 = 22,530.06 rounded to 22,530
- Final range of **21,301 to 22,530** APRNs choosing to practice in a rural area

Appendix B: Calculations for Option 3

Option 3: Expand Graduate Nursing Education (GNE) Demonstration

Short description: This option would expand the size of the Graduate Nursing Education Demonstration.

(All analysis using CMS Report to Congress)

Cost

- CMS' total cost estimates per year for 5 hospital awardees in the GNE Demonstration ranged from $17,873,500 to $41,823,500 (HHS, 2018)

Effectiveness at Addressing the Primary Care Shortage

- 4-year estimate is an addition 2,097.8 to 4,264.7 additional APRNs (HHS, 2018)
- Divide 2,097.8 to 4,264.7 by 4
- 524.45 to 1,066.175 additional APRN graduates per year
- Rounded **to 524 to 1,066 APRN** graduates per year

Geographic Equity (622 to 1,263 rural APRNs)

- Approximately 20 percent of APRN graduates choose to practice in a rural area (Pohl et al., 2018; AANP, n.d.a)
- Roughly 44 percent of medical students choose to practice in a rural area if exposed to rural experience (Deutchman, 2013). I decided to use this number to judge effect of rural training on APRN graduates because in the status quo, APRN students are more likely than medical students to choose rural practice
- Only two of the five hospitals exposed students to rural practice
    - Three hospitals = 18 % and Two hospitals = 44%
- First divide 2,097.8 to 4,264.7 by 5 → 419.56 to 852.94 graduates per hospital awardee
- Then divide this range by 4 to get the per year number → 104.89 to 213.235
- (104.89 x .44 x2) + (104.89 x .18 x 3) = 148.9438 rounded to **149**
- (213.235 x .44 x2) + (213.235 x.18 x3) = 302.7937 rounded to **303**

Appendix C: Stances of Stakeholders Analysis for Options 1 - 3

Option 1 Stances of Stakeholders, Total Points = 13.5

Actors	Description	Motivation	Stance
American Nurses Association: Weight of 0.5	A nursing professional organizations that advocate for all nurses.	The ANA supports increased funding for nurse training and programs to develop the nursing workforce.	High support = **3 points**
American Association of Nurse Practitioners (AANP): Weight of 0.5	A nursing professional organization that represents the interests of nurse practitioners.	The AANP supports increased funding for nurse training and programs to develop the nurse practitioner workforce.	High support = **3 points**
American Association of Colleges of Nursing (AACN): Weight of 2	The AACN represents 825 public and private universities. It advances the interests of colleges of nursing, faculty, and students.	The AACN would like to see increased federal funding for nurse training programs.	High support = **3 points**
American Academy of Family Physicians (AAFP): Weight of 1	The AAFP represents more than 131,000 family physicians and residents.	The AAFP is concerned about the primary care shortage. It would not support any measure that it sees as a threat to GME funding nor any measure that might lead to the replacement of the physician-led model of care.	No-low support = **0.5 points**
American Medical Association (AMA): Weight of 2	The AMA is the largest and most politically active association that represents physicians.	The AMA is concerned about the primary care shortage. It would not support any measure that it sees as a threat to GME funding nor any measure that might lead to the replacement of the physician-led model of care.	No-low support = **0.5 points**
Centers for Medicare & Medicaid Services: Weight of 2	CMS administers the Medicare program.	CMS is interested in insuring that Medicare beneficiaries receive high quality care. It is concerned with the rising cost of Medicare. CMS will be cautious in implementing or proposing programs that do not have a history of reducing Medicare costs.	Low-medium support = **1.5 points**

Option 2 Stances of Stakeholders, Total Points = 14 points

Actors	Description	Motivation	Stance
American Nurses Association (ANA): Weight of 0.5	A nursing professional organizations that advocate for all nurses.	The ANA supports increasing parity between APRNs and primary care physicians.	High support = **3 points**
American Association of Nurse Practitioners (AANP): Weight of 0.5	A nursing professional organization that represents the interests of nurse practitioners.	The AANP supports measures that increase parity between APRNs and primary care physicians.	High support **= 3 points**
American Association of Colleges of Nursing (AACN): Weight of 2	The AACN represents 825 public and private universities. It advances the interests of colleges of nursing, faculty, and students.	The AACN supports measures that increase parity between APRNs and primary care physicians.	High support = **3 points**
American Academy of Family Physicians (AAFP): Weight of 1	The AAFP represents more than 131,000 family physicians and residents.	The AAFP believes that the physician-led model of care is the best method to ensure patients' safety. It opposes measures that may lead to APRNs' independent practice.	No support = **0 points**
American Medical Association (AMA): Weight of 2	The AMA is the largest and most politically active association that represents physicians.	The AMA believes that the physician-led model of care is the best method to ensure patients' safety. It opposes measures that may lead to APRNs' independent practice.	No support = **0 points**
Centers for Medicare & Medicaid Services: Weight of 2	CMS administers the Medicare program.	CMS is interested in value-based care that reduces cost without negatively affecting the quality of care Medicare beneficiaries receive.	Medium-High support = **2.5 points**

Option 3: Stances of Stakeholders, Total Points = 16.5 points

Actors	Description	Motivation	Stance
American Nurses Association: Weight of 0.5	A nursing professional organizations that advocate for all nurses.	The ANA supports increased funding for nurse training and programs that help develop the nursing workforce.	High support = **3 points**
American Association of Nurse Practitioners (AANP): Weight of 0.5	A nursing professional organization that represents the interests of nurse practitioners.	The AANP supports increased funding for nurse training and programs that help develop the nurse practitioner workforce.	High support **= 3 points**
American Association of Colleges of Nursing (AACN): Weight of 2	The AACN represents 825 public and private universities. It advances the interests of colleges of nursing, faculty, and students.	The AACN would like to see increased federal funding for nurse training programs. The AACN has previously stated that it supports the GNE Demonstration.	High support = **3 points**
American Academy of Family Physicians (AAFP): Weight of 1	The AAFP represents more than 131,000 family physicians and residents.	The AAFP is concerned about the primary care shortage. It would not support any measures that decreases GME funding.	Low support = **1.0 points**
American Medical Association (AMA): Weight of 2	The AMA is the largest and most politically active association that represents physicians.	The AMA is concerned about the primary care shortage. It would not support any measures that decreases GME funding.	Low support = **1.5 points**
Centers for Medicare & Medicaid Services: Weight of 2	CMS administers the Medicare program.	CMS is interested in cost-effective methods to address the primary care shortage.	Medium support = **1.5 points**

References

Adams, K.E., & Markowitz, S. (2018). Improving efficiency in the health-care system: Removing anticompetitive barriers for advanced practice registered nurses and physician assistants. Brookings Institute. Retrieved from https://www.brookings.edu/research/improving-efficiency-in-the-health-care-system-removing-anticompetitive-barriers-for-advanced-practice-registered-nurses-and-physician-assistants/.

Advanced Practice Registered Nurses. Veteran Affairs Department. 81 Fed. Reg. 90198. (December 14, 2017). (to be codified at 38 CFR pt. 17).

Aiken, L. H., Dahlerbruch, J., Todd, B., & Bai, G. (2018). The Graduate Nurse Education Demonstration – Implications for Medicare policy. *The New England Journal of Medicine*, *378*(25), 2360.

American Association of Colleges of Nursing. (2017). Nursing faculty shortage fact sheet. Retrieved from https://www.aacnnursing.org/Portals/42/News/Factsheets/Faculty-Shortage-Factsheet-2017.pdf.

American Association of Family Practitioners (2014). Rural practice, keeping physicians in place (position paper). Retrieved from https://www.aafp.org/about/policies/all/rural-practice-paper.html.

American Association of Nurse Practitioners. (2019). NP fact sheet. Retrieved from https://www.aanp.org/about/all-about-nps/np-fact-sheet.

American Association of Nurse Practitioners. (n.d.a). Nurse Practitioners in primary care. Retrieved from https://www.aanp.org/advocacy/advocacy-resource/position-statements/nurse-practitioners-in-primary-care.

American Association of Nurse Practitioners. (n.d.b) State practice environment. Retrieved from https://www.aanp.org/advocacy/state/state-practice-environment.

American Medical Association. (2016, May 25). AMA statement on VA proposed rule on advanced practice nurses. [Press release]. Retrieved from https://www.ama-assn.org/press-center/ama-statements/ama-statement-va-proposed-rule-advanced-practice-nurses.

American Medical Association. (2018, September 26). Scope of Practice. Retrieved from https://www.ama-assn.org/practice-management/payment-delivery-models/scope-practice.

American Organization of Nurse Executives. (2014). Nursing workforce development programs in action: Federal dollars on the ground. Retrieved from http://media.wix.com/ugd/148923_f1a4f95f17db4a5fa8f9b5d012a2b8a6.pdf

Association of American Medical Colleges. (n.d.). Medicare Direct Graduate Medical (DGME) payments. Association of American Medical Colleges. Retrieved from https://www.aamc.org/advocacy/gme/71152/gme_gme0001.html.

Azer, S. A., Simmons, D., & Elliott, S. L. (2001). Rural training and the state of rural health services: effect of rural background on the perception and attitude of first-year medical students at the University of Melbourne. *Australian Journal of Rural Health*, *9*(4), 178-185.

Baernholdt, M., Yan, G., Hinton, I., Rose, K., & Mattos, M. (2012). Quality of life in rural and urban adults 65 years and older: findings from the National Health and Nutrition Examination Survey. The Journal of Rural Health, 28(4), 339-347.

Barrett, F. A., Lipsky, M. S., & Lutfiyya, M. N. (2011). The impact of rural training experiences

on medical students: A critical review. *Academic Medicine*, *86*(2), 259-263.
Brems, C., Johnson, M. E., Warner, T. D., & Roberts, L. W. (2007). Exploring differences in caseloads of rural and urban healthcare providers in Alaska and New Mexico. *Public Health*, *121*(1), 3-17
Burton, L. M., Lichter, D. T., Baker, R. S., & Eason, J. M. (2013). Inequality, family processes, and health in the "new" rural America. American Behavioral Scientist, 57(8), 1128-1151.
Buttorf, C., Ruder, T., & Bauman, M. Multiple chronic conditions in the United States. RAND Corporation.
Centers for Disease Control and Prevention. (2017a, August 2). About rural health. Retrieved from https://www.cdc.gov/ruralhealth/about.html.
Centers for Disease Control and Prevention. (2017b., January 12). Rural Americans at higher risk of death from five leading causes. [Press release]. Retrieved from https://www.cdc.gov/media/releases/2017/p0112-rural-death-risk.html.
Centers for Medicare & Medicaid Services. (2016). *Advanced practice registered nurses, anesthesiologist assistants, and physician assistants*. Washington, DC: Centers for Medicare & Medicaid Services.
Centers for Medicare & Medicaid Services. (2017). *Evaluation of the GNE Demonstration project volume II: Demonstration costs*. Washington, DC: Centers for Medicare & Medicaid Services.
Centers for Medicare & Medicaid Services. (2012, July 30). Graduate Nurse Education Demonstration fact sheet. Retrieved from https://innovation.cms.gov/Files/fact-sheet/GNE-Fact-Sheet.pdf.
Centers for Medicare & Medicaid Services. (2018). NHE fact sheet. Retrieved from https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html.
Cheney, C. (2011, January 4). Physician shortage to quadruple within decade, AAMC says. *HealthLeaders*. Retrieved from https://www.healthleadersmedia.com/strategy/physician-shortage-quadruple-within-decade-aamc-says.
Colby, S.L., & Ortman, J.M. (2014). *The Baby Boomer cohort in the United States: 2012 to 2060*. Washington, DC: US Census Bureau. Retrieved from https://www.census.gov/library/publications/2014/demo/p25-1141.html.
Colwill, J. M., & Cultice, J. M. (2003). The future supply of family physicians: implications for rural America. *Health Affairs*, *22*(1), 190-198.
Deutchman, M. (2013). *Medical school rural tracks in the US*. National Rural Health Association. Retrieved from https://www.ruralhealthweb.org/NRHA/media/Emerge_NRHA/PDFs/RTPolicyBrief91513final.pdf.
Dierick-van Daele, A.T., Metsemakers, J.F., Derckx, E.W., Spreeuwenberg, C., & Vrijhoef, H.J. (2009). Nurse practitioners substituting for general practitioners: Randomized controlled trial. *Journal of Advanced Nursing*, 65(2), 391-401.
Dobson, A. & El-Gamil, A. (2014). *Updated report: Impact of proposed legislation HR 2504/ S. 1332 on Medicare expenditures*. Dobson DaVanzo and Associates.
Fry, R. (2018, March 1). Millennials projected to overtake Baby Boomers as America's largest generation. Pew Research Center. Retrieved from http://www.pewresearch.org/fact-tank/2018/03/01/millennials-overtake-baby-boomers/.
Health Resources and Services Administration. (n.d.). HPSA find. Retrieved from

https://data.hrsa.gov/tools/shortage-area/hpsa-find.
Health Resources and Services Administration. (2018). *First quarter of Fiscal Year 2018 designated HPSA quarterly summary*. Washington, DC: Health Resources and Services Administration. Retrieved from https://ersrs.hrsa.gov/ReportServer?/HGDW_Reports/BCD_HPSA/BCD_HPSA_SCR50_Qtr_Smry_HTML&rc:Toolbar=false.
Heisler, E.J., Mendez, B.H., Mitchell, A, Panangala, S.V., & Villagrana, M.A. (2018). *Federal support for Graduate Medical Education: An overview*. (CRS Report No. R44376). Congressional Research Service.
IHS Inc. (2018). 2018 Update: The Complexities of Physician Supply and Demand: Projections from 2016 to 2030: Final Report. Washington, DC: Association of American Medical Colleges. Retrieved from https://aamc-black.global.ssl.fastly.net/production/media/filer_public/a5/c3/a5c3d565-14ec-48fb-974b-99fafaeecb00/aamc_projections_update_2017.pdf.
Jaspen, B. (2017, November 20). Nurses Say AMA launching 'turf war' over direct patient access. *Forbes*. Retrieved from https://www.forbes.com/sites/brucejapsen/2017/11/20/nurses-say-ama-launching-turf-war-over-direct-patient-access/#610550911168.
JONAS Philanthropies. (2015, March 9). New AACN data confirms enrollment surge in schools of nursing. [Press release]. Retrieved from http://jonasphilanthropies.org/new-aacn-data-confirms-enrollment-surge-in-schools-of-nursing/.
Knestrick, J. (2017, November 19). American Association of Nurse Practitioners responds to American Medical Association Amendment to Resolution 214. [Press Release]. American Association of Nurse Practitioners. Retrieved from https://www.aanp.org/news-feed/american-association-of-nurse-practitioners-responds-to-american-medical-association-amendment-to-resolution-214.
Li, Y., Turinetti, M. & Fang, D. (2018). Special survey on vacant faculty positions for academic year 2018-2019. American Association of Colleges of Nursing.
Mann, S. (2016, March 14). Research shows shortage of more than 100,000 doctors by 2030. *AAMC News*. Retrieved from https://news.aamc.org/medical-education/article/new-aamc-research-reaffirms-looming-physician-shor/.
McGraw, B. (2018, April 6). Nursing organizations applaud nurse practitioner bill. *WSLS*. Retrieved from https://www.wsls.com/news/virginia/southwest-virginia/nursing-organizations-applaud-nurse-practitioner-bill.
Medicare Payment Advisory Commission. (2012a). Report to the Congress: Medicare and the health care delivery system. Chapter 5. Washington, DC: Medicare Payment Advisory Commission.
Medicare Payment Advisory Commission. (2012b). Report to the Congress: Medicare payment policy. Washington, DC: Medicare Payment Advisory Commission.
Medicare Program; Payment for Nursing and Allied Education. Department of Health and Human Services. 66 Fed. REg. 3357. (to be codified at 42 CFR pts. 413 and 422.)
Merritt Hawkins Team. (2017, September 22). 2017 Survey of physician appointment times. Retrieved from https://www.merritthawkins.com/news-and-insights/thought-leadership/survey/survey-of-physician-appointment-wait-times/.
Moy, E., Garcia M.C., Bastian, B., Rossen, L.M., Ingram, D.D., Faul, M., …, Iademarco, M.F.

(2017). Leading Causes of Death in Nonmetropolitan and Metropolitan Areas — United States, 1999–2014. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report Surveillance Summaries. 2017;66(No. SS-1):1–8. DOI: http://dx.doi.org/10.15585/mmwr.ss6601al.

Mundinger, M. O., Kane, R. L., Lenz, E. R., Totten, A. M., Tsai, W. Y., Cleary, P. D., ... & Shelanski, M. L. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial. *JAMA*, 283(1), 59-68.

Murphy, B. (2018, January 16). Breaking down the numbers behind the Match process. American Medical Association. Retrieved from https://www.ama-assn.org/residents-students/match/breaking-down-numbers-behind-match-process.

Office of the Assistant Secreatary for Planning and Evaluation. (n.d.). Mission. Retrieved from https://aspe.hhs.gov/mission.

Ohman-Strickland, P. A., Orzano, A. J., Hudson, S. V., Solberg, L. I., DiCiccio-Bloom, B., O'Malley, D., ... & Crabtree, B. F. (2008). Quality of diabetes care in family medicine practices: influence of nurse-practitioners and physician's assistants. *The Annals of Family Medicine*, *6*(1), 14-22.

Organisation for Economic Co-operation and Development. (2017). Health at a glance 2017: OECD indicators. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjRuIj5itjhAhVJmVkKHWzxAWEQFjAAegQIAxAC&url=https%3A%2F%2Fwww.oecd.org%2Funitedstates%2FHealth-at-a-Glance-2017-Key-Findings-UNITED-STATES.pdf&usg=AOvVaw2430-TcccF1AaL72tw6Dtp.

Pelletier, S.G. (2016, September 27). Training physicians to meet the needs of rural America. *AAMC News*. Retrieved from https://news.aamc.org/medical-education/article/training-physicians-meet-needs-rural-america/.

Petterson, S.M., Cai, A., Moore, M., & Bazemore, A. (2013a). State-level projections of primary care workforce, 2010-2030. Robert Graham Center, Washington, DC.

Petterson, S.M., McNellis, R., Klin, K., Meyers, D., Bazemore, A. (2018). The state of primary care in the United States: A chartbook of facts and statistics.

Petterson, S.M., Phillips, R.L. Jr., Bazemore, A.W., & Koinis, G.T. (2013b). Unequal distribution of the US primary workforce. Robert Graham Center. Retrieved from https://www.graham-center.org/rgc/publications-reports/publications/one-pagers/unequal-distribution-2013/.

Pohl, J.M., Thomas, A. Bigley, M.B., & Kopanos, T. (2018) Primary care workforce data and need for nurse practitioner full practice authority. *Health Affairs*. Retrieved from https://www.healthaffairs.org/do/10.1377/hblog20181211.872778/full/.

Scope of Practice Policy. (n.d.). Virginia scope of practice policy: State profile. Retrieved from http://scopeofpracticepolicy.org/states/va/.

Seale, C., Anderson, E., & Kinnersley, P. (2006). Treatment advice in primary care: a comparative study of nurse practitioners and general practitioners. *Journal of Advanced Nursing*, *54*(5), 534-541.

Specker, L. (2018, July 11). Blue Cross scholarship steer doctors to rural Alabama. *AL.com*. Retrieved from https://www.al.com/news/2018/07/blue_cross_scholarships_steer.html.

US Census Bureau. (2018, March 13). Older people projected to outnumber children for first

time in US history. [Press release]. US Census Bureau. Retrieved from https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html.
US Census Bureau. (n.d.). Quick Facts: Danville city, Virginia (County). Retrieved from https://www.census.gov/quickfacts/fact/table/danvillecityvirginiacounty/PST045217.
US Congress, Office of Technology Assessment. *Nurse practitioners, physician assistants, and certified nurse-midwives: a policy analysis*. Washington (DC): U.S. Government Printing Office; 1986 Dec. Health Technology Case Study no. 37, Pub. no. OTA-HCS-37.
US Department of Health and Human Services. (2017). *Evaluation of the Graduate Nurse Education Demonstration Project: Report to Congress.* Washington, DC: US Department of Health and Human Services.
US Department of Health and Human Services. (2018, November 29). Graduate Nurse Education Demonstration. Retrieved from https://innovation.cms.gov/initiatives/GNE/.
US Department of Veterans Affairs. (2016, December 14). VA grants full practice authority to Advanced Practice Registered Nurses. [Press release]. Washington, DC: Department of Veterans Affairs. Retrieved from https://www.va.gov/opa/pressrel/pressrelease.cfm?id=2847.
Warshaw, R. (2017, October 13). Health disparities affect millions in US communities. *AAMC News*. Retrieved from https://news.aamc.org/patient-care/article/health-disparities-affect-millions-rural-us-commun/.
Weeks, W. B., & Wallace, A. E. (2008). Rural–urban differences in primary care physicians' practice patterns, characteristics, and incomes. *The Journal of Rural Health*, *24*(2), 161-170.
Wilson, I. B., Landon, B. E., Hirschhorn, L. R., McInnes, K., Ding, L., Marsden, P. V., & Cleary, P. D. (2005). Quality of HIV care provided by nurse practitioners, physician assistants, and physicians. *Annals of Internal Medicine*, *143*(10), 729-736.