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FACTORS THAT INFLUENCE JOB CHOICE AT THE TIME OF GRADUATION FOR
PHYSICIAN ASSISTANTS

by

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Submitted in partial fulfillment of the requirements for the degree of

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APPROVAL FOR SUCCESSFUL DEFENSE

Lauren Anne Twombly, has successfully defended and made the required modifications

to the text of the doctoral dissertation for the **Ph.D.** during this **Fall Semester 2017**.

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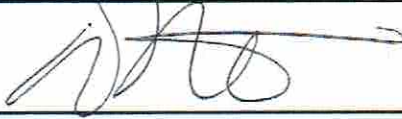
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ABSTRACT

Current trends and data analysis show that there is a shortage of primary care providers throughout the United States. Physician assistants (PAs) who are mid-level practitioners, nationally certified, and state licensed to practice medicine, play an important role in healthcare delivery; however, the percentage of PAs practicing in primary care has dramatically decreased in the past 15 years. An important question to consider is what drives the decision-making process of job choice for PAs? The purpose of this dissertation was to identify potential modifiable factors that influence PA first job choice following graduation from a PA program in a national sample and to determine if they have a relationship to the choosing of primary care. Specifically, this study utilized a conceptual framework to explore the following: what role do individual factors (demographics; student debt; and personal values) have relative to "program" factors (including faculty and preceptor influence; and mentoring) vs. "external" factors (job availability, income potential) in shaping job choice?

Using a national sample from The 2016 End of Program Survey from the Physician Assistant Education Association, out of the 3038 subjects, 269 (8.9%) accepted a job in primary care medicine, 847 (27.9%) accepted a specialty job and 1922 (63.3%) did not accept a job at the time they were given the survey. The multinomial logistic regression model comparing no job accepted versus primary care job choice revealed marital status and racial/ethnic differences in first job choice. Additionally, financial factors including both educational debt and income potential, were found to be significant predictors. For the second multinomial logistic regression model comparing specialty job versus primary care job choice, the results demonstrate civil status differences in first job choice, financial factors including both educational debt (strong) and income potential (both moderate and strong), and a program factor (moderate clinical rotation experience).

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Finally, I would like to thank my wife, Stacey. You are the most passionate and energetic person that I know. My goal is to attempt to emulate your persistence, dedication and grit. I am beyond thankful to have you in my life as my #1 and could not have done this without you!

DEDICATION

I dedicate this milestone to the following:

- To my best friend, Chester, for your unconditional love.

- To my nieces and nephews, who I challenge to follow my favorite quote, "Be the change you wish to see in the world." - Gandhi

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CHAPTER 1 - INTRODUCTION

Physician assistants (PAs) who are mid-level practitioners, nationally certified, and state licensed to practice medicine, play an important role in healthcare delivery throughout the United States. (AAPA, 2016). They are required to have a supervising doctor of medicine or osteopathy working in collaboration with them; however, PA duties are very similar to a physician including examining, diagnosing, and treating patients (Arc-pa.org, n.d.a). In fact, studies have shown that PAs can perform up to 80% of the primary care services that physicians do and at the same quality (Mittman, Cawley, & Fenn, 2002). Additionally, most PAs have prescribing authority with laws regarding practice regulations that vary from state to state. In summary, a PA's scope of practice includes diagnosing, examining, treating, prescribing medication, and disease management of patients under the direct supervision of a physician (Hass, 2016). However, of important note, there are many more physicians than PAs. In 2015 according to the Association of American Medical Colleges, there were a total of 859,848 active physicians and only 108,717 certified PAs (NCCPA, 2016).

Current trends and data analysis show that there is a shortage of primary care providers throughout the United States (U.S.). Bodenheimer and Pham (2010) state that 65 million Americans reside in primary care shortage areas and obtaining prompt access to primary care is difficult. Buerhaus, DesRoches, Dittus, and Donelan (2015) concur with previous research that this demand for primary care providers is occurring because of population growth, an aging population with sicker individuals, and insurance expansions under the Affordable Care Act (ACA). The Association of American Medical Colleges predicts there will be a shortage of 12,500 to 31,100 primary care physicians by the year 2025. Similarly, Petterson, Liaw, Tran, and Bazemore (2015) forecast the primary care shortage will continue to grow and predict more than 44,000 primary care physicians will be needed by the year 2035. Based on the research provided,

it is clear that the number of primary care providers is inadequate to address the healthcare needs across the nation.

Historically, PAs were created in order to address the physician shortage and were meant to be physician and nurse extenders who could practice primary care medicine under a physician's guidance. The idea of the profession was to create healthcare providers who could perform the less complex aspects of healthcare (Larson & Hart, 2007). "Extenders of primary care" was first proposed in 1961 at the American Medical Association (AMA) conference when Dr. Charles L. Hudson developed the idea of "assistants to doctors" as a new healthcare provider model (Jones, 2007). After approval from the medical community, Dr. Eugene Stead, Jr., MD of Duke University School of Medicine brought the notion to fruition when he started the first physician assistant (PA) program in October 1965 (Cawley, Cawthon, & Hooker, 2012).

In the early years of the profession, PAs worked almost exclusively in primary care settings. It was not until the 1980s and 1990s that PAs started to diversify and work in surgical and medical specialties (Larson & Hart, 2007). Figure 1 demonstrates the estimated percentage of PAs in clinical practice within the certain fields of medicine (Morgan, Everett, Humeniuk & Valentin, 2016). As seen in the graph, the percentage of PAs practicing in primary care has dramatically decreased in the past 15 years. The graph displays that the percentage of PAs in clinical practice in primary care was greater than 50% in 1997 and then only slightly above 30% in 2013. It is not clear what drives the decision-making process. It is possible that finances impact PAs' decision to choose primary care or specialty in that a primary care PA's salary is approximately $85,000 compared with $105,000 for other specialties (Moore et al., 2014). It is important to find out what is the mystery behind job choice and whether program and external factors influence the decision.

PA Education

To become a PA, a graduate level education (master's degree) following an undergraduate degree is required. The graduate level education occurs at a nationally accredited program that averages 27 months in length (AAPA, 2016). The program is similar to that of a medical school curriculum, but shorter in length and entails both a didactic portion as well as clinical experiences within different health care disciplines. The ARC-PA (2016) describes the curriculum for PA education to include "basic medical, behavioral, and social sciences; introduction to clinical medicine and patient assessment; supervised clinical practice; and health policy and professional practice issues" (About PAs section, para. 2).

PA educational programs are overseen by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA). In the U.S., there are 218 accredited PA programs and roughly 8,900 physician assistant graduates per year (Arc-pa.org, n.d.a). For comparison purposes, it is helpful to know that there are only 147 MD (Doctor of Medicine)-granting medical schools and 33 DO (Doctor of Osteopathy) offering institutions (Liaison Committee on Medical Education, 2017). Although there are less medical schools than PA programs, there are many more medical school graduates. As an example, in 2016 there were 18,938 medical school graduates (AAMC, 2016).

The ARC-PA's function is to protect the public and physician assistant profession's interest by outlining and enforcing standards for physician assistant education. The ARC-PA evaluates PA programs across the United States and ensures compliance with a set of standards that the commission has developed and continues to modify. Programs without accreditation status are either in the process of applying for a new developing program or have recently failed to meet the ARC-PA certification standards.

Following graduation from an accredited PA program, PAs must pass a national

certification examination that is administered by the National Commission on Certification of

Physician Assistants (NCCPA) in order to practice medicine. Upon successful completion of this

certification, PAs can then apply for a license to practice within their state of choice. According to

Hooker, Brock, and Cook (2016) at least 98% of PA graduates obtained the national certificate

required for state licensure. In order to maintain certification, PAs complete 100 hours of

continuing medical education (CME) every two years and must pass the NCCPA recertifying

examination every ten years (NCCPA, 2015). These steps assist in making sure that patients

receive quality care from physician assistants.

Once PAs achieve certification, they are able to practice throughout the United States and

are known as "generalists" (AAPA, 2016).   The term "generalists" means that PAs are able to

change specialties throughout their career at any given point in time. This flexibility allows for

adaptation to both the needs of the healthcare system and to the individual PA. The ability to

change specialties is not available to physicians as they must commit to a field of medicine. For

example, a physician who chooses and completes a urology residency is obligated to remain

practicing in that field for the length of his or her career. The physician would only be able to

switch from a specialist to a generalist if he or she went back for additional training and

certification. In contrast, PAs can start their career in urology and then switch to primary care

medicine at any point without requiring further formal training or education.

Specialty choice refers to which area of medicine a PA chooses to practice in. For example, some

specialties include: emergency medicine, obstetrics and gynecology (OBGYN), or surgery. For this study,

"primary care" will be defined as PAs practicing in any of the following areas: family medicine/general

practice, general internal medicine, and general pediatrics. All other areas of medicine will be considered

"specialty."

Research suggests that PAs take advantage of their ability to change specialties. According to the AAPA 2016 Salary Report, five percent of PAs changed their role in regards to either specialty or practice setting (i.e. hospital, community health organization, private office) during the year 2015. Additionally, out of the respondents from the AAPA 2016 survey, the percentage of specialty changing PAs from a primary care specialty to a non-primary care specialty was 15.7% while 11% changed from non-primary care to primary care. These statistics indicate that PAs do in fact take advantage of the flexibility in specialty choice and certain factors may persuade PAs to switch from specialty to primary care medicine or vice versa.

Problem Statement

Access to primary care and maintaining providers are important policy topics for the federal government. In fact, with the change of insurance mandates, the use of services by the nation's 46.3 million formerly uninsured is likely to rise after Past-President Obama called for an expansion of the nation's primary care team (Petterson, Liaw, Phillips, Rabin, Meyers, & Bazemore, 2012). The Affordable Care Act (ACA), enacted in 2010, has increased access to health care and has recognized PAs as one of the three primary care providers (PAs, nurse practitioners, and physicians). This creates a responsibility for PAs to fulfill primary healthcare needs. PAs will need to assist with meeting the high demands for primary care office visits. Because of population growth as well as an aging population with expanded insurance, the number of office visits to primary care physicians is projected to increase from 462 million in 2008 to 565 million in 2025 (Petterson, Liaw, Phillips, Rabin, Meyers, & Bazemore, 2012). Since the profession was founded with a focus on primary care, it is important for PAs to recognize the changes that are occurring and address the needs of patients.

Despite the government's effort in increasing primary care providers, the primary care provider workforce is decreasing. In fact, the proportion of PAs in family medicine declined from

38% to 23% from 1997 to 2013 (Morgan, Everett, Humeniuk, & Valentin, 2016). Furthermore, the

American Academy of Physician Assistants' (AAPA) annual survey showed that only 32.1% of the

physician assistants practiced in primary care in 2013. Unfortunately, this was not just a one-year

deviation from the norm. Statistics demonstrate that the proportion of PAs practicing in primary

care has continued to decline from above 50% in the 1990s to nearly 30% in 2013, while

proportions of PAs practicing in the subspecialties has increased (American Academy of Physician

Assistants, 2014). Some of the preferred specialties that PAs are currently practicing in include

surgery, dermatology, emergency medicine, or OBGYN. For example, in 2013, 24% of PAs were

working in surgical subspecialties, 11% in emergency medicine, and 2% in OBGYN (American

Academy of Physician Assistants, 2013).

The decline in primary care health providers stems from a lack of physicians and physician

assistants choosing to practice in primary care medicine. Schwarts (2012) concluded that only

20% of all 22,934 medical school graduates that he surveyed in 2012 were planning to practice in

primary care in 2015. According to the 2014 Physician Assistant Education Association (PAEA)

Matriculating Student Survey, 64.4% of the students entering a PA program indicated an intention

to practice in one or more primary care specialties. However, only 27.6% of recently certified PAs

with a clinical position work in primary care (NCCPA, 2015). From these statistics, it appears that

PA students enter a PA program with an intention to practice primary care, but then choose a

specialty other than primary care upon graduation.

The purpose of this study will be to identify potential modifiable factors that influence PA

first job choice following graduation from a PA program in a national sample and determine if they

have a relationship to the choosing of primary care. The literature is lacking regarding studies that

are specific to the field of physician assistant and the identification of variables that predict first job

choice. Morgan and Hooker (2010) analyzed data from the American Academy of Physician

Assistant's (AAPA) census data from 2006. The AAPA census is a survey of physician assistants conducted in order to gain information about the PA profession. This data is used by a variety of organizations to analyze trends in PA practice. These researchers suggested that factors that influence job choice could be similar to those that affect physicians including financial factors such as student debt and income differential among specialties, as well as physician likeliness to hire, training focus while in PA school, and personal interests and backgrounds (Morgan & Hooker, 2010). Their suggestion for future research assisted in creating this research study.

Research on factors that influence a physician assistant's first job choice during PA school are limited; however, there is a plethora of data focused on medical students and residents regarding job choice. Specifically, studies have been conducted to determine factors that predict field of medicine choice for medical students. The factors for first job choice dispersed within the literature for all healthcare providers include but are not limited to financial, lifestyle, health care environment, upbringing, personal interests, and faculty or mentor influence. It is important to recognize that PAs have both different educational backgrounds and the ability for specialty choice across their career; therefore, this study will help identify critical information necessary to attract more PAs into primary care. Additionally, most of the research focusing solely on PAs and factors that affect physician assistants' career choice is over five years old, and therefore, does not reflect the changes that have been instituted as a result of health care reform and the commencement of the Affordable Care Act.

Research Questions

The central research questions for this dissertation include:

- What percentage of graduating physician assistants have accepted a clinical position in primary care?

- What factors predict physician assistants' job choice upon graduation? What role do individual factors (demographics; student debt; and personal values) have relative to "program" factors (including faculty and preceptor influence; and mentoring) vs. "external" factors (job availability, income potential) in shaping job choice?

Significance

Physician assistants are an integral part of the health care team and a profession that continues to grow. In fact, since 2006, the profession has grown 34% (AAPA 2013). Within one year, a physician assistant typically treats approximately 3,500 patients and writes on average 2,600 to 5,200 prescriptions (AAPA, 2013). These numbers demonstrate the impact that PAs have on providing healthcare to patients and highlight their importance as part of the healthcare team. However, PAs choosing specialty fields over primary care contributes to the overall problem of being unable to meet the healthcare demands of the United States.

The impact that PAs can make on U.S. healthcare is only anticipated to increase as the profession continues to develop. According to the Bureau of Labor Statistics (2015), the field of physician assistant is expected to grow with a projected growth of employment as much as 30% from 2014 to 2024 whereas physicians and surgeons projected growth is only 14%. These percentages are much higher when compared to all other occupations cited by the Bureau of Labor Statistics, which is predicted to grow on average only 7%. Additionally, the physician assistant projected growth of employment rated higher in comparison to employment of all healthcare occupations, which is projected to only grow 19% (Bureau of Labor Statistics, n.d.a).

There are several benefits to having access to primary care medicine. Having primary care providers available results in fewer preventable hospitalizations, fewer hospital readmissions, reduced health disparities, reduced mortality, and overall lower healthcare costs (MacNamara &

George, 2011). Additionally, there are cost benefits to using physician assistants. Hooker (2000) found that PAs can complete 75% of physician's tasks at a cost of 44% of the physician's salary. These potential benefits and cost savings make it clear that utilizing PAs to address the primary healthcare provider shortage is significant.

The government has increased access to healthcare for individuals yet the ability to execute providing primary care is lacking secondary to the shortage of these specific healthcare providers. If factors are identified that predict graduates who will choose a position in primary care, then policies and changes can be implemented to funnel graduates into primary care medicine. These changes can occur at the program level during PA training thus benefiting patients throughout the United States. Specifically, Macinko, Starfield, and Shi (2007) concluded that "a one-unit increase in primary care supply (one PCP/10,000) resulted in improvements in all health outcomes studied, with a range of 0.66% to 10.8% improvement, depending on the outcome and the geographic unit of analysis" (p. 119).

Both the federal government and specific organizations such as the Physician Assistant Education Association (PAEA) have implemented policies in order to try to augment the primary care workforce since physician assistant job choice has been trending towards specialties (Morgan, Himmerick, Leach, & Everett, 2016). However, as demonstrated by the statistics, the efforts are not resulting in favorable outcomes of increased PAs in primary care.

Determining which specific factors are found to be statistically significant in predicting physician assistants' first job choice will be valuable to not only physician assistant educators, but also policymakers. If program and faculty influences can predict a students' first job choice and the need for primary care providers continues to grow, PA program faculty can gear their attitudes and curricular framework towards developing primary care PAs. This outcome would increase the

primary care workforce in order to prevent disease and to focus on preventative care. By doing so, quality of care will be increased and healthcare costs will decrease. Starfield, Shi, and Macinko (2005) describe multiple studies that confirm that primary care had a strong and significant influence on life expectancy, total mortality, stroke mortality, and post neonatal mortality at the state level.

CHAPTER II - LITERATURE REVIEW

Overview

The purpose of this literature review is to understand prior research and theories that have

been done to highlight factors influencing career choice specifically pertaining to the medical field.

The research analyzed and theories reviewed will help determine the conceptual framework for the

study. In this chapter, I will discuss a wide range of factors that influence job choice for health

care providers, including physician assistants, medical students, and physicians. The majority of

the review will focus on physicians' specialty choice since this is where the abundance of literature

on job choice resides. First, I will define specialty choice and provide a background on the

Affordable Care Act and healthcare reform. Next, I will review individual factors, including

demographics, student debt, and personal interests that influence job choice. Following the review

of those factors, I will discuss program factors, including faculty and preceptor influence on career

choice. The last category of factors will include external factors, such as job market and

availability of jobs, practice location, and income potential. Following a thorough review of each

of these factors, I will discuss student perception of primary care and Physician Assistants (PAs)

changing specialties. Lastly, I will discuss multiple theories related to career choice and how they

have guided the development of my conceptual framework. In the conclusion, I will discuss gaps

in the literature and provide a summary of the literature review.

Specialty Choice

PAs are an integral part of the health care team with the ability to practice in different areas

of medicine. As mentioned in Chapter One, they are considered "generalists" and have the ability

to choose their specialty of field of medicine in which they desire to practice in. Throughout the

literature, "primary care" is an umbrella term and typically defined to include family

medicine/general practice, general internal medicine, and general pediatrics.

Affordable Care Act (ACA)

Determining the reason behind physician assistants choosing specialty practice over primary care is important for policymakers and those concerned with access to health care in the United States, particularly if increasing the primary care workforce is a priority. Several programs have been implemented since the ACA was initiated in 2010. The primary goal of the ACA was to "increase the affordability of health insurance and lower the number of uninsured citizens by expanding public and private insurance coverage, and to implement programmatic initiatives aimed at improving quality while reducing the costs of health care" (Bartels, Gill, & Naslund, 2015, p. 306). Job growth for physician assistants (53.5%) and physicians/surgeons (17.9%) was projected to be substantial from 2000 to 2010 (Hecker, 2001). As a result of expanding access to health care, the Bureau of Labor Statistics projects job growth of physician assistants to continue to be above average compared to all occupations and to be 38% between 2012 and 2022 (Gearon, 2015).

With health care reform taking place throughout the last six years, policymakers and researchers would expect that the initiatives of the ACA would expand the health care workforce. According to Kocher, Emanuel, and DeParle (2010), the ACA assists in relieving financial barriers from all Americans, both the patients and the providers. Dr. Ezekiel Emanuel, a bioethicist and oncologist served as special advisor for health policy to the director of the White House Office of Management and Budget and is often referred to as the chief architect of the ACA (Eilperin & Goldstein, 2017). Some of the provisions that provide financial incentives to providers include a 10% payment bonus available for qualified primary care physicians, an increase in funding for the National Health Service Corps, and an allocation of funding available to support medical education. These provisions benefit not only physicians, but physician assistants as well (AAPA, 2016).

Another change secondary to the ACA is the transformation from fee-for-service systems to alternative payment models (APMs). Fee-for-service is a payment model where each service is paid for separately. Patel, Presser, George, and McClellan (2016) describe the negative side of fee-for-service models as providers are penalized financially for reducing the use of unnecessary services and quantity instead of quality of care is rewarded. The newly developed APMs are meant to give added incentive payments to healthcare providers to provide high-quality and cost-efficient care. The goals of the primary care providers to achieve incentives are to reduce cost of care, increase quality of care, and add staff and electronic medical records software to their offices to coordinate care (Kocher & Chigurapti, 2016). A key point to this change is that specialists have the potential to lose money considering their income is linked to relative value units, which are based on services they deliver. The effects of these changes are only predicted at this point however, as they have not been directly observed.

Additionally, the ACA developed new care delivery models such as patient-centered medical homes (PCMH) where patient treatment is coordinated by the primary care provider. A PCMH approach has been or is currently being adopted by numerous primary care offices within the United States. The PCMH approach is leveraged by physician reimbursement and involves a team of physicians treating a patient with a multi-disciplinary approach with the primary care clinicians at the center of care. With this relatively new model, primary care providers now collaborate with specialists to provide care at a single site from a team of specialists (Kern, Edwards, & Kaushal, 2016). Between 2009 and 2013, PCMH initiatives increased from 26 initiatives covering approximately five million patients to 114 initiatives covering approximately 21 million patients (McHugh, Shi, Ramsay, Harvey, Casalino, Shortell, & Alexander, 2016).

The focus of the ACA is on the patient-centered medical home. As these changes are taking place, the medical profession would like to see primary care providers monitor and keep

track of all preventative health care services that the patient receives. For example, the primary care provider is not the one to perform a colonoscopy, but has the responsibility of referring patients for screening and preventative services as well as performing follow-up care. Specifically, the primary care providers organize, supervise, and monitor all aspects of patients' medical care. Hence, it is important for there to be an abundance of primary care providers.

In conclusion, as provided in the background information above, a multitude of changes have occurred within the past few years regarding health care delivery in the United States. From a policy perspective, it is important to consider these governmental changes in order to appreciate the impact that they have on primary care delivery to patients.

Factors Determining Specialty Choice in the Medical Field

    Individual Factors.

    Studies have found that certain demographic factors contribute to predicting job choice. In particular, studies focused on physicians and job choice revealed that more females, as well as Latino students, are more likely to pursue primary care (Bennett & Phillips, 2010). One study by Xu, Rattner, Veloski, Hojat, Fields, and Barzansky (1995) discovered that women were more influenced by family and personal factors while men were impacted by early role model influence. In this particular study, physicians were asked to rate the extent to which 19 different variables had on influencing their career choice. The statistical analysis compared the mean values for both females and males. For the personal values factor, the mean rating for men was 2.87 and was 3.24 for women (p.0001). For family value, the mean rating for men was 2.92 and for women was 3.15 (p .0001). Lastly, for the factor of early role model, men had a mean rating of 3.10 and a rating of 2.81 for women (p .0001). This finding may help explain the difference in primary care choice by gender.

In regards to marital status, Newton, Grayson, and Whitley (1998) found that being married was positively correlated with choosing primary care. Marital status was only one of ten demographic factors that was found to be positively significant in predicting career choice in that particular study. However, the authors commented that previous career choice literature shows varying, inconsistent findings related to the variable of marital status affecting career choice.

Another demographic factor that is suggested to influence primary care choice is an individual's upbringing. Coombs, Morgan, Pedersen, Koduri, and Alder (2011) surveyed 474 of the 700 total Utah licensed and practicing physician assistants and discovered that PAs who reported a rural or suburban upbringing had lower odds of practicing primary care. On the contrary, graduation from a Utah PA program was favorable for practicing in primary care. The results of their study indicate the only statistically significant predictors of practicing primary care were being male, obtaining training within the state of Utah, and growing up in an urban setting.

A point to consider is that Utah ranks ninth out of all of the states in the United States with the highest urban densities (Cox, 2016). Due to this fact, when the ratio of primary care physicians to population is assessed, Utah ranks last in the country. Additionally, Utah's demographics are distinctive in that the state ranks first in population growth (Coombs, Morgan, Pedersen, Koduri, & Alder, 2011). Future studies in additional states with varying demographics may be helpful to see if the same factors predict PAs choosing primary care. With that said, it is important to realize that physician shortages are much more of a problem in rural areas (National Rural Health Association, 2016).

The literature demonstrates that college debt can impact all career decisions; not just limited to those interested in healthcare. Rothstein and Rouse (2011) established that undergraduate college debt affects post-graduation employment decisions. For example, students with more debt are less likely to accept jobs in low-paying industries. Their findings were based

upon data from a highly selective and wealthy university's administrative and financial aid records. Their overall findings revealed that students with more debt are less likely to accept jobs in low-paying industries and will generally accept higher-paying jobs. Vaughn (2010) reported similar findings stating that future financial considerations were of greatest importance among medical residents with higher levels of educational debt after creating an accumulation of wealth model for medical careers. As of 2015, the median educational debt increased to greater than $180,000 with 45% of graduating medical students owing equal to or more than $200,000 (Minder, 2016).

Regarding PAs, almost 25% of graduating PA students from 2011 reported having more than $100,000 in student debt and slightly more than 30% reported owing between $50,001 and $100,000 (Moore, Coffman, Cawley, Crowley, Bazemore, Cheng, Fox, & Klink, 2014). One would think that debt has an impact on specialty versus primary care career choice based on the difference in salary. For instance, a primary care PA's salary is approximately $85,000 compared with $105,000 for other specialties. In 2011, the median debt of PA students was $88,000 (Moore et al., 2014). Therefore, the $20,000 annual difference in salary could significantly impact job choice especially when considering future loan repayment.

Among the many factors affecting career choice, another significant influence to consider is personal interests. In a study by Ko, Lee, Leung, Fleming, Vikis, and Yoshida, (2007) the researchers surveyed 118 University of British Columbia medical students, residents, and physicians using a questionnaire focusing on identifying factors that influenced career choice. The results of the study suggested that medical residents ranked "personal interests" as the most important motive for selecting their specialty choice followed by "previous positive clerkship experience, influence from a mentor, future job opportunities, lifestyle and financial awards, and geographical location" (p. 484).

Steinbrook's (2009) opinion is that medical students are becoming less interested in primary care fields, causing an increase in specialties, such as radiology, anesthesia, or emergency medicine. His perspective considers that the lack of autonomy in primary care is leading medical students to focus their interests into specialty fields. Specifically, he hypothesized this increase in specialty fields can be related to physicians wanting to "have greater control over their lives, a wider variety of professional experiences, sufficient funds in the short term to pay off student debt, and higher incomes over the long term" (p. 2696). Although he discusses several factors influencing specialty choice, his main hypothesis for a diversion from primary care is driven by money and career satisfaction.

However, a study by Clinite, DeZee, Durning, Kogan, Blevins, Chou, and Kazantsev (2014) aimed at comparing first year medical students' specialty selection with fourth year medical students' selection, included a survey of participants from 11 U.S. MD-granting medical schools. The research from the 5-point Likert scale survey found that fourth year medical students rated "enjoying the type of work" as the highest important factor whereas they rated "financial factor" lowest (p. 1485). This study demonstrates that although some hypothesize that financial factors are the most influential, they may not be. Instead, personal satisfaction may be a higher priority when choosing a job.

Similarly, Bodenheimer (2006) explains how primary care providers are becoming more and more frustrated and dissatisfied with their work atmosphere secondary to high demands placed on primary care. Primary care physicians are expected to diagnose and treat patients across the life span for a multitude of conditions, both acute and chronic. Due to the fact that reimbursement is based on quality of services provided rather than quantity, both patients and providers are frustrated. There is a decline in the attractiveness of primary care in terms of working conditions and the effects of the implementation of governmental regulations through the ACA. This may be

a critical factor for physician assistants if studies demonstrate it has such a profound effect on physicians. Physician assistant students may be made aware of the provider's dissatisfaction with primary care during clinical rotations.

In regards to personal interests, a factor related to choosing a career in primary care was the ability to have long-term relationships with patients (Roy, Breton, & Loslier, 2016). Similarly, Newton, Grayson, and Whitley (1998) determined that a personal factor related to choosing a career in primary care was an "emphasis on people skills, rather than technical skills" (p. 201). Lastly, Wright and Orcutt (2011) demonstrated that physician assistants ranked factors that were important in influencing specialty choice, including personal satisfaction, intellectual challenge, commitment to patient care, image of primary care, and professional satisfaction. It is clear from the multiple studies and research gathered that career choice can be influenced by personal interests and motives.

Program Factors.

Many studies have found that in general, faculty has an effect on a student's overall career choice. First, I will focus on faculty impact on career choice from a broader perspective within higher education. Then, I will describe literature related specifically to faculty's impact on medical students' career choice. With the increasing cost of higher education, the faculty and institutions themselves are generally held more accountable for students' progress towards a degree; however, student employment after graduation is important as well, to which more institutions are being held accountable on this aspect. Specifically, whether or not students find jobs after graduation, is being considered a designated responsibility for the faculty within higher education by major stakeholders (Rogers, 2013).

Several studies have looked at student engagement and persistence related to faculty-student interactions. Testing Tinto's Model of Attrition, Pascarella and Terenzini (1977) found that students who discussed career aspirations with faculty were more likely to persist with their educational goals. Research has also concluded that mentorship is integral in student development of future employment interests. The 2014 Gallup-Purdue Index found that graduates who had a "professor who cared about them as a person, made them excited about learning, and encouraged them to pursue their dreams, their odds of being engaged at work more than doubled, as did their odds of thriving in their well-being" (p.6).

Studies demonstrate that faculty can affect medical students' career choice in primary care both positively and negatively. According to the 2007 Association of American Medical Colleges' Graduation Questionnaire, 75% of medical students stated that role models had a substantial impact on their specialty choice. One study revealed that female medical students' choice of surgery as a career, was strongly associated with a higher proportion of women on the surgical faculty (Straus, Straus, & Tzanetos, 2006). Similarly, Ravindra and Fitzgerald (2011) found that doctors who identified a particular surgical role model were more likely to pursue a career in surgery.

Faculty and preceptor exposure during clinical rotations in addition to PA curriculum requiring certain rotations can have an impact. MacNamara and George (2011) comment that requiring a family medicine clerkship and a longitudinal clinical experience in primary care for medical students, aids in increasing students' choice for primary care. Likewise, after a review of the literature, Pfarrwaller, Sommer, Chung, Maisonneuve, Nendaz, and Perron (2015) found that medical schools that focused on longitudinal programs concentrated on family practice are the most effective in promoting primary care. The longitudinal program was found to be the only consistent factor in increasing students' choice for primary care. Most of these medical schools did

also recruit students according to predictors of career choice that have been identified in the literature such as having an interest in primary care.

Faculty-student interaction plays a role in career choice as well. One sentinel study done by Gaff and Wilson (1975) determined the undergraduate students who were "high interactors" with faculty members were significantly more certain of vocational choice than those students who were "low interactors." Similarly, mentorship is a factor in influencing medical students. For example, a qualitative study performed found that positive role models were those with characteristics stated to be "favorable persona, reputation in diagnostic skills, research or teaching, and overt satisfaction with careers" (Mutha, Takayama, & O'Neil, 1997, p. 638). Relationships with these mentors or advisors who had the above listed positive attributes were said to have had an effect on students' specialty choices.

Students also feel that mentors are important to have with regard to deciding future career plans. Aagaard and Hauer (2003) studied third and fourth year medical students at The University of California at San Francisco and sought to determine medical students' mentoring relationships and characteristics surrounding these interactions. Out of the 232 students, 96% rated mentors as important or very important for making career choices. Similarly, a study performed by Caiola and Litaker (2000) found that the availability of a mentor was important or very important in fellowship program selection. These findings were based on 85% of 109 general internal medicine fellows reporting this fact in a survey questionnaire. Based on these studies, mentorship not only plays a role in career choice, but also in specialty training.

Matson, Davis, Epling, Freeman, Iroku-Malize, Stephens, and Perry (2015) remark that faculty have an obligation to engage and mentor students to foster professional development and to guide student career choice. In a study completed by Kolasinski, Bass, Kane-Wanger, Libman,

Sandorfi, and Utset (2007), rheumatologists who were surveyed stated that clinical rotations in rheumatology and exposure to role models and mentors were the most influential factors in them pursuing that specialty field.

While faculty mentors are found to have an impact on students' career choice, preceptors may also have an influence on their future career plans. Preceptors who are judged by students as "high quality teachers" have the greatest impact on students' career choice. In fact, Stagg, Prideaux, Greenhill, and Sweet (2012) performed a systematic review of the literature and found that student satisfaction with teaching that is rated as "high-quality" can increase career choice four times. Conversely, students who rate a preceptor as a poor educator are more likely to deviate from that specific area of medicine. Additionally, a study conducted by Sobral (2001), discovered similar findings and stated that the preceptorship experience has an influence on career decision. Specifically, 52% of the students surveyed stated that preceptorship had a positive influence on their specialty choice. Lastly, Griffith III, Georgesen, and Wilson (2000) performed a study to determine if the quality of clinical preceptors influenced career choice. Their findings showed that "Nine of 29 (30%) of the excellent students who worked with a "best" medicine clinical instructor chose an internal medicine residency, while none of the 23 excellent medical students who did not work with a "best" medicine clinical instructor did so" (p. 278).

The literature also demonstrates that students can be heavily influenced by mentors. A study performed by Osborn (1993) who surveyed 142 senior year medical students concluded that exposure to either faculty or role models with a positive attitude and who enjoy their specialty field can impact a students' decision to choose primary care. From this research as well as studies outlined above, it is apparent that clinical preceptors' attitudes can impact specialty choice of students. Additionally, mentors within educational programs can serve as knowledgeable guides as students learn and grow within the field. An example of successful role models is a program that

Stanford University School of Medicine created. The main objective of the initiative was to recruit and retain residents in their family medicine residency program. During the three years of their residency, the students paired with seasoned faculty who acted as mentors. As the faculty assisted in aiding the residents' progression in education, the residents help teach the medical students and support the change of the curriculum to include a more primary care foundation. As a result of this program, 1 in 10 Stanford graduates in 2013 chose family medicine, which was the largest in the school's history (Teng & Lin, 2014).

A study performed by Shapiro and Fornari (2016) researched factors that influenced students' selection of a family medicine residency at a private urban medical school. Their sample contained 63 students who were fourth-year students and were selected for primary care focused residencies. The results of their study demonstrated that the most cited reasons for not pursuing family medicine included family medicine being broad focused, having a lack of prestige, and that it was considered a nonacademic field. These negative stereotypical opinions stemmed from exposure while on clinical experiences. In fact, 53% of the respondents stated that they were told or directly overheard negative comments about primary care more than five times during their clinical clerkships. Faculty members' negative comments were highlighted in this study with one student stating, "Sadly, certain faculty members have a negative take on Family Medicine…commented that Family Physicians are less than other doctors and get paid very little" (p. 22).

There are also concerns regarding the influence of the "hidden curriculum" in medical schools that discourage student interests into adult primary care specialties. The idea of the "hidden curriculum" refers to when residents are exposed to a culture and an environment controlled by preceptors and attending physicians that may negatively impact students' viewpoints (Runyan, Savageau, Potts, & Weinreb, 2016). Hafferty (1998) remarks that educators must realize

that their institutions are cultural entities and moral communities that define what is "good" and "bad" within medicine. The Council on Graduate Medical Education Twentieth Report (2010) discusses the emergent apprehension on mentors' influence as well as a lack of strong primary care role models leading to a decrease in primary care providers.

External Factors.

Recently, researchers performed a descriptive, cross-sectional study analyzing the national job market for PAs and believe that *job availability* may be a potential barrier to PAs practicing in primary care. Precisely, their research found that in 2014, 82% of PA job postings were for positions in specialties (n = 28,047), while only 18% of PA job postings were for primary care positions (n = 6,091) (Morgan, Himmerick, Brandi Leach, & Everett, 2016). It appears that the higher percentage of job postings for specialty work correlates with the persistent trend of physician assistants working in specialty positions. As stated by the authors, this is the only original research available that accesses the national physician assistant job market. A limitation to their study is that it was strictly an analysis of job postings and does not provide evidence that individuals who want a primary care job could not get one.

Few studies exist that look at job market availability and the effects on medical specialty choice. However, Azizzadeh, McCollum, Miller, Holliday, and Shilstone (2003) performed a study to research factors influencing career choice among medical students interested in surgery. Their findings revealed that career choice among medical students who were interested in surgery or surgical subspecialty was majorly influenced by "career opportunities". Studies such as this one indicate that students who are deciding their career path are influenced by future employment options.

Personal finances are one of the most influential factors when choosing a job. Therefore, a factor that influences PA career choice is his or her financial situation. It has been demonstrated that medical students are concerned about their future income. According to the 2007 Association of American Medical Colleges' Graduation Questionnaire, 51% of medical students stated future income was the most important factor for deciding specialty versus primary care.

The effects of future salary based upon specialty choice are seen in Newton, Grayson, and Whitley's (1998) study which determined that, "income relative to other specialties was inversely related to primary care career choice" indicating that students who chose a specialty over primary care seemed to be influenced more by financial impact since primary care providers are paid less (p. 201). The data was collected by surveying three consecutive graduating classes from New York Medical College and East Carolina University School of Medicine. The respondents answered questions regarding career choice, demographic characteristics, and student-related influences.

Steinbrook (2009) reports that "over a 35-40 year career, the difference in income results in a $3.5 million gap, on average, between the return on investment for primary care physicians and that for subspecialists" (p. 2696). This statistic sheds some light on the subject of medical school students choosing specialties over primary care. If a student's financial situation is his or her main priority, then choosing a specialty seems to be an appropriate choice based on the salary differences. The payment gap is emphasized by Dorsey, Nicholson, and Frist (2011) who claim that a primary care physician's annual practice income would need to increase by 63% or $122,000 to generate the same lifetime earnings as a physician who practiced cardiology.

For physician assistants, Smith and Jacobsen (2015) reported that emergency medicine PAs are the highest paid – $18,917 more than those in general practice. Therefore, over a 35-year

career, emergency medicine PAs are paid over $662,000 more than general practice PAs. This calculation does not take into consideration bonuses or additional compensation and the statistics are based on the 2009 AAPA census data. The second highest paid field of medicine for PAs is surgery, with the average salary increase of $13,365 when compared to general practice. For surgical PAs compared to general practice PAs, the income gap over a 35-year period would be over $467,000. With these substantial lifetime payment gaps, if financial factors weigh in heavily on a physician assistant's specialty choice, then choosing a non-primary care option seems most appropriate and beneficial.

Theoretical Framework

The process of job choice and developing a career path can be understood and examined through specific theories. In the following paragraphs, I will discuss multiple theories that are applicable to career/specialty choice. First, theories that apply to medical specialty choice will be outlined, which include Expected Utility Theory, Attachment Theory, and Self-Determination Theory. Next, I will discuss Social Cognitive Career Theory and the effects that external environment can have on job choice. Finally, I will explain The Bland-Meurer Model. Based upon these theories, I will develop my conceptual framework that will be used for this study.

An economics theory known as Expected Utility Theory can assist in explaining overall decision-making, which can then be further applied to career choice. Germeijs and De Boeck (2003) describe the optimal choice as the one that maximizes the expected utility. Edwards (1954) elaborates on this theory stating that individuals make choices with the goal of seeking the maximum utility. This theory can help explain why student debt or potential salary may be factors in influencing job choice based on the thinking that individuals make rational choices based upon their financial constraints. Additionally, it reflects that consideration is given to the future and

income potential. However, it is important to note that there are also noneconomic factors that weigh in on the choice-making process as well.

One theory of personality that can be applied to medical specialty choice process is Attachment Theory, which is based upon individuals shaping cognitive models of caring based upon past experiences with caregivers (Ciechanowski, Worley, Russo, & Katon, 2006). A component of this theory is applicable to determining if someone is more likely to pursue primary care medicine based upon their affinity for participating in moderate to long-term caring relationships with patients. There are four Attachment Theory categories which include: secure, fearful, preoccupied, and dismissing (Meredith, Ownsworth, & Strong, 2008). These differences in one's attachment security have been used in the research to explain career choice and satisfaction (Meredith, Ownsworth, & Strong, 2008). This theory aids in substantiating the inclusion of personal values in my model.

Another theory that can be utilized to predict students' career choice is Self-Determination Theory, which is based upon an individual's intrinsic desire for learning, growth, and intellectual challenge (Williams, Saizow, Ross, & Deci, 1997). Furthermore, the theory proposes that external environments can influence and ignite the intrinsic motivations of students. For example, the theory predicts that educational environments that favor autonomy will enhance the student's intrinsic motivation (Williams, Saizow, Ross, & Deci, 1997). This theory is important to consider for this study as it brings together two categories of variables: both the personal factors and program factors. An individual possesses personal values that can contribute to their job choice, but may be molded and fine-tuned by program factors such as preceptor or faculty influence.

Based upon the Self-Determination Theory is a model known as "Instructor Facilitates Students" (Williams, Wiener, Markakis, Reeve, & Deci, 1994). This is a student-centered model

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that focuses on the instructor providing autonomy support and facilitating a student's interest; not controlling their decision making and providing pressure. Williams et al. (1994) performed a study to apply this theory to students selecting a medical specialty based upon a student internalizing value within a certain field and then an instructor and clinical experience influencing the students' feelings. Specifically, the study confirmed that instructors' autonomy support significantly predicted both perceived competence and interest, which then specifically predicted choice of internal medicine (Williams, Saizow, Ross, & Deci, (1997). A theory such as this one demonstrates the possibility that faculty and preceptors can influence career choice.

An additional theory to consider with regard to student career choice process is Social Cognitive Career Theory. When deciding job choice, an individual must take into consideration their abilities, interests, and values along with the advantages and disadvantages of choosing a specific field of medicine (Rogers, Creed, & Searle, 2009). Social Cognitive Career Theory helps identify the processes through which individuals make choices and how they achieve success in occupational pursuits (Lent, Brown, & Hackett, 2000). This theory focuses on the external environmental factors and variables that can impact individuals' thoughts and decisions. One definition is that Social Cognitive Career Theory "focuses on several cognitive-person variables (e.g. self-efficacy, outcome expectations, and goals), and on how these variables interact with other aspects of the person and his or her environment (e.g. gender, ethnicity, social supports, and barriers) to help shape the course of career development" (Lent, Brown, & Hackett, 2000). For this study, the theory can be applied to the external influences such as faculty impact on students' career choice of primary care or specialty. For example, it can illustrate how clinical preceptors or faculty "mediate" various external influences (including perceptions of the labor market) or their positive or negative feelings on primary care. Chickering (1969) emphasized student-faculty

interactions and believed that if they occurred in diverse settings, the students' sense of purpose and competence was fostered.

Lastly, a model that has been developed and will act as a main guide to this study's conceptual model is termed The Bland-Meurer Model (Bland, Meurer, & Maldonado, 1995). Bland et al. (1995) describe the model for medical-student specialty choice as beginning with a student attempting to match "characteristics of a specialty as he perceives them" with "his or her own career needs" (p. 622). The career needs include variables encompassing personal needs, societal needs, and external needs of others. The desires identified by the student that guide career choice stem from values that the student places as high importance. These core sets of values are shaped by experiences prior to and during medical school, demographic characteristics, and the culture of the institution that they attend. This process leads to main factors that can influence a student's final career choice decision.

Bland et al. (1995) emphasize the impact that the organization's culture has on a student's behavior and experiences, which in turn shape and create values. The organization's culture is said to be influenced primarily by its mission, faculty, and students. The summary of the model is based upon how multiple variables work together to form job choice.

Gaps in the Literature

A thorough review of the literature suggests there are apparent gaps with regards to PA first job choice. First, original research in PA education and career choice is limited. Additionally, most of the research focusing solely on PAs and factors that affect physician assistants' career choice is over five years old, and therefore, does not reflect the changes that have been instituted as a result of health care reform and the commencement of the Affordable Care Act. Also, individuals from different generations possess diverse career interests.

Studies on medical students demonstrate significant gaps and limitations. One example is that Bennett and Phillips (2010) discuss multiple categories as influences that can affect medical students' primary care or non-primary career choices, which include demographics/predisposition, curriculum/experience, student interests/perceived specialty characteristics, lifestyle and financial considerations, choice process/identity development, and health care environment. These researchers determined those factors by conducting a systematic literature review incorporating a secondary data analysis. A limitation to this research was that the researchers' theoretical model is based on older studies dating back to 1995, which may not adequately represent contemporary findings. Health care has evolved and changed throughout the years, which may affect career decisions. Along with that, according to theory, external environments may play an important role in shaping career and medical specialty choice. The health care environment has clearly developed and transformed over time.

One example is that the workplace has changed since 1995, being that millennials are entering the workforce and have new ideas surrounding work-life balance. Kisor, Hoge, Cosher, Gump, Carson, and Mitchell (2017) provide details on this subject stating that excessive overtime hours and an inflexible boss ranked the third and fifth most common reasons for finding a new company to work for in the U.S. Additionally, Lawal and Afolabi (2016) remark that lifestyle choices have become more important than in prior years in guiding choice of career for residents. Hence, millennials who are deciding which specialty to go into may be heavily influenced by work hours and flexibility. Therefore, developing a study based upon recent graduates is important since lifestyle preferences have evolved and changed as time has passed.

Conclusion and Conceptual Model

After a thorough review of the literature and recognizing the gaps, I have concluded that conducting a study focusing solely on physician assistant graduates and their job choice is needed.

This necessity is based upon a clear deficit of studies sampling physician assistants. Additionally, as mentioned previously, conducting a study post-ACA and on millennial graduates is useful in addressing the identified problem. As discussed, health care has reformed over the past few years and determining the factors related to the current times is helpful. By ascertaining factors that influence first job choice for PA graduates in the year 2016, I will be able to address the problem of not having enough primary care providers.

The conceptual model (Appendix A) for this study was developed from the various theories examined regarding job choice. Additionally, the variables chosen are based upon the extensive literature review that was conducted. The literature guided the inclusion of certain variables in my model and the multiple theories served as an example for creating my conceptual framework. My model is based upon the idea that different factors, including personal, program, and external influences can guide career choice. The visual is that of a funnel in that certain factors are weighted more, depending on the individual, and can influence career decisions.

The "Individual Factors" encompass demographics, student debt, and personal values. The Utility Theory guided the incorporation of student debt while the Social Cognitive Career Theory helped form the inclusion of demographics and level of student debt. The "Program Factors" category stemmed from Attachment Theory and includes the experiences shaped by both mentors and faculty. Additionally, it includes preceptor influence and clinical rotation experiences, which can affect career decisions. Lastly, "external factors" include availability of jobs in the specialty as well as income potential. The Utility Theory and Social Cognitive Career Theory guided the inclusion of external factors. These specific variables will be further outlined in the Methodology section in Chapter Three. In summary, the above mentioned conceptual model will guide the study to address the research questions which were identified in Chapter One and include:

- What percentage of graduating physician assistants have accepted a clinical position in primary care?

- What factors predict physician assistants' job choice upon graduation? What role do "individual" factors (demographics; student debt; and personal values) have relative to "program" factors (including faculty and preceptor influence; and mentoring) vs. "external" factors (job availability, income potential) in shaping job choice?

CHAPTER III - METHODS

In this chapter I describe the design and methodology of my study. First, I discuss the survey instrument utilized to collect the data. Second, the subjects and population are outlined. Next, I introduce the variables within the instrument and provide a rationale for which ones were used in this study. After, I provide a thorough outline of the variables. Finally, I reintroduce the research questions and consider limitations to the study.

The purpose of this study is to determine factors that predict first job choice in physician assistant graduates. This is a quantitative research study that uses multinomial logistic regression analysis to predict factors that lead to either primary care, specialty, or no job accepted for physician assistants following graduation from an accredited university within the United States.

Instrument

The instrument utilized in the study is End of Program Survey (EOPS) created by Physician Assistant Education Association (PAEA). The aim of the survey was to collect information from graduating physician assistant students on demographics, program and curriculum experiences, career plans, and educational debt (PAEA, 2016). Specifically, the topics included: general information, demographics, impact of PA program and curriculum (didactic and clinical), interprofessional education experiences, institutional support services, assessment of PA competencies, specialty choice and career plans, financing of education, and negative behaviors or experiences during school. The questions ranged from basic fill-ins to Likert style responses. There was also an area available for additional comments. To maintain confidentiality and anonymity, all data was de-identified and sent in raw form to the primary researcher. See Appendix B for a full copy of this survey. Since 2016 was the first year that the survey was distributed, there is no information on its psychometric properties. The survey took the subjects roughly 30 minutes to complete.

This study aimed at determining factors that predicted *first* job choice upon graduation from PA school. The EOPS was chosen for a variety of reasons. First, it provided a large sample of graduate students who accepted their first job offer as a physician assistant. Second, it collected information at the time of the student's pending graduation and first job choice as opposed to obtaining information from PAs who have been in the field and would need to recall information related to their job choice. The timing was critical in choosing this survey for the study. Finally, PAEA collected data in the EOPS from accredited universities across the United States, which provided good geographical representation of physician assistants.

The EOPS was the best survey for my analysis when compared to other surveys available. I researched other surveys including the American Academy of Physician Assistant's survey and considered it for my analysis. However, that study was aimed at producing information about all physician assistants who have ever graduated and are currently practicing in the United States. This would not narrow my focus, which was on recent graduating physician assistants who are choosing their first job. Additionally, raw data was not available as a primary researcher not part of the organization. Furthermore, PAEA conducted other student surveys including "Matriculating Student Survey" and "Mid-Program Student Survey," but these did not capture my sample of graduating physician assistants who are in the process of choosing their first job.

Data Collection Procedure

The PAEA initially sent the survey out to all program directors during the first business day of the month that the students graduated from their respective institutions. The subjects were informed that participation was voluntary and there was no penalty for not completing the survey or discontinuing it. The subjects had the ability not to answer or skip any questions they did not feel comfortable answering. The subjects were also informed that the data may be released for

research purposes to other PA researchers once IRB approval was attained for their respective institutions.

Subjects

This study is a review of retrospective data that was collected by the PAEA (Physician Assistant Education Association). Starting in 2016, the PAEA began to send the "End of Program Survey" to program directors from PA programs in the United States that had been accredited by January 2016 on the first business day of the month that the program graduates a class. PAEA reached out to a total of 200 programs, but 16 of those programs were ineligible since they were not graduating students yet. Therefore, the survey was sent to a total of 184 programs with a response from 151 programs. The distribution of the 151 programs according to the U.S. Census Bureau Regions and Divisions was the following: 47 programs were located in the Northeast region, 37 in the Midwest region, 49 in the South Region, and 18 programs in the West region (PAEA, 2017). This sample is a national representation of PA programs as every program that was accredited at that time received the survey. The program director provided the link for the survey to his or her students to complete. Subjects included any PA student from an accredited PA program who was graduating. Participation in the EOPS was voluntary. The total sample was 3,289 participants. According to PAEA, the total population of graduates during the 2015-2016 year was 8,059, making the response rate 40.81%. After deleting 251 missing cases, the sample size for this study was 3,038 subjects.

In order to analyze whether my sample was representative of the original sample, I did comparisons of the frequency distributions for some of the variables. The descriptive results did not vary substantially. For example, prior to deleting missing cases, 73.3% of the original sample was not male. The final sample utilized for this research contained 75.1% not male participants. Other comparisons performed to determine the difference in descriptive statistics before and after

deleting missing cases included the following: Moderate influence of availability of jobs – 36.7% (original sample) and 39.1% (study sample), Minor to no influence of personality, interest, and skills – 1.7% (original sample) and 1.9% (study sample), and Strong influence of income potential – 35% (original sample) and 37.1% (study sample). These comparisons are helpful in demonstrating the variability in the study sample from the original sample.

Additionally, I did a comparison of the final sample versus the deleted cases. Frequency and percent differences were analyzed to show the differences due to missing data. For example, the missing cases demographic make-up was 31.3% male, 25.7% married, and 63.1% white. For comparison purposes, the final sample for this study contained the following demographic make-up: 24.9% male, 30.1% married, and 79.7% white. A comparison of distributions of the predictors for two groups (the final sample and the group with all missing cases/removed from my final model) was performed and can be viewed in Appendix C.

Variables

The following paragraphs describe the variables included in the instrument and in my analysis with descriptions of each. The survey included many variables related to physician assistants. In the initial selection of my variables, I used both the literature review and conceptual model as my guide. Individual factors, program factors, and external factors are considered most important in predicting the outcome variable of no job accepted, primary care, or specialty practice as first job choice. Therefore, I broke the independent variables into those three categories.

Dependent Variable.

The section titled, "Specialty and Career Plans" in the EOPS consisted of primarily nominal and ratio data. The question for "Discipline accepted job offer in" was used as the dependent variable for this study. In the EOPS, question 35 asked about the students' current PA employment

status. For those students who selected, "I have accepted a job offer," they were instructed to answer question 35, which listed all different specialties as well as primary care jobs. For this analysis, "I have accepted a job offer" was coded per the following: "Primary care" was given a "1" and "Specialty" was given a "2." All missing cases were given a "0" as these indicated that no job was accepted since survey respondents were instructed not to answer that question if they did not accept a job offer. When the analysis was performed, the reference category was "Primary Care." Primary care included "family/general medicine, general internal medicine, general pediatrics, geriatrics, and obstetrics/gynecology/women's health." Specialty included any of the following: "general surgery, emergency medicine (not urgent care), critical care, urgent care, cardiology, oncology, other internal medicine subspecialties, dermatology, pediatric subspecialties, orthopedics, cardiovascular/cardiothoracic, neurology, plastic surgery, other surgical subspecialties, occupational medicine, psychiatry/behavioral medicine, correctional medicine, geriatrics, and hospitalist." Classifying which type of practice was specialty or primary care was based on the literature and past studies completed. After all recoding, my outcome variable contained three choices: No job accepted, Primary care, or Specialty. I chose to include those subjects with no job accepted in addition to those that accepted a job in order to capture all students making a choice to allow for a more comprehensive model. At the time of the survey which is the students' last month of PA school prior to graduation, there are three natural job choices for them: to accept a job in primary care, to accept a job in a specialty, or to not have a job. Therefore, the outcome variable should encompass all three options.

Independent Variables.

Individual Factors.

The individual factors that were included in my study included the following: demographics, student debt, and personal values. Specific variables used to capture demographics

included gender, ethnicity, race, and civil status. Civil Status included the following choices: single (never legally married), married, domestic partnership/civil union, separated (but still legally married), divorced, or widowed. Ethnicity and race were two separate questions on the survey. The first question regarding ethnicity was worded as the following, "Are you Hispanic, Latino, or Spanish in origin?" with the choices of "yes," "no," or "I prefer not to answer." The second question was "What is your race" and included the following as options: "American Indian or Alaskan Native," "Asian," "Black or African American," "Multi-racial," Native-Hawaiian or Pacific Islander," "White/Caucasian," "Other" or "I prefer not to answer." Some individuals responded "yes" to the first question about being Hispanic, Latino, or Spanish, but also chose "White" for the race question. Therefore, I recoded the two original variables into the following four variables: "White", "HispanicLatinoSpanish", "OtherRace/Ethnicities", and "White and Hispanic." This elaborate recoding ensured that I represented all races and ethnicities without including a duplicate entry in my analysis since for instance, some subjects said "yes" to both White and Spanish. The **"**Financing your education" EOPS section consisted of nominal variables along with open-ended responses. For this study, level of student debt, a categorical variable, as a factor in influencing job choice, was used in the model. Lastly, "Fit with personality, interests, and skills" applied to personal values as an individual factor.

All variables regarding influential factors or experiences that helped the student choose his/her specialty choice for a PA job were originally coded in the EOPS as follows: "4" was given for "Strong influence," "3" for "Moderate influence," "2" for "Minor influence," and "1" for "No influence." For my analysis, I chose to group the categories as the following to have more equal distributions: 1 and 2 were coded as a 0 and described as "Minor to no influence." The 3's were recoded as 1 and described as "Moderate influence" and the 4s were coded as 2 for "Strong influence." Each of these variables were then recoded into dummy variables to represent the

following: "Minor to no influence or not," 'Moderate influence or not," and "Strong influence or not." For this study, I used "Minor to no influence" as the reference category for the analysis. The following includes the measures of each individual factor variable:

- Gender (a categorical variable indicating student gender. In the current study, it is recoded into a dichotomous variable where 0 = Not Male, 1 = Male).

- Ethnicity and Race (categorical variables measuring a student's ethnicity. White is the reference group. There were four groups of variables including: White (0 = Not white, 1 = White), HispanicLatinoSpanish (0 = Not Hispanic, Latino, or Spanish, 1 = Hispanic, Latino, or Spanish), Other race/ethnicities (0 = Not Other race/ethnicities, 1 = Other race/ethnicities), White and Hispanic (0 = Not White and HispanicLatinoSpanish 1 = White and HispanicLatinoSpanish)).

- Civil Status (a categorical variable measuring a student's civil (marital) status. In the current study, it is recoded into a dichotomous variable where 0 = Not Married, 1 = Married).

- Level of educational debt (a categorical variable showing influence on career choice. Minor to no influence or not is the reference group. Minor to no level of educational debt (0 = Not minor to no level of educational debt, 1 = Minor to no level of educational debt); Moderate level of educational debt (0 = Not moderate level of educational debt, 1 = Moderate level of educational debt); Strong level of educational debt (0 = Not strong level of educational debt, 1 = Strong level of educational debt)).

- Fit with personality, interests, and skills (a categorical variable showing influence on career choice. Minor to no influence of fitting with personality, interest, and skills or not is the reference group). Minor to no influence of fitting with personality, interest, or skills (0 = Not minor to no influence of fitting with personality, interest, and skills, 1 = Minor to no

personality interest and skills); Moderate influence of fitting with personality interest and skills (0 = Not moderate influence of fitting with personality interest & skills, 1 = Moderate influence of fitting with personality interest and skills); Strong influence of fitting with personality interest and skills (0 = Not Strong influence of fitting with personality interest and skills, 1 = Strong influence of fitting with personality interest and skills)).

Program Factors.

The program factors included four different variables: advising/mentoring from a preceptor, advising/mentoring from a faculty member, experience in clinical rotations, and role model/mentor/advisor influenced. These four variables were taken from the section of the EOPS that asked, "How influential are the following factors or experiences in helping you choose your specialty choice for a PA job?" These variables were measured in a Likert scale and the following includes the measures of the program factors:

- Advising/mentoring from a preceptor (a categorical variable showing influence on career choice. Minor to no influence or not is the reference group. Minor to no preceptor influence (0 = Not minor to no preceptor influence, 1 = Minor to no preceptor influence); Moderate preceptor influence (0 = Not moderate preceptor influence, 1 = Moderate preceptor influence); Strong preceptor influence (0 = Not strong preceptor influence, 1 = Strong preceptor influence)).

- Advising/mentoring from a faculty member (a categorical variable showing influence on career choice. Coded as the following: Minor to no influence or not is the reference group. Minor to no faculty influence (0 = Not minor to no faculty influence, 1 = Minor to no faculty influence); Moderate faculty influence (0 = Not moderate faculty influence, 1 = Moderate faculty influence); Strong faculty influence (0 = Not Strong faculty influence, 1 = Strong faculty influence)).

- Experience in clinical rotations (a categorical variable showing influence on career choice. Minor to no influence or not is the reference group. Minor to no clinical rotation experience (0 = Not minor to no clinical rotation experience, 1 = Minor to no clinical rotation experience); Moderate clinical rotation experience (0 = Not moderate clinical rotation experience, 1 = Moderate clinical rotation experience); Strong clinical rotation experience (0 = Not strong clinical rotation experience, 1 = Strong clinical rotation experience)).

- Role model/mentor/advisor influenced (a categorical variable showing influence on career choice. Minor to no influence or not is the reference group. Minor to no mentor influence (0 = Not minor to no mentor influence, 1 = Minor to no mentor influence); Moderate mentor influence (0 = Not moderate mentor influence, 1 = Moderate mentor influence); Strong mentor influence (0 = Not strong mentor influence, 1 = Strong mentor influence)).

External Factors.

The external factors included availability of jobs and potential future income. These variables were taken from the same section of the EOPS as above where the question read, "How influential are the following factors or experiences in helping you choose your specialty choice for a PA job?" The following includes the measure of all of the external factor variables:

- Availability of jobs in a specialty (a categorical variable showing influence on career choice. Minor to no influence or not is the reference group. Minor to no available jobs (0 = Not minor to no available jobs, 1 = Minor to no available jobs); Moderate available jobs (0 = Not moderate available jobs, 1 = Moderate available jobs); Strong available jobs (0 = Not strong available jobs, 1 = Strong available jobs)).

- Income potential (a categorical variable showing influence on career choice. Minor to no influence or not is the reference group. Minor to no income potential (0 = Not minor to no

income potential, 1 = Minor to no income potential); Moderate income potential (0 = Not moderate income potential, 1 = Moderate income potential); Strong income potential (0 = Not strong income potential, 1 = Strong income potential)).

In conclusion, the independent variables were chosen and utilized to fulfill the categories related to the research questions and driven by the conceptual model. As described in my conceptual model, my model is based upon the idea that different factors, including individual, program, and external influences can guide career choice. The dependent variable was chosen as primary care, specialty, or no job accepted since this study's model had three possible outcomes.

Data Analysis and Missing Cases

In order to analyze the data collected, different statistic methods were explored. For this study, categorical variables were studied; therefore, a linear regression model was not appropriate to use. Multinomial logistic regression (MLR) is a statistical method utilized when the categorical dependent variable has more than two levels (Chan, 2005). This analysis distinguishes between the multiple response variables and a set of explanatory variables and provides a probability of an outcome (Agresti, 2002).

MLR uses maximum likelihood estimation, an iterative procedure, to find the function that will maximize our ability to predict the probability of an outcome occurring (Czepiel, 2002). The first iteration is the log likelihood of the "null" model, which has no predictors. Next, the iteration includes the predictors into the model. At each iteration, the log likelihood (or goodness of fit) increases to maximize the log likelihood. When the difference between successive iterations is not changed significantly, the model is said to have "converged." Using multinomial logistic regression allows for the ability to interpret parameter estimates as odds ratios (Hilbe, 2011).

Prior to performing a multinomial logistic regression, certain assumptions must be met (Starkweather & Moske, 2011). First, the dependent variable should be measured as a nominal variable. For this analysis, job accepted is considered a nominal variable. Second, the analysis should include one or more independent variables. In this case, there are independent variables broken down into different predictors for job choice and include individual, program, and external factors. Next, there should be no multicollinearity, meaning that the independent variables should not be highly correlated with each other (Grewal, Cote, & Baumgartner, 2004).

For this quantitative study, multinomial logistic regression analysis is best because my outcome variable, which is job choice, is categorical and I have several predictor variables (Peng, Lee, & Ingersoll, 2002). Bayaga (2010) explains multinomial logistic regression as an extension of the binomial logistic regression model. He further explains that dummy coding of independent variables is useful to determine the effect of the predictors on the probability of success in a category, in comparison to the reference category. I will be able to use this statistical analysis to determine the relationship between my independent variables and my outcome variable.

The first step of my analysis included list-wise deletion process to remove any missing data. Kang (2013) explains that missing data is relatively common in all research, but must be addressed to prevent bias and reduce the risk of a threat to validity of the study. The sample size for the present study was not significantly reduced: only 7.6% of the cases were missing and removed from the final analytic sample.

A missing data analysis was performed to compare whether the distribution of predictors was the same across the missing cases and the non-missing cases. Chi-square tests between the categorical predictors and missing status showed some of the predictors were significant (e.g., gender, race/ethnicity). It was found; however, that the majority of the categories for the predictors

among the deleted missing cases sample were very small in size (out of the 32 categories, 22 categories were no larger than 20 counts, and 8 categories were no larger than 10 counts) as compared to those for the final analytic sample. For example, for the variable "moderate influence of the availability of jobs," the missing case sample has a frequency of 17 while the final sample has a frequency of 1188. Due to the extremely small counts in some categories of the predictors, missing data analysis using chi-square tests becomes unstable and unreliable. Given this reason and the fact that only small portion of the sample was missing (7.6%), the list-wise deletion approach was deemed appropriate for this study.

After addressing all missing cases, I performed the descriptive statistics and a multinomial logistic regression. The multinomial logistic regression model is based on the following equation:

$$\log Pr\ (Y=j\ )\ /\ Pr\ (\ Y=j'\ ) = \alpha + \beta_1 X_1 + \beta_2\ X_2 +...+ \beta_k\ X_k$$

where j is the identified outcome (no job accepted/specialty job choice) and j' is the reference outcome (primary care). In this research, the model of job accepted between the three outcomes can be represented using the following two models:

$$\log Pr\ (Y=\text{no job accepted}\ )\ /\ Pr\ (\ Y=\text{primary care}) = \alpha + \beta_1 X_1 + \beta_2\ X_2 +...+ \beta_k\ X_k$$

$$\log Pr\ (Y=\text{specialty job choice}\ )\ /\ Pr\ (\ Y=\text{primary care}) = \alpha + \beta_1 X_1 + \beta_2\ X_2 +...+ \beta_k\ X_k$$

Job choice is likely to be influenced by explanatory variables. Therefore, the above equations are comparing outcome (no job accepted) with the reference category (primary care) and one comparing outcome (specialty choice) with the reference category (primary care). Odds ratio was utilized to determine which factors predicted the outcome. Specifically, an odds ratio greater than one indicates that subjects in that category (no job accepted or specialty job choice) have higher odds than participants in the reference category of primary care job choice.

After I decided on the model and analysis, I submitted all required documentation to my institution's Internal Review Board (IRB) for approval. This procedure and process was important in order to ensure the safety of the human subjects involved in my study. Along with that, all data was always password protected and secure. The IRB from my institution granted me an approval allowing me to proceed with my analysis. The following paragraphs indicate exactly what analysis was done to address the specific research questions.

Data was initially analyzed using frequency counts and descriptive statistics for general demographic variables, including gender, ethnicity, race, and civil status. To answer the first research question, which is: "**What percentage of graduating physician assistants have accepted a clinical position in primary care?**" descriptive statistics and frequency counts were used.

The second research question of "**What factors predict physician assistants' job choice upon graduation? What role do individual factors (demographics; student debt; and personal values) have relative to "program" factors (including faculty and preceptor influence; and mentoring) vs. "external" factors (job availability, income potential) in shaping job choice?**" was addressed using multinomial logistic regression analysis. First, I ran the comprehensive model with all predictors to understand the relationship between each cluster of factors and the outcome, controlling for all other variables. Then I determined the influence and significance of the independent variables on the outcome variable. Primary care was utilized as my reference variable and compared to both no job accepted and specialty.

Limitations

There are several limitations related to my research. First, using secondary survey data results is an inflexible design. I could not change the way the survey was distributed or help

determine which questions were asked. Because of this, certain variables that were found in the literature were not able to be included in my model. These include socioeconomic status and student financial aid. However, whether or not level of educational debt had an impact on a student's job choice was included in my design. The educational debt variable was a categorical variable. This variable was included in my model to determine if level of education debt was influential in the decision of job choice. Therefore, although it was not a socioeconomic or student financial aid variable, it did act as an influential variable to represent educational debt as a factor in the decision-making process.

Performing a cross-sectional study is another limitation to my study. A longitudinal study could be considered to study the negative impact that preceptors or faculty could have on student career choice. For instance, Chen, Reinert, Landau, and McGarry (2014), reported that "the burnt out, overworked image of primary care providers" may be dissuading trainees from the field. Longitudinal research needs to be done to determine if students are entering PA school with the desire to be a primary care provider, but change to a specialty after seeing primary care provider preceptors who are dissatisfied with their career choice. The fact that burnout and satisfaction with work-life balance in United States physicians has worsened from 2011 to 2014 is a concern, since it may affect the future providers' job choice (Shanafelt, Hasan, Dyrbye, Sinsky, Satele, Sloan, & West, 2015).

Furthermore, my study is based on self-reported data, which cannot be verified. It is impossible to ascertain whether the data is completely factual. This study depends on the complete understanding and interpretation of the questions by the respondents. Because most questions used included rating scales, it is important to recognize that individuals may interpret the scales differently. However, there is no reason to believe that people who chose primary care versus a specialty job would interpret questions differently; therefore, there is still error, but no systematic

bias. Additionally, the definition of certain factors in the survey are left to interpretation by the individual. An example of a factor that can be interpreted in different ways is, "Fit with personality, interest, and skills."

Lastly, a limitation to my study was that the data was obtained using categorical values, but coded using a numerical score. By recoding all influence factors into dummy variables, it is difficult to determine if the analysis is inaccurate due to the proportional differences.

Conclusion

This chapter provided an overview of the methodology for my study. I described where the sample originated from and explained my quantitative analysis approach. In the next few chapters, I will explain the results from the analysis and significant outcomes from my study as well as provide areas for future research and overall limitations.

CHAPTER IV - RESULTS

The purpose of this research was to determine factors that could predict first job choice in physician assistant students. This chapter will concentrate on the results of the analysis that was outlined in Chapter Three. First, I will provide descriptive statistics. Then I will review each research question and describe the analysis that was performed to answer the question. Finally, I will describe the results and provide a brief chapter summary at the end.

This study uses a dataset from The Physician Assistant Education Association (PAEA). The survey data was designed to collect information from the 2016 cohort of physician assistants. The original sample prior to performing list-wise deletion was a total of 3,289 participants. After deleting a total of 251 missing cases, the final sample size for this study was 3,038 subjects. Specifically, there were 1,146 participants who stated they accepted a job, which was the dependent variable. For the independent variables, the percent missing ranged from 0.6% to 6.5% missing values.

Descriptive Results

Descriptive statistics were performed for each of the demographic variables in my model; specifically, frequency counts. The gender of the participants appears to be unequally distributed as 24.9% were male. However, this is expected since females over represent in the PA population (AAPA, 2016). Regarding the civil status of the sample, 30.1% were married and 69.9% were not married. The ethnicity and race make-up of my sample included the following: 79.7% were White, 1.8% Hispanic, Latino, or Spanish, 4.2% identified as both White and Spanish, while 14.3% stated they were other races/ethnicities.

The first research question for my study was: *What percentage of graduating physician assistants have accepted a clinical position in primary care?* To answer this question, descriptive

statistics were used. First, the data was cleaned and missing cases were deleted. The total sample

size without missing cases was 3,038 graduating physician assistants. As noted in Table 1, out of

the 3,038 subjects, 269 (8.9%) accepted a job in primary care medicine. Out of the 3,038 subjects,

847 (27.9%) accepted a specialty job. Lastly, out of the 3,038 students, 1,922 did not accept a job

at the time they were given the survey, which is 63.27%.

Table 1. Descriptive Statistics of the Dependent Variable (N = 3038)

Variable	Percentage (%)
Primary Care Medicine	8.9
Specialty	27.9
No Job Accepted	63.3

Table 2 demonstrates the descriptive statistics for all independent variables in my model.

Cumulative percents are provided for each outcome variable for comparison purposes. For

example, 58% of the males in the sample chose no job, 10% chose primary care, and 32% chose a

specialty job.

Table 2. Descriptive Statistics of Independent Variables Across All Groups

Variable	Final Sample n = 3038 f	(%)	No Job Accepted n= 1922 %	Primary Care n = 269 %	Specialty n = 847 %
INDIVIDUAL FACTORS					
Male	755	24.9	58	10	32
Not Male	2283	75.1	65	8	27
Married	913	30.1	60	13	27
Not Married	2125	69.9	65	7	28
White	2420	79.7	61	10	29
Hispanic Latino Spanish	56	1.8	77	4	19
White and Spanish	129	4.2	63	8	29
Other race/ethnicities	433	14.3	74	6	20
Minor to no influence of personality, interest, and skills	57	1.9	60	16	24
Moderate influence of personality, interest, and skills	484	15.9	67	9	24
Strong influence of personality, interest, and skills	2497	82.2	63	8	29
Minor to no influence of education debt level	1051	34.6	61	10	29
Moderate influence of education debt level	1091	35.9	66	8	26
Strong influence of education debt level	896	29.5	63	9	28
PROGRAM FACTORS					
Minor to no preceptor influence	382	12.6	59	10	31
Moderate preceptor influence	932	30.7	66	8	26
Strong preceptor influence	1724	56.7	63	9	28
Minor to no faculty influence	1181	38.9	63	9	28
Moderate faculty influence	1114	36.7	65	8	27
Strong faculty influence	743	24.5	61	9	30
Minor to no influence of clinical rotation experience	222	7.3	55	9	36
Moderate influence of clinical rotation experience	901	29.7	66	10	24
Strong influence of clinical rotation experience	1915	63	63	8	29
Minor to no influence of mentors	838	27.6	63	10	27
Moderate influence of mentors	1115	36.7	66	8	26
Strong influence of mentors	1085	35.7	60	9	31
EXTERNAL FACTORS					
Minor to no influence of availability of jobs	623	20.5	55	10	35
Moderate influence of availability of jobs	1188	39.1	65	9	26
Strong influence of availability of jobs	1227	40.4	66	8	26
Minor to no influence of income potential	513	16.9	63	15	22
Moderate influence of income potential	1399	46.1	66	8	26
Strong influence of income potential	1126	37.1	60	7	33

Regression results

The second research question for my study was: *What factors predict physician assistants'*

job choice upon graduation? What role do individual factors (demographics; student debt; and

personal values) have relative to "program" factors (including faculty and preceptor influence;

and mentoring) vs. "external" factors (job availability, income potential) in shaping job choice?

To answer this question, a multinominal regression was utilized where the reference group for the dependent variable ("Job choice") was primary care. Table 3 represents the analysis of the model where primary care job choice is the reference category.

Table 3. Analysis of the Model on Job Choice in Graduating Physician Assistants:

	No Job Accepted			Specialty Job Choice		
	OR	Sig.	SE	OR	Sig	SE
Individual Factors						
Male	.849		.154	1.098		.165
Married	.508	***	.137	.497	***	.150
Hispanic, Latino, Spanish	4.077		.732	2.137		.780
Other race/ethnicities	1.965	**	.216	1.074		.237
White and Hispanic	1.247		.335	1.120		.359
Moderate educational debt	.972		.180	.822		.193
Strong educational debt	.614	*	.206	.446	***	.220
Moderate personality interest and skills	1.377		.436	1.462		.490
Strong personality interest and skills	1.529		.415	1.846		.467
Program Factors						
Moderate preceptor influence	1.083		.242	.961		.261
Strong preceptor influence	1.043		.242	.941		.260
Moderate faculty influence	1.063		.172	1.210		.186
Strong faculty influence	.830		.202	1.070		.218
Moderate mentor influence	1.038		.182	1.044		.198
Strong mentor influence	.802		.190	.993		.204
Moderate clinical rotation experience	.895		.281	.552	*	.297
Strong clinical rotation experience	1.079		.276	.714		.289
External Factors						
Moderate available jobs	1.139		.187	.716		.199
Strong available jobs	1.354		.199	.677		.212
Moderate income potential	1.791	**	.187	2.634	***	.209
Strong income potential	2.487	***	.231	5.514	***	.252

Significance: *p <0.05, **p<0.01, *** p<0.001
The reference outcome is Primary Care Job Choice. Significant variables are presented with asterisks.

Table 3 provides a response to the first part of the second research question: *What factors predict physician assistants' job choice upon graduation?* The analysis demonstrates a statistically significant relationship between the following factors as being significant predictors in the model of no job accepted: Married, Other Race/ethnicities, Moderate income potential, Strong income potential, and Strong educational debt. Additionally, the analysis provides evidence of a

significant relationship between the following factors as being significant predictors in the model of specialty job choice: Married, Moderate income potential, Strong income potential, Strong educational debt, and Moderate clinical rotation experience.

No Job Accepted: Category Results

Table 3 presents the findings of the multinomial logistic regression analysis and evaluation. First, individual factors are considered in the model of comparing the outcome of no job accepted to the reference category, primary care job choice. These individual factors included demographics, educational debt influence, and personality, interest, and skills influence. Out of the demographic predictors, two were found to be significant including being married and other race/ethnicities (with reference category as White). Being married is significantly and negatively related to the odds of choosing no job over primary care. Specifically, for students who are married, the odds of having no job accepted were 49.2% lower than for those who are not married (Odds-Ratio = 0.508, $p < .001$). Other race/ethnicities is significantly and positively related to the odds of choosing no job over primary care. Specifically, for students who consider themselves other race/ethnicity, the odds of having no job accepted were 96.5% higher as compared to their White counterparts (Odds-Ratio = 1.965, $p < .01$). The other two race/ethnicity categories of Hispanic, Latino, Spanish and White and Hispanic had no statistically significant findings. Gender was not statistically significant, indicating that gender has no statistically significant relation to the odds of physician assistant graduates choosing no job choice or primary care as their first job.

In the category of educational debt influence, strong educational debt was found to be significant while moderate educational debt did not have any significance. Strong educational debt is significantly and negatively related to the odds of choosing no job over primary care (Odds-Ratio = 0.614, $p < .05$). Specifically, for students who described level of educational debt as having a strong influence on choice of specialty (as compared to those who described reference

category as level of educational debt had minor to no influence on their specialty choice) were less likely to choose no job accepted than primary care. In fact, the odds of having no job accepted were 38.6% lower.

The next category of factors considered in the model of comparing the outcome of no job accepted to the reference group of primary care job choice were program factors. In this category, the predictors focused around preceptor, faculty, and mentor/advisor influence as well as clinical rotation experience. None of these predictors were found to be statistically significant ($p > .05$). This indicates that program factors had no statistically significant relation to the odds of physician assistant graduates choosing no job choice or primary care as their first job.

The last category of factors represented in Table 3 in the model of comparing the outcome of no job accepted to the reference group of primary care job choice were external factors. These predictor variables included availability of jobs and income potential. The predictors related to availability of jobs did not have any statistical significance ($p > .05$).

However, the variables of income potential were found to be statistically significant. Compared to low income potential, moderate income potential is significantly and positively related to the odds of choosing no job over primary care (Odds-Ratio = 1.791, $p < .01$). Specifically, for students who described income potential as moderately influencing choice of specialty (compared to reference variable minor to no income potential influence) were more likely to choose no job accepted than primary care. In fact, the odds of having no job accepted were 79.1% higher. The difference between minor to no income potential influence and strong income potential was even greater. Strong income potential is significantly and positively related to the odds of choosing no job over primary care (Odds-Ratio = 2.487, $p < .001$). Specifically, for students who described income potential as having a strong influence on choice of specialty when

compared to students who felt income potential had little to no influence on their specialty choice were more likely to choose no job accepted than primary care. In fact, the odds of having no job accepted were 148.7% higher. This suggests that individuals who think income is important tend to not choose primary care and wait for other job opportunities.

In conclusion, the highlighted results demonstrate civil status and racial/ethnic differences in first job choice. Additionally, financial factors including both educational debt and income potential were found to be significant predictors of first job choice in the model comparing no job accepted versus primary care job choice.

Specialty Choice Accepted: Category Results

The second part of the multinomial regression considered the outcome variable of specialty job choice with the reference variable of primary care job choice. The same predictors as mentioned above were included in this model to be able to consider the three influential categories: individual factors, program factors, and external factors. The following paragraphs present the results of this analysis.

The individual factors included demographics, educational debt influence, and personality, interest, and skills influence. Out of all individual factors in this model, married and strong educational debt were the only predictors of physician assistant job choice. Gender, race/ethnicities, and personality, interest and skills were not significant predictors of job choice.

Compared to physician assistant students who were not married, students who were married tended to have significantly higher odds of choosing a job in primary care medicine over specialty field (Odds-Ratio = 0.497, $p < .001$). Strong educational debt is significantly and negatively related to the odds of choosing a specialty job over primary care (Odds-Ratio = 0.446, $p < .001$). Specifically, for students who described level of educational debt as having a strong influence on

career choice when compared to students who felt level of educational debt had minor to no influence on their specialty choice were less likely to choose a job in a specialty than primary care. In fact, the odds of having a specialty job accepted were 55.4% lower.

The next group of predictors in the model for comparison of specialty versus primary care job choice included program factors. These factors considered influence from preceptors, faculty, and advisors/mentors. An additional predictor included clinical rotation experience. The only significant predictor found among the program factors was moderate clinical rotation experience. Moderate clinical rotation experience is significantly and negatively related to the odds of choosing specialty over primary care (Odds-Ratio = 0.552, p < .05). Specifically, for students who described experience in clinical rotations as having a moderate influence on choice of specialty when compared to students who felt clinical rotation experience had minor to no influence on their specialty choice, were less likely to choose a job in a specialty than primary care. In fact, the odds of having a specialty job accepted were 44.8% lower.

The last category of predictors represented in Table 3 in the model of comparing the outcome of specialty job choice to the reference group of primary care job choice were external factors. These predictor variables included availability of jobs and income potential. The predictors related to availability of jobs (both moderate and strong influence) did not have any statistical significance (p > .05). However, the analysis showed that both moderate and strong income potential predictors were significant. Moderate income potential is significantly and positively related to the odds of choosing specialty over primary care (Odds-Ratio = 2.634, p < .001). Specifically, for students who described income potential as moderately influencing choice of specialty (as compared to minor to no influence) were more likely to choose a job in a specialty than primary care. In fact, the odds of having a job in a specialty were 163.4% higher. Similar to the above pattern, students who believe that income potential has a strong influence on

job choice when compared to those students who believe that income potential had minor to no influence on job choice, strong income potential is significantly and positively related to the odds of choosing specialty over primary care (Odds-Ratio = 5.514, p < .001). Specifically, for students who described income potential as having a strong influence on choice of specialty when compared to students who felt income potential had little to no influence on their specialty choice were more likely to choose a specialty job than primary care. In fact, the odds of having accepted a job in a specialty were 451.4% higher.

In conclusion, the highlighted results demonstrate civil status differences in first job choice for the outcome of specialty choice with reference variable primary care job choice. Additionally, financial factors, including both educational debt (strong) and income potential (both moderate and strong), were found to be significant predictors of first job choice in the model comparing specialty job choice versus primary care job choice. Lastly, unlike the first model, which demonstrated no significant predictors, a program factor (moderate clinical rotation experience) was found to be significant in predicting specialty job choice when compared to primary care job choice.

Conclusion

In conclusion, this chapter focused on the results from an analysis performed to answer the two research questions of this study. Significant variables that predict no job choice versus primary care medicine included being married, other race/ethnicities, moderate income potential, strong income potential, and strong educational debt. The model for comparing specialty choice and primary care was similar, but not entirely the same. For this analysis, the following factors were found to be significant: being married, moderate income potential, strong income potential, strong educational debt, and moderate clinical rotation experience. These factors represented each category of influencing variables, including personal, external, and program.

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine primary care as first job choice in physician assistant students and understand what factors determine such a choice. This research categorized the predictors into individual factors, program factors, and external factors. The research questions that guided this study were as follows:

- What percentage of graduating physician assistants have accepted a clinical position in primary care?

- What factors predict physician assistants' job choice upon graduation? What role do individual factors (demographics; student debt; and personal values) have relative to "program" factors (including faculty and preceptor influence; and mentoring) vs. "external" factors (job availability, income potential) in shaping job choice?

This chapter provides a summary of findings as well as an interpretation of the results. I also discuss policy implications and recommendations for practice. Prior to the conclusion, I provide recommendations for future research.

Summary and Interpretation of Findings

The study sample included 3,038 participants which consisted of 24.9% males and 75.1% females. This sample is comparable to the overall 2016 cohort of certified PAs, which can be found in the 2016 Statistical Profile of Certified Physician Assistants by Specialty published by the NCCPA. In that report there were a total of 115,533 participants of which 32% were male and 68% female (NCCPA, 2017). The race and ethnicity make-up is also similar to the overall 2016 NCCPA's report where 86.7% identified themselves as White (NCCPA, 2017). For this study, 79.7% identified as White, 1.8% as Hispanic, Latino, or Spanish, 4.2% as White and Spanish, and 14% as Other Races/Ethnicities.

Job Choice Outcome.

The first objective for the study was to determine first job choice of the students. The three outcomes included the following: a job in primary care, a job in a specialty, or no job accepted. Job choice for the sample of 3,308 graduating students from the Class of 2016 included the following: 8.85 percent chose primary care, 27.88% chose a job in a specialty field, and 63.27% did not accept a job at the time of the survey. A further breakdown suggests that, 269 subjects out of a total sample of 1,116 of those who accepted a job, chose primary care which is approximately 24%. Out of the 1,116 sample of those who accepted a job, 847 chose a job in a specialty, which represents 76% of the students. Comparing this to the 2016 NCCPA data, the job choice for certified physician assistants included 25,601 participants which equated to 27.8% of certified PAs in primary care, which shows my sample was representative of the overall population of certified 2016 physician assistants (NCCPA, 2017).

The trend in these findings is similar to studies previously done, which demonstrates a gap in the amount of physician assistants practicing in primary care versus in a specialty (Morgan, Everett, Humeniuk & Valentin, 2016). The findings of only 8.85 percent of graduating students choosing primary care or 24% out of those who accepted a job is concerning given the obvious need for primary care in this country.

Factors that predict job choice.

The second part of the analysis focused on factors that predicted primary care job choice compared to no job accepted or specialty choice. The first analysis considered primary care versus no job accepted. The findings included the following factors as being significant predictors of choosing primary care or no job: married, other race/ethnicities, strong educational debt, moderate income potential, and strong income potential. The predictors that favored PA students choosing primary care when compared to no job accepted were being married and strong educational debt.

This study confirmed the findings of Newton, Grayson, and Whitley (1998), which also found that being married was positively correlated with choosing primary care. The reasoning behind this finding is not known; however, it is possible that married individuals prefer the primary care setting since it has more stable hours and less call than other specialties. Rhodes (1989) found that general practice was perceived to be more compatible with family life making it a more popular job choice for women. Additionally, it is possible that married individuals have an additional income from their spouse allowing for salary to not be the defining factor in job choice.

Students who believed that educational debt has a strong influence on job choice were also more likely to choose primary care. At first, this statistic may seem surprising since salaries in primary care are not as high as in subspecialties; however, it is possible that loan forgiveness programs promote more graduates into primary care medicine. Working in primary care as their first job and having the ability to receive loan repayment might be appealing to those students who have a high debt burden. In a recent study, a higher percentage (11%) of primary care PAs reported that they chose their specialty due to a loan repayment program compared with 1.6% of those in a non-primary care specialty (Coplan, Smith, & Cawley, 2017).

Lastly, the predictors that favored PA students choosing no job accepted over primary care medicine included other race/ethnicities, moderate income potential, and strong income potential. The income potential findings correspond with what has been found in the literature in that students who care about income potential are much less likely to choose primary care medicine due to the significant salary gap (Newton, Grayson, and Whitley, 1998). As mentioned in Chapter Two, for surgical PAs compared to general practice PAs, the income gap over a 35-year period would be over $467,000 (AAPA, 2009). With these substantial lifetime payment gaps, it is not surprising that individuals who feel that income potential influences specialty choice, are less likely to choose primary care medicine.

The final analysis compared factors that affect the outcome of specialty or primary care job choice. Similar to the above findings, the predictors that were found to be significant in predicting either specialty or primary care choice in this analysis included: married, strong educational debt, moderate clinical rotation experience, moderate income potential, and strong income potential. The factors that favored primary care job choice included married, strong educational debt, and moderate clinical rotation experience. The reasons are presumed to be the same as previously mentioned in this chapter. The finding of moderate clinical rotation experience is consistent with the literature that found that medical schools who focused on primary care residencies were able to increase primary care job choice (MacNamara and George, 2011). For this study, students who felt that clinical rotation experience had a moderate influence on job choice were more likely to choose primary care than a specialty. Perhaps these students accepted a job offer from their preceptors while on clinical rotations or had a PA program that focused on primary care medicine with more exposure during clinical rotations.

Lastly, those students who are influenced by income potential are most likely to choose a specialty over primary care medicine. This finding is aligned with previous literature and is substantiated by the fact that specialty jobs pay more than primary care jobs (Dorsey, Nicholson, and Frist, 2011). Unexpectedly, none of the program factors related to preceptors, faculty, or mentors were found to be significant in this study. This is surprising considering the literature review demonstrated faculty, mentor, and preceptor influence on medical students' job choice (Straus, Straus, & Tzanetos, 2006).

Practice Recommendations for PA Educators and Schools

This study found several factors that are not able to be manipulated by faculty of PA programs such as marital status or income potential. However, experience on clinical rotations did prove to be statistically significant which should be considered. One practice recommendation for

PA programs would be to have clinical rotation experiences focus on primary care. According to PAEA 2016 data on physician assistant students, only 71.2% of students had a clinical rotation in "extended primary care." Perhaps the length of time a student spends on primary care clinical rotations versus time spent doing specialty clinical experiences should be considered. Additionally, an emphasis on general training should occur on clinical rotations and then how to interact and communicate with specialists to foster the healthcare team. Training the next generation of primary care providers requires a focus on interprofessional teamwork (Cassel and Wilkes, 2017).

Creating special programs that focus on funneling graduates into primary care based on their clinical rotation experience should be considered by PA schools. An example of a program that combined both financial factors as well as mentoring from faculty to address the rural shortage was the Physician Shortage Area Program (PSAP) of Jefferson Medical College (JMC). This program concentrated on individuals who were already interested in practicing in a rural community. These selected students are equipped with faculty advisors in the Department of Family Medicine during their medical school career, receive some additional financial aid, and are expected to do their residency in a family medicine area in a rural community. Rabinowitz, Diamond, Markham, and Paynter (2001) demonstrate that favorable outcomes have resulted from this program through their retrospective cohort study:

> PSAP has been successful in (1) increasing the percentage of rural family physicians (>8 times that of their peers), (2) retaining rural family physicians (87% retention rate over 5-10 years in practice), and (3) having a major impact on the rural physician workforce, despite its small size (accounting for 21% of rural family physicians in Pennsylvania who graduated from 1 of the 7 allopathic medical schools in the state, even though PSAP students represent only 1% of graduates from those schools) (p. 1046).

A program like this could be used to increase primary care PAs and should be considered by PA programs.

Another important part of clinical rotations and augmenting the primary care workforce is to expose PA students to primary care practice settings that allow for improving the perception of primary care medicine (Osborn, Glicksman, Brandt, Doyle, & Fung, 2017). During clinical rotations, educators can train preceptors to have open discussions regarding economic and financial factors related to a specialty choice of primary care medicine to counteract any misconceptions that the student may have.

Increasing the number of graduates who choose primary care may also impact future PA students' decisions to pursue primary care. One student found that the percentage of a school's graduates' entering primary care was a positive influence on choosing primary care over a specialty (Colquitt, Zeh, Killian & Cultice, 1996). Therefore, any efforts done by the PA school to increase students' choices of primary care may affect future cohorts as well.

Policy Remedies

In this study, educational debt and income potential were found to be significant predictors of specialty choice. Policy approaches that can address these factors could encourage primary care roles for PA students. For example, educational loan repayment programs through the National Health Service Corps could influence PA students to choose primary care medicine (Morgan & Hooker, 2015). The National Health Service Corps provides scholarships and debt forgiveness for primary care providers who agree to practice in underserved areas. One problem is that this program is underfunded. In fact, in 2008 it provided only 76 scholarships for 950 applicants and 867 loan repayment awards to 2,713 applicants (Bodenheimer & Pham, 2010). Increased funding

could assist with this deficit and if a student's loan can be paid off by accepting a job in primary care medicine, then a student with financial motivation will be influenced.

In order to address the income potential factor that was found to be predictive of specialty choice, policy changes need to occur. Although it would be difficult to mitigate the payment gap between primary care and specialty jobs, health reform bills could augment bonus payments for primary care services. Another example would be to increase financial incentives for electronic medical record use, which has been done before to transform primary care. Primary care providers who utilize the electronic medical record as directed by the government and who track primary care needs of patients can receive financial rewards which in turn can raise their overall salary. In 2011, the Centers for Medicare & Medicaid Services (CMS) Electronic Health Record (EHR) Incentive Program provided financial rewards to practices for implementation and meaningful use of EHRs (Rittenhouse, Ramsay, Casalino, McClellan, Kandel, & Shortell, 2017). Rewarding for the use of an EHR ties in with the two models known as the patient-centered medical home (PCMH) and the accountable care organization (ACO). The PCMH focuses on payment reform that improves reimbursement to primary care practices and providers while rewarding high performance with the goal of improving quality of care (Rittenhouse, Shortell, & Fisher, 2009). Any financial incentive could help promote interest in primary care.

Future Research Considerations

This study filled in the gaps in the literature focusing on physician assistants and primary care choice in medicine; however, more research is still needed. A future research suggestion is to look at multiple years of data. This study only included the 2016 cohort of graduating students; therefore, it would be interesting to consider 2017 and on, especially as the climate of healthcare continues to evolve. Additionally, if the same comprehensive model is utilized, it may be helpful to consider doing an analysis on students who have not accepted a job and their desirability of

specialty choice for the future. Another suggestion would be to use this study's model; however, further break down the third job choice option of "No job accepted" into different possibilities such as "Plan to apply for a PA residency", "Received a job offer, but not in the discipline I would like", "Received a job in primary care, but prefer specialty", or "Not yet started job search", etc. I would recommend that PAEA elaborate on this question to include categories such as those examples.

Another recommendation to PAEA regarding the EOPS would be to not divide out the race and ethnicity questions. I believe it would be best to include only one question with all possible options. This change would avoid confusion and repetition within the groups.

A longitudinal study could be performed to determine if job choice preferences change throughout PA school. Specifically, do students enter PA school with an affinity for primary care medicine, but then graduate and choose a specialty job? Study design could consider the negative impact that preceptors or faculty can have on student career choice. For instance, Chen, Reinert, Landau, and McGarry (2014), reported that "the burnt out, overworked image of primary care providers" may be dissuading trainees from the field. Longitudinal research should be done to determine if students are entering PA school with the desire to be a primary care provider, but change to a specialty after seeing primary care provider preceptors who are dissatisfied with their career choice. The fact that burnout and satisfaction with work-life balance in U.S. physicians has worsened from 2011 to 2014 is a concern, since it may affect the future providers' job choice (Shanafelt, Hasan, Dyrbye, Sinsky, Satele, Sloan, & West, 2015).

In another study performed by Beverly, Reynolds, Balbo, Adkins, and Longenecker (2014), the researchers attempted to determine if a week-long intense course focused on primary care given to first year medical students would change the students' perceptions of primary care. Surveys were administered before and after the course and the results of the study suggested that medical students showed a positive improvement in 20 of the 25 attitudes towards primary care. Courses

like these may help increase students' motivation to pursue primary care and increase awareness about the specific field; however, supplementary studies would be required to further examine these findings as well as follow up to see if there was a correlation with this program and actual job choice post-graduation.

A study with particular attention placed on timing of students' first job choice decisions should also be considered. Compton, Frank, Elon and Carrera (2008) found that only 30% of those students who were initially interested in primary care at the start of their education remained interested during their senior year. These findings were based upon a sample of 942 medical students from a total of 15 United States schools. Each student completed a total of three questionnaires at first year orientation in 1999, at orientation to clinical rotations/wards (typically between their second and third years), and during their senior year. This finding supports the idea that students may be heavily influenced by faculty or preceptors during the course of their education, which can impact job choice. These findings are consistent with Barshes, Vavra, Miller, Brunicardi, Goss, and Sweeney (2004), who state that only 20% to 45% of medical students ultimately choose the specialty that they initially would have preferred upon entry into medical school. Whether ultimately choosing primary care or a specialty, the difference is minimal regarding student pursuit of his or her initial interest. Similarly, the primary finding of West, Popkave, Schultz, Weinberger, and Kolars' (2006) research was that career choices for internal medicine residents are unstable as almost two-thirds change their career plans during their training.

Another important consideration to this type of research is the evolving healthcare of our nation. Is the decision-making of job choice influenced by policy changes in the government? Specifically, if this study is conducted after ACA changes, will the outcome be the same? As mentioned in previous chapters, the ACA created a more favorable primary care environment through incentives for high-quality, population-based, preventative, and patient-centered practice

(Cassel & Wilkes, 2017). However, in recent times post 2016 election, there is major policy

uncertainty. Future laws and healthcare mandates can impact both how patients receive primary

care and how medical providers deliver healthcare. Therefore, further research is needed to reflect

how policy remodeling and recalibration of the ACA implements change. Healthcare reform and

policy changes may impact PAs' job choice.

Another study design could consider looking at institutional clustering effect. It was not

possible for this study to receive institutional ID (de-identified). However, it would be interesting

to see the effect influenced by different institutions and not just the individual level. Also, it could

be beneficial to consider the difference in public versus private institutions. State medical schools

graduate more primary care providers than specialists and it is hypothesized that this may be

occurring secondary to students accumulating less debt (MacNamara & George, 2011). In fact,

Phillips, Petterson, Bazemore, and Phillips (2014) performed a retrospective multivariate analysis

on data from 136,232 physicians who graduated from allopathic U.S. medical schools between

1988 and 2000, obtained from the American Association of Medical Colleges Graduate

Questionnaire, the American Medical Association Physician Masterfile, and other sources. The

results suggest that physicians regardless of socioeconomic background, who graduated from

public schools were more likely to practice primary care and family medicine at graduating

educational debt levels of $50,000 to $100,000 (2010 dollars; $p < .01$). As the debt level increased,

the physicians were less likely to pursue primary care. These findings differ from this study's

findings; however, it takes into consideration the institutional factors.

Socioeconomic factors were not included in this analysis as this data was not available in

the survey utilized, but should be considered for future research. This study found that educational

debt was significant. Future studies could use actual amount of debt instead of just a categorical

value of educational debt influence. Perhaps socioeconomic factors of physician assistant students

would also be found to predict job choice even at a graduate school level. In the literature, one study determined that a father's lower socioeconomic status was a predictor for the medical student to choose family medicine (Colquitt, Zeh, Killian, & Cultice, 1996). Alternatively, another study found that students who had parents' income over $100,000 at the time of entry into medical school were less likely to choose a generalist specialty (Kassebaum, Szenas & Schuchert, 1996). A study specific to PAs and socioeconomic factors predicting job choice would be useful to fill the gap in the literature.

Student aid is another individual factor to consider when discussing students' career choice since it contributes to overall financial status. Historically, research suggests for the medical school class of 1983, whether or not medical school students received federally-funded scholarships, was more powerful at predicting career choice than student indebtness (Dial & Elliot, 1987). This finding which was formulated based upon the Association of American Medical College's survey implies that federal funding has an impact on choice of job specialty and also that the problem of physician shortage along with the primary care versus specialty care have been in existence for quite some time. Today, there are still federally-funded scholarships available through the National Health Service Corps (Locke, Stiles, & Coffeyville, 2016). Funding through these types of programs can assist in eliminating some of the debt burden and allow individuals more freedom in choosing a job regardless of the specific salary. According to the National Health Service Corps website, since the inception in 1972, more than 50,000 primary care medical, dental, and mental and behavioral health professionals have served allowing for primary healthcare providers to be placed in areas of need. Future research could include student aid as a factor in the analysis.

Research could also be done to focus solely on preceptor, faculty, and mentor influence. This study did not find any significance; however, only a broad category of preceptor, faculty, or

mentor influence was considered. Doing a study with more in depth analysis on faculty interactions, for example, may prove to be helpful. This idea is based on Young-Jones, Burt, Dixon, and Hawthorne (2013) finding that the number of times a student met with faculty outside of the classroom was an important contributor to multiple factors impacting student success, such as student responsibility, student self-efficacy, student study skills, and perceived support. Although these findings do not specifically pertain to career choice, it is important to recognize the general positive impact faculty can have on students and their future career decisions. These positive factors correlate with career choice and student success post-graduation.

Conducting qualitative research could assist in assessing student perception of primary care and the effect it has on job choice. Research has analyzed the influence of students' experiences and their perceptions of future practice areas. Gold, Barg, and Margo (2014) conducted a study to determine the effect of negative thoughts regarding primary care on career choice. The researchers specifically focused on trying to identify and understand the early factors in career selection. The results of their study indicated that some of the undergraduate pre-med students felt that primary care was "not glamourous, not interesting, less appealing than a specialty, and elementary and basic" (p. 280). One student stated, "I feel like the American attitude is always to be the best at what we're doing, and be innovative too. Make drastic changes towards curing diseases. Whereas in primary care, you don't have that many options for curing a disease" (p.281). Additionally, students who were interested in non-primary care specialties were more likely to desire a high-prestige career (48%) than those interested in primary care (31%) (Compton, Frank, Elon, & Carrera, 2008). These comments illustrate some of the negative feelings towards primary care work.

Additionally, the qualitative study performed by Gold, Barg, and Margo (2014) identified that students sometimes have a misunderstanding about what the field of primary care entails. The

students in the study were lacking a clear definition of what family medicine involves and seemed to be influenced by a negative stigma of the career. Another valuable point that their study found was that even when students were presented with the option of more money to pursue primary care medicine, most students still lacked excitement or interest about a future in primary care.

It is recommended for organizations such as PAEA and AAPA to continue to conduct surveys to further research in the field. The EOPS was beneficial to this study and would be advantageous to continue in future years considering 2016 was the first year it was deployed. By having follow-up cohorts surveyed, data could be utilized for the longitudinal design studies mentioned previously. Additionally, it would be helpful to conduct a survey to determine factors that influence career choices and why students select the PA profession. The reason is their original thought process and motivation for selecting the PA profession may also influence specialty or primary care job choice. Rizzolo, Leonard, and Massey (2017) performed a survey study on two universities and found that the top three reasons for students to select the PA profession were: flexibility of the profession, income, and lack of stress in the profession. Future research can analyze not only first job choice for PA students as this study did, but also students' original career choice and how it evolves during their PA education.

Conclusion

Increasing the primary care workforce is crucial to our health care system and PAs can be substantial contributors to augment primary care capacity. To support policymaking regarding PAs in primary care, this study aimed at finding factors that predict first job choice for physician assistant students by including a comprehensive model of individual, program, and external factors. Specifically, an emphasis was placed on primary care outcomes to determine ways to facilitate PA students' decisions to practice primary care medicine. The results significantly add to the literature and help to fill the void of physician assistant job choice research. If policymakers,

educators, and medical professionals take an interdisciplinary approach to solving the problem

identified, then change can happen.
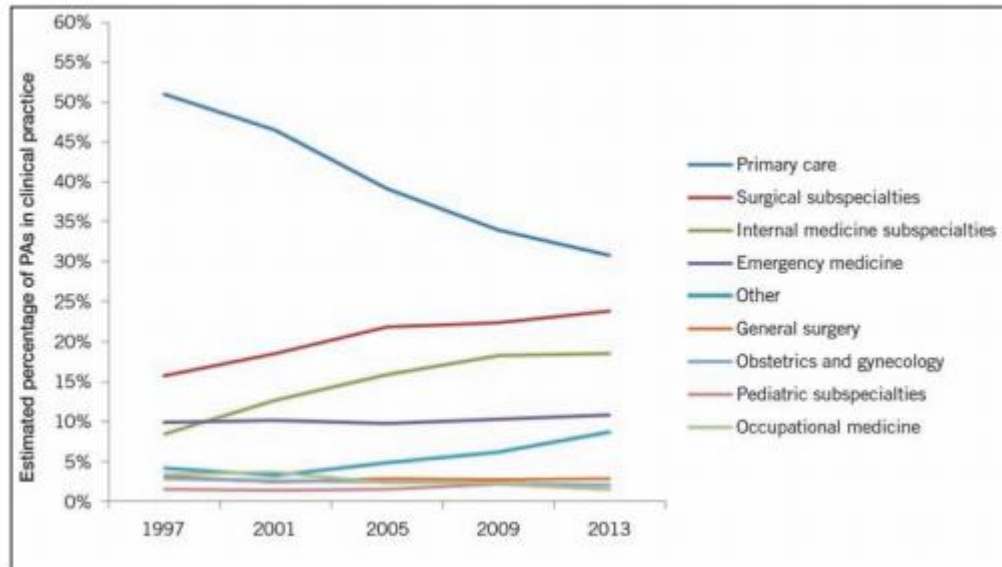
Figure 1. Estimated percentage of PAs in clinical practice. Reprinted from Morgan, P., Everett, C.

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Appendix A - Conceptual model for this study: Factors that influence job choice for graduating physician assistants

Individual Factors:
Demographics; Student Debt; Personal Values

Program Factors:
Faculty & Preceptor Influence; Mentoring

External Factors:
Job availability and income potential

Job Choice:

Primary Care, Specialty, or No Job Accepted
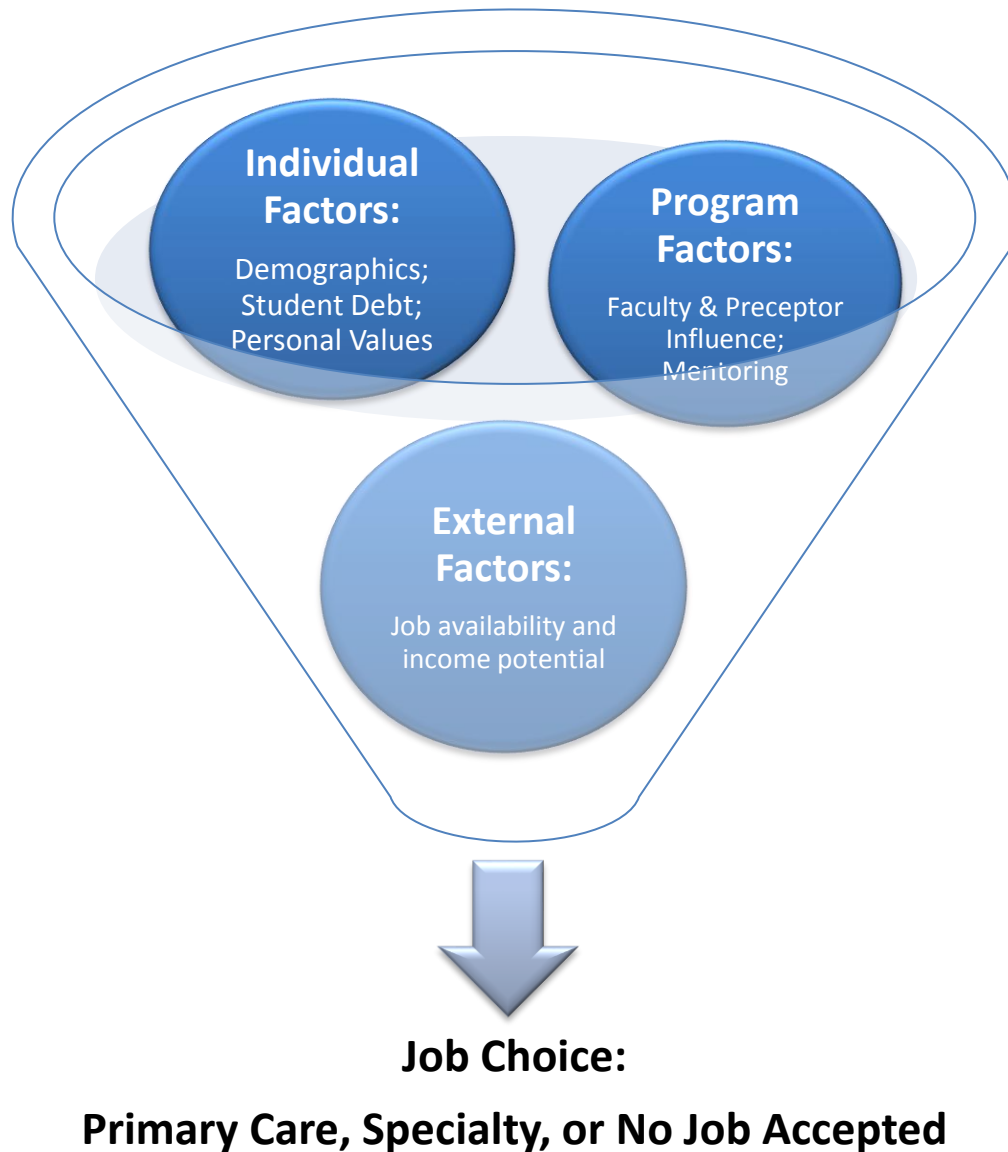
Note: Adapted from Bland, C. J., Meurer, L. N., & Maldonado, G. (1995). Determinants of primary care specialty choice: a non-statistical meta-analysis of the literature. *Academic Medicine*, 70(7), 620 - 41.

Appendix B - End of Program Survey

About the Survey

The Physician Assistant Education Association (PAEA) End of Program Survey (EOPS) seeks information from graduating physician assistant (PA) students to help schools evaluate and improve their educational programs. The information is also used for research on PA education as well as reporting to accrediting agencies. The survey will take approximately 30 minutes to complete.

Topic areas in the EOPS include:
- General information
- Demographics
- Impact of PA program & curriculum (didactic and clinical)
- Interprofessional education experiences
- Institutional support services
- Assessment of PA Competencies
- Specialty choice and career plans
- Financing of education
- Negative behaviors or experiences during school

Your PA program has been informed of the EOPS administration regulations and guidelines. By encouraging your participation, your PA program agrees to the protocol described below.

Participation is Voluntary

Participation in the EOPS is voluntary. You have the right to not answer or skip any question or set of questions. There is no penalty for not completing the survey or for discontinuing it. To help ensure participation is voluntary, PAEA will not inform PA programs as to which students have begun or completed the EOPS. If you believe that you are being coerced into participation, please contact the PAEA Research Department by email (research@PAEAonline.org).

Confidentiality Statement

Your agreement to participate in the survey is not considered permission to release your identified data. The data collected in this survey are classified as confidential. Confidential data are data that may not be released with individual identification, except with permission. The responses you provide on this survey are retained by PAEA in a secure, confidential database to which only a small number of designated PAEA staff has access. Any comments you write about the strengths and weaknesses regarding your program will be provided only to your PA program verbatim. The responses will not be

linked to your identity and will be shared in a separate anonymous report. In responding to these essay-type questions, you should not provide self-identifying information unless it is your intention that your identity be known.

Your responses to questions about negative behaviors or experiences during PA school might include sensitive information. Because of this, they will be released to PA schools only in a form aggregated to the PA program. PA programs will receive EOPS data in reports that aggregate responses at the national and program levels. For Institutional Review Board (IRB) approved research, PAEA might provide PA programs and other PA researchers with a file of de-identified individual responses, excluding open text responses. In such files, your EOPS may be linked with information in other databases, but only in formats without identification.

In order to accurately track response rate, we are asking each student to provide their email address, along with their program's name and state. This information will only be used to identify duplicate responses and calculate response rates, as well as to contact winners of the incentive prize drawings. Once this survey closes and duplicate responses are resolved, email addresses will be completely removed from the database.

Individuals receiving such files will be required to agree to and sign PAEA's Confidentiality, Academic Integrity, and Non-Disclosure Agreement, which outlines how the data may be used and for how long. The PAEA reviews reports and data files prior to their disbursement. PAEA reduces the probability of connecting responses to specific individuals by not providing information where the small number of respondents in a specific category would allow individuals to be easily identified. This data collection activity has been reviewed according to PAEA policies and procedures and its Institutional Review Board.

This data collection is considered to be minimal risk. PAEA has taken extensive measures to ensure the security of the data and the confidentiality of the responses. Nevertheless, if individually identified data were made public, it could prove embarrassing or damaging to your reputation. By participating, you will be contributing to improving PA education.

If you have any questions about your rights as a participant, please contact the PAEA Research Department by email (reseach@PAEAonline.org). If you have any technical questions about the EOPS, contact Rachel Hamann, Director, Research & Policy (rhamann@PAEAonline.org or 703-667-4332).

I have read and understood this statement:

○○   I have read and understood this confidentiality statement and <u>agree to participate</u>. By continuing with this survey, I grant permission to share my responses in the confidential manner described above.
○○   I have read and understood this confidentiality statement and <u>do not agree </u>to participate.

Please enter your email address below. Please note, this information will be used <u>only</u> to identify duplicate responses in the data and to contact recipients from the incentive prize drawing.

About Your Program

This section collects information about your program, enrollment, and preferred practice location.

1. Please confirm your graduation month.
<drop down menu>

2. Please select the name of your PA program.
<drop down menu>

3. Please select the state in which your PA program is located.

Note: If you attended PA school at your program's satellite campus, please indicate the state in which the satellite campus is located.

4. Please enter the five or nine-digit zip code for the place you consider to be home (where you spent the majority of your life before college).

5. What state is your primary choice for practicing after finishing PA school?
<drop down menu>

6. Which of the following environments is your <u>primary</u> choice for practicing after finishing PA school?
○○   Federal or state prison system
○○   Inner city
○○   Medically underserved area (MUA)
○○   Military base(s)
○○   Overseas
○○   Rural
○○   Suburban
○○   Urban
○○   Other, please specify _____

7. Did you first enroll into your PA program as a graduate student or an undergraduate student (e.g., participated in a pre-PA program prior to the graduate phase of the PA program)?

○○ Graduate

○○ Undergraduate

○○ Other, please specify _____

8. Did you attend any other PA program(s) before the one you are expected to graduate from?

○○ Yes

○○ No

9. Did you experience any interruptions longer than one week while enrolled in your current PA program (not including vacations or scheduled breaks; i.e., leave of absence)?

○○ Yes (if selected, go to 9a-b)

○○ No (if selected, go to 10)

9a. Which of the following best characterizes the reason for your interruption in your PA education?

○○ Decelerated to the next class

○○   Decelerated but remained in the same class

○○ Medical leave of absence

○○ Personal leave of absence

○○ Other, please specify _____

9b. How long, in months, was your temporary absence from your PA program?

○○ Less than one month
○○ 1 month
○○ 2 months
○○ 3 months
○○ 4 months
○○ 5 months
○○ 6 months
○○ 7 months
○○ 8 months
○○ 9 months
○○ 10 months
○○ 11 months
○○ 12 months
○○ 13 months
○○ 14 months
○○ 15 months
○○ 16 months
○○ 17 months
○○ 18 months
○○ Longer than 18 months

About You

This section collects information on your demographics, family life, and educational background.

10. Please select the month in which you were born.
<drop down menu>

11. Please enter the year you were born.

12. Please indicate your gender identification.
○○ Male
○○ Female
○○ Transgender
○○   I prefer not to answer

13. Are you Hispanic, Latino, or Spanish in origin?
○○ Yes
○○ No
○○   I prefer not to answer

14. What is your race?
○○   American Indian or Alaskan Native
○○ Asian
○○   Black or African American
○○ Multi-racial
○○   Native-Hawaiian or Pacific Islander
○○   White/Caucasian
○○ Other, please specify _____
○○   I prefer not to answer

15. Which of the following best describes your civil status?

Note: If you are engaged, please select "single."
- ⚪⚪ Married
- ⚪⚪ Single (never legally married)
- ⚪⚪ Domestic partnership/civil union
- ⚪⚪ Separated, but still legally married
- ⚪⚪ Divorced
- ⚪⚪ Widowed
- ⚪⚪ Other, please specify _____
- ⚪⚪ I prefer not to answer

16. Other than yourself, how many legal dependents do you have?

17. Please indicate the <u>highest</u> level of education that you <u>completed</u> prior to entering the professional phase of your current PA program.
- ⚪⚪ High school diploma
- ⚪⚪ Some college but no degree
- ⚪⚪ Associate's degree
- ⚪⚪ Bachelor of Arts
- ⚪⚪ Bachelor of Science
- ⚪⚪ Other Bachelor's degree (e.g., business, BFA)
- ⚪⚪ Master's degree (health or science related; e.g., MPH)
- ⚪⚪ Master's degree (not health or science related, e.g., MBA)
- ⚪⚪ Academic doctorate (e.g., PhD, EdD)
- ⚪⚪ Professional doctorate (e.g., MD, JD)
- ⚪⚪ Foreign medical graduate/unlicensed medical graduate
- ⚪⚪ Other, please specify _____

18. In which of the follow environments did you spend a majority of your life? Please select all that apply.
- ☐☐ Inner city
- ☐☐ Military base(s)
- ☐☐ Overseas
- ☐☐ Rural
- ☐☐ Suburban
- ☐☐ Urban
- ☐☐ Other, please specify
- ☐☐ I prefer not to answer _____

Impact of PA Program

This section collects information about your experiences in and satisfaction with your PA program curricula, as well as your perceived preparedness for clinical work.

19. Please indicate your level of agreement or disagreement with the following statements.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Overall, I am satisfied with the quality of my PA education	OO	OO	OO	OO	OO
If I could revisit my career again, I would attend school to become a PA	OO	OO	OO	OO	OO

20. Based upon your experiences in PA school, please indicate your level of agreement or disagreement with the following statements.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I would recommend the PA career to others	OO	OO	OO	OO	OO
I would recommend my PA program to Others	OO	OO	OO	OO	OO

21. PA school was:

○○   Less challenging than I expected

○○   What I expected

○○   More challenging than I expected

22. In what ways, if any, were you impacted by your PA education?

	More	About the same	Less
Politically liberal attitude	○○	○○	○○
Politically conservative attitude	○○	○○	○○
Accepting of others' views/open minded	○○	○○	○○
Accepting of cultural, ethnic, and sexual orientation diversity	○○	○○	○○
Compassionate	○○	○○	○○
Curious	○○	○○	○○
Cynical	○○	○○	○○
Humble	○○	○○	○○
Self-reflective	○○	○○	○○
Sociable	○○	○○	○○

Didactic Curriculum

This section collects information about your experiences in, satisfaction with, and preparedness for clinical rotations of your program's curriculum, specific to the didactic (classroom) phase of your program.

23. How well did your study of the following courses/topics prepare you for clinical rotations?

Note: Some course names may be different from the ones used at your program. Please find the one that most closely matches. If you did not have a course/module that resembles one presented below, please select "N/A."

	Excellent	Good	Fair	Poor	N/A
Anatomy	OO	OO	OO	OO	OO
Biochemistry	OO	OO	OO	OO	OO
Biostatistics/Epidemiology	OO	OO	OO	OO	OO
Clinical experiences during the didactic portion of the curriculum	OO	OO	OO	OO	OO
Clinical medicine (includes Surgery/emergency medicine/Peds/ OB/GYN/Behavioral Health)	OO	OO	OO	OO	OO
Clinical/technical skills	OO	OO	OO	OO	OO
Ethics/Bioethics	OO	OO	OO	OO	OO
Genetics	OO	OO	OO	OO	OO
Interpretation of literature/evidence-based medicine/Research	OO	OO	OO	OO	OO
Lab interpretation/diagnosis	OO	OO	OO	OO	OO
Microbiology	OO	OO	OO	OO	OO
Neuroscience	OO	OO	OO	OO	OO
Patient communication skills/history taking	OO	OO	OO	OO	OO
Pathology/Pathophysiology	OO	OO	OO	OO	OO
Pharmacology	OO	OO	OO	OO	OO
Physical examinations/patient assessment	OO	OO	OO	OO	OO
Physiology	OO	OO	OO	OO	OO
Service learning	OO	OO	OO	OO	OO

24. Do you believe that your instruction in the following areas was inadequate, appropriate, or excessive?

	Inadequate	Appropriate	Excessive
Culturally appropriate care for diverse populations	OO	OO	OO
Diagnosis of disease	OO	OO	OO
Disease prevention/health maintenance	OO	OO	OO
Management of disease	OO	OO	OO
Oral health	OO	OO	OO
Palliative/End of life care	OO	OO	OO
Public health	OO	OO	OO
Role of community health and social service agencies	OO	OO	OO
Women's health	OO	OO	OO
Social determinants of health	OO	OO	OO

Clinical Curriculum

This section collects information about your experiences in and satisfaction with your supervised clinical rotations, as well as your level of preparedness for clinical practice.

25. Please rate the quality of your educational experiences for the following clinical rotation   disciplines.

Note: If you did not have a clinical experience in one of the following disciplines, please select "N/A."

	Excellent	Good	Fair	Poor	N/A
Emergency medicine	००	००	००	००	००
Extended primary care or rural track	००	००	००	००	००
Family medicine	००	००	००	००	००
General internal medicine	००	००	००	००	००
General pediatrics	००	००	००	००	००
General surgery	००	००	००	००	००
Hospital medicine	००	००	००	००	००
Obstetrics/gynecology/women's health	००	००	००	००	००
Psychiatry/behavioral medicine	००	००	००	००	००
Elective(s)	००	००	००	००	००

25. Please respond to the questions below regarding your supervised clinical rotations.

	Were you observed by your preceptor taking the relevant portions of the patients' history?		Were you observed by your preceptor performing the relevant portions of the physical examination?		Were you observed by your preceptor performing relevant technical procedures (e.g., suturing, phlebotomy, etc.)		Were you provided mid-point feedback by your clinical preceptor?	
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
Emergency medicine	00	00	00	00	00	00	00	00
General Surgery	00	00	00	00	00	00	00	00
Family medicine	00	00	00	00	00	00	00	00
Internal medicine	00	00	00	00	00	00	00	00
Obstetrics/gynecology/ Women's health	00	00	00	00	00	00	00	00
Pediatrics	00	00	00	00	00	00	00	00
Behavioral medicine/Psychiatry	00	00	00	00	00	00	00	00

General Comments on PA Curriculum

This section collects information about your general impressions of your program's curriculum and methods of instruction.

26. Please comment on what you perceive to be the <u>strengths</u> of your program's <u>didactic</u> (classroom/lab) curriculum.

27. Please comment on what you perceive to be the <u>weaknesses</u> of your program's <u>didactic</u> (classroom/lab) curriculum.

28. Please comment on what you perceive to be the <u>strengths</u> of your program's <u>clinical</u> curriculum.

29. Please comment on what you perceive to be the <u>weaknesses</u> of your program's <u>clinical</u> curriculum.

30. Based on your experiences, please comment on the <u>strengths and weaknesses of teaching methodologies</u> (e.g., simulation labs, OSCEs, standardized patients) used in the didactic and clinical curricula.

Interprofessional Education Activities

This section collects about your experiences and satisfaction with interprofessional education.

31. Have you participated in any required curricular activities where you had the opportunity to learn   about and with students from different health professions?

○○   Yes (if selected, go to 31a-c)

○○   No (if selected, go to 32)

○○   Unsure (if selected, go to 32)

31a. With which other health profession(s) have you had the opportunity to participate or interact in educational activities? Please select all that apply.

❑❑   Allopathic Medicine

❑❑ Dentistry

❑❑ Nursing

❑❑   Occupational Therapy

❑❑   Osteopathic Medicine

❑❑ Pharmacy

❑❑ Physical Therapy

❑❑   Psychology

❑❑ Public Health

❑❑ Social Work

❑❑   Veterinary Medicine

❑❑   Other, please specify _____

31b. What was the nature of the learning experience(s) with other health professions students?   Please select all that apply.

❑❑   Active engagement with patients (e.g., inpatient or ambulatory based team rotation, longitudinal clinics, practice-based clerkships)

❑❑   Clinical simulations

❑❑   Community projects or service learning activities

❑❑   Lecture only, basic science

❑❑   Lecture only, clinical subject (e.g., universal precautions, informed consent, advanced cardiac life support, population health)

❑❑   Patient-centered case problems (classroom or student setting)

❑❑   Team skills training

❑❑   Other, please specify _____

31c. Please indicate your level of agreement with the following statement:

"The learning experience(s) with other health professions students helped me gain a better understanding of the roles of other professions in the care of patients."

⭕ Strongly agree

⭕ Agree

⭕ Neither agree nor disagree

⭕ Disagree

⭕ Strongly disagree

Institutional Support Services

This section collects information about the services and resources available at your program.

32. In considering accessibility and responsiveness, please respond by indicating your level of satisfaction with the following student support services.

Note: Please use "N/A" only if your school does not have or you have never accessed the listed service. Some terms may differ at your program or institution.

	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied	N/A
Admissions	⭕	⭕	⭕	⭕	⭕	⭕
Business office	⭕	⭕	⭕	⭕	⭕	⭕
Campus security	⭕	⭕	⭕	⭕	⭕	⭕
Counseling/Mental health center	⭕	⭕	⭕	⭕	⭕	⭕
Faculty advising	⭕	⭕	⭕	⭕	⭕	⭕
Financial aid	⭕	⭕	⭕	⭕	⭕	⭕
Health center	⭕	⭕	⭕	⭕	⭕	⭕
Institutional computing (technology)/Help desk	⭕	⭕	⭕	⭕	⭕	⭕
Library/Learning resource center	⭕	⭕	⭕	⭕	⭕	⭕
Registrar	⭕	⭕	⭕	⭕	⭕	⭕
Student success center/ADA office	⭕	⭕	⭕	⭕	⭕	⭕
Student activities	⭕	⭕	⭕	⭕	⭕	⭕

33. Please comment on the general accessibility and responsiveness of the student support services   at your college or university.

PA Competencies

The questions in this section are being asked to help PAEA better understand graduate candidates' perceptions of their preparedness based on the competencies for the PA profession.

34. How confident are you in your current ability to perform the following activities?

	Very confident	Confident	Neutral	Not very confident	Not at all confident
Medical Knowledge Includes synthesis of pathophysiology, patient presentation, differential diagnosis, patient management, surgical principles, health promotion, and disease prevention	00	00	00	00	00
Interpersonal & Communication Skills Encompasses verbal, nonverbal, written, and electronic exchange of information to patients, peers, and others	00	00	00	00	00
Patient Care Includes patient and setting specific assessment, evaluation, and management	00	00	00	00	00
Professionalism The expression of positive values and ideals as care is delivered and prioritizing patients' needs over one's own; includes ethical practice and cultural sensitivity	00	00	00	00	00
Practice-Based Learning & Improvement Includes processes and practices through which PAs engage in critical analysis of their own practice experience, medical literature, and other resources to improve	00	00	00	00	00
Systems-Based Practice Awareness and responsiveness to the larger system of health care to provide patient care that balances quality and cost	00	00	00	00	00

Specialty and Career Plans

This section collects information about your employment status, job search, and practice preferences.

35. What is your PA employment status?

⭕⭕ I have not yet started my job search (if selected, go to 36)

⭕⭕ I plan to apply for a PA residency (if selected, go to 35c)

⭕⭕ I have submitted job applications but have not yet received an invitation to interview (if selected, go to 36)

⭕⭕ I have had at least one interview or invitation to interview but have not yet received a job offer (if selected, go to 36)

⭕⭕ I have received at least one job offer but have not accepted a position (if selected, go to 36)

⭕⭕ I have accepted a job offer (if selected, go to 35a-b)

35a. Which of the following best describes the practice discipline where you accepted an offer?

<u>Primary Care Specialties</u>

○○   Family/General medicine

○○   General internal medicine

○○   General pediatrics

○○   Geriatrics

○○   Obstetrics/Gynecology/Women's health

<u>Surgery Specialties</u>

○○   General surgery

○○   Orthopedics

○○   Cardiovascular/Cardiothoracic

○○   Neurology

○○   Plastic surgery

○○   Other surgical subspecialties, please specify _____

<u>Emergency Medicine Specialties</u>

○○   Emergency medicine (not urgent care)

○○   Urgent care

<u>Internal Medicine Subspecialties</u>

○○   Internal medicine: Cardiology

○○   Internal medicine: Oncology

○○   Other internal medicine subspecialty, please specify _____

<u>Inpatient Specialties</u>

○○   Critical care

○○   Hospitalist

<u>Other Specialties</u>

○○   Dermatology

○○   Pediatric subspecialties

○○   Occupational medicine

○○   Psychiatry/Behavioral medicine

○○   Correctional medicine

35b. Was the practice discipline where you accepted a job offer your first choice?

OO Yes

OO No

35c. Which of the following PA residencies do you plan to apply for? Please select all that apply.

❑❑ Emergency medicine

❑❑ General surgery

❑❑ Hospitalist

❑❑ Orthopedics

❑❑ Other, please specify_____

36. Please rate the desirability of the following specialties for your future practice.

	Very desirable	Desirable	Neither desirable nor undesirable	Undesirable	Very undesirable
Primary Care Specialties					
Family/General medicine	OO	OO	OO	OO	OO
General internal medicine	OO	OO	OO	OO	OO
General pediatrics	OO	OO	OO	OO	OO
Obstetrics/Gynecology/Women's health	OO	OO	OO	OO	OO
Geriatrics	OO	OO	OO	OO	OO
Surgery Specialties					
General surgery	OO	OO	OO	OO	OO
Orthopedics	OO	OO	OO	OO	OO
Cardiovascular/Cardiothoracic	OO	OO	OO	OO	OO
Neurology	OO	OO	OO	OO	OO
Plastic surgery	OO	OO	OO	OO	OO
Other surgical subspecialties	OO	OO	OO	OO	OO
Emergency Medicine Specialties					
Emergency medicine (not urgent care)	OO	OO	OO	OO	OO
Urgent care	OO	OO	OO	OO	OO
Internal Medicine Subspecialties					
Cardiology	OO	OO	OO	OO	OO
Oncology	OO	OO	OO	OO	OO
Other internal medicine subspecialty	OO	OO	OO	OO	OO
Inpatient Specialties					
Critical care	OO	OO	OO	OO	OO
Hospitalist	OO	OO	OO	OO	OO
Other Specialties					
Occupational medicine	OO	OO	OO	OO	OO
Psychiatry/Behavioral medicine	OO	OO	OO	OO	OO
Correctional medicine	OO	OO	OO	OO	OO
Dermatology	OO	OO	OO	OO	OO
Pediatric subspecialties	OO	OO	OO	OO	OO

37. Please rate the desirability of the following practice environments.

	Very desirable	Desirable	Neither desirable nor undesirable	Undesirable	Very undesirable
Federal/State prison system	OO	OO	OO	OO	OO
Inner city	OO	OO	OO	OO	OO
Medically underserved area (MUA)	OO	OO	OO	OO	OO
Military base(s)	OO	OO	OO	OO	OO
Overseas	OO	OO	OO	OO	OO
Rural	OO	OO	OO	OO	OO
Suburban	OO	OO	OO	OO	OO
Urban	OO	OO	OO	OO	OO
Veterans Administration	OO	OO	OO	OO	OO
Other, please specify	OO	OO	OO	OO	OO

38. Please rate the desirability of the following practice settings.

	Very desirable	Desirable	Neither desirable nor undesirable	Undesirable	Very undesirable
Accountable care organization (ACO)	OO	OO	OO	OO	OO
Community health center (CHC)	OO	OO	OO	OO	OO
Group private practice	OO	OO	OO	OO	OO
Health maintenance organization (HMO)	OO	OO	OO	OO	OO
Solo private practice	OO	OO	OO	OO	OO

39. How influential are the following factors or experiences in helping you choose your specialty choice for a PA job?

	Strong influence	Moderate influence	Minor influence	No influence
Advising/Mentoring from a <u>preceptor</u>	OO	OO	OO	OO
Advising/Mentoring from a <u>faculty member</u>	OO	OO	OO	OO
Availability of jobs in the specialty	OO	OO	OO	OO
Desire to fill a social need	OO	OO	OO	OO
Family expectations	OO	OO	OO	OO
Fit with personality, interests, and skills	OO	OO	OO	OO
Income potential	OO	OO	OO	OO
Level of educational debt	OO	OO	OO	OO
My future family plans	OO	OO	OO	OO
Experience in clinical rotations	OO	OO	OO	OO
Previous health care training or experience	OO	OO	OO	OO
Role model/Mentor/Adviser influence	OO	OO	OO	OO
Previous work/Volunteer experience	OO	OO	OO	OO
Scope of practice within specialty	OO	OO	OO	OO
Specialty interest group sponsored panels and presentations	OO	OO	OO	OO

Financing of Your Education

All of the information you share in the survey, including financial data, is confidential and will not be released to your school with your identification.

The information you provide will help the PA community and PAEA better understand the costs of education and the impact of the rising levels of student indebtedness.

If you cannot remember the actual figures for some of the questions, please enter your best estimates.

40. Did you receive any scholarships, stipends, or grants (not loans) for PA school?
〇〇 Yes (if selected, go to 40a)
〇〇 No (if selected, go to 41)

40a. Please enter the total dollar amount of all scholarships, stipends, and/or grants that you received   for the professional phase of the program.

Note: Please do not include loans or any scholarships, stipends, or grants that you received for your undergraduate education if you participated in a pre-professional PA program (e.g., 4+2 or 3+2)

41. Do you still owe $1,000 or more on outstanding pre-PA (undergraduate) educational loans?
〇〇 Yes (if selected, go to 41a)
〇〇 No (if selected, go to 42)

41a. Please enter the dollar amount that you owe on your outstanding pre-PA educational loans (excluding interest).

42. Do you owe $1,000 or more on PA educational loans?
〇〇 Yes (if selected, go to 42a)
〇〇 No (if selected, go to 43)

42a. Please enter the dollar amount that you owe on your PA educational loans (excluding interest).

43. Do you owe $500 or more on non-educational loans (credit cards, consumer debt, car loans, etc.)?

Note: Please do not include home mortgage loans.

○○   Yes (if selected, go to 43a)

○○   No (if selected, go to 44)

43a. Please enter the dollar amount you owe on non-educational loans (credit cards, consumer debt, car loans, etc.).

Note: Please do not include home mortgage loans.

44. Do you plan to enter into a federal or state loan forgiveness program?

○○ Yes

○○ No

○○ Unsure

44a. Please select the type of loan forgiveness program in which you plan to participate. Please   select all that apply.

❑❑   Armed Services

❑❑   Department of Education's Public Service Loan Forgiveness (PSLF)

❑❑   Indian Health Service Corps

❑❑   National Health Service Corps

❑❑   State loan forgiveness program

❑❑   Uniformed Service (e.g., Center for Disease Control, Department of Health and Human Services)

❑❑   Other, please specify _____

Behaviors Witnessed or Experienced During PA School

Your responses to the following questions about behaviors or experiences during PA school might be sensitive. Because of this, they will only be released to schools in aggregated form after being reviewed by PAEA staff to reduce the probability that you could be identified by your responses.

PAEA recognizes that some students may be uncomfortable responding to the following questions. However, if the survey indicates that student mistreatment or harassment is being experienced at the national level, we will use this information to plan workshops and other educational experiences to help faculty and staff address any problems. Unfortunately, PAEA does not have a mechanism to follow up on any issues of mistreatment or harassment that has not already been reported. If you have personally experienced or have observed mistreatment or harassment, you are encouraged to report the incident(s) to the proper authorities at your school.

If you would prefer to skip this section, please indicate below.
- ○○   I am comfortable proceeding to questions on behaviors and experiences during PA school (if selected, go to 45)
- ○○   For personal reasons, I would prefer to skip this section (if selected, go to End of Survey)

45. Does your program have policies regarding the mistreatment of PA students?
- ○○ Yes
- ○○ No
- ○○ Unsure

46. For each of the following behaviors, please indicate the frequency that <u>you</u> <u>personally</u> <u>experienced</u> that behavior during PA school.

	Never	Once	Occasionally	Frequently
Been publicly embarrassed	OO	OO	OO	OO
Been publicly humiliated	OO	OO	OO	OO
Been threatened with physical harm	OO	OO	OO	OO
Been physically harmed (e.g., hit, slapped, kicked)	OO	OO	OO	OO
Been required to perform personal services (e.g., shopping, babysitting)	OO	OO	OO	OO
Been subjected to unwanted sexual advances	OO	OO	OO	OO
Been asked to exchange sexual favors for grades or other rewards	OO	OO	OO	OO
Been denied opportunities for training or rewards based on <u>my gender</u>	OO	OO	OO	OO
Been subjected to offensive remarks/names based on my gender	OO	OO	OO	OO
Received lower evaluations or grades solely because of my <u>gender</u> rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on <u>my race or ethnicity</u>	OO	OO	OO	OO
Been subjected to offensive remarks/names based on my race or ethnicity	OO	OO	OO	OO
Received lower evaluations or grades solely because of my <u>race or ethnicity</u> rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on my <u>sexual orientation</u>	OO	OO	OO	OO
Been subjected offensive remarks/names regarding my <u>sexual orientation</u>	OO	OO	OO	OO
Received lower evaluations or grades solely because of <u>my sexual orientation</u> rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on <u>my gender identification</u>	OO	OO	OO	OO
Been subjected offensive remarks/names regarding <u>my gender identification</u>	OO	OO	OO	OO
Received lower evaluations or grades solely because of <u>my gender identification</u> rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on <u>my religion</u>	OO	OO	OO	OO
Been subjected offensive remarks/names regarding <u>my religion</u>	OO	OO	OO	OO
Received lower evaluations or grades solely because of <u>my religion</u> rather than performance	OO	OO	OO	OO

46a. Please indicate the individual(s) who performed the described behavior(s). Please select all that apply. (displayed if "Never" count in 46 does not equal "0")

❑❑ Patients

❑❑ Preceptors

❑❑ Program faculty

❑❑ Program staff

❑❑   Other health professionals

❑❑   Other PA students

❑❑   Other health professions students

47. For each of the following behaviors, please indicate the frequency you witnessed other students experience that behavior during PA school.

	Never	Once	Occasionally	Frequently
Been publicly embarrassed	OO	OO	OO	OO
Been publicly humiliated	OO	OO	OO	OO
Been threatened with physical harm	OO	OO	OO	OO
Been physically harmed (e.g., hit, slapped, kicked)	OO	OO	OO	OO
Been required to perform personal services (e.g., shopping, babysitting)	OO	OO	OO	OO
Been subjected to unwanted sexual advances	OO	OO	OO	OO
Been asked to exchange sexual favors for grades or other rewards	OO	OO	OO	OO
Been denied opportunities for training or rewards based on their gender	OO	OO	OO	OO
Been subjected to offensive remarks/names based on their gender	OO	OO	OO	OO
Received lower evaluations or grades solely because of their gender rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on their race or ethnicity	OO	OO	OO	OO
Been subjected to offensive remarks/names based on their race or ethnicity	OO	OO	OO	OO
Received lower evaluations or grades solely because of their race or ethnicity rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on their sexual orientation	OO	OO	OO	OO
Been subjected offensive remarks/names regarding their sexual orientation	OO	OO	OO	OO
Received lower evaluations or grades solely because of their sexual orientation rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on their gender identification	OO	OO	OO	OO
Been subjected offensive remarks/names regarding their gender identification	OO	OO	OO	OO
Received lower evaluations or grades solely because of their gender identification rather than performance	OO	OO	OO	OO
Been denied opportunities for training or rewards based on their religion	OO	OO	OO	OO
Been subjected offensive remarks/names regarding their religion	OO	OO	OO	OO
Received lower evaluations or grades solely because of their religion rather than performance	OO	OO	OO	OO

47a. Please indicate the individual(s) who performed the described behavior(s). Please select all that apply. (displayed if "Never" count in 47 does not equal "0")

❑❑ Patients

❑❑ Preceptors

❑❑ Program faculty

❑❑ Program staff

❑❑ Other health professionals

❑❑ Other PA students

❑❑ Other health professions students

❑❑ I do not know

48. For any incident(s) that <u>you were subject to</u>, did you report the incident(s) to a designated person or any other official empowered to handle such complaints? (displayed if "Never" count in 46 does not equal "0")

○○ Yes (if selected, go to 49 or End of Survey)

○○ No (if selected, go to 48a)

48a. What is the most important reason(s) that you chose not to report the incident(s)? Please select   all that apply.

❑❑ Did not know what to do

❑❑ Fear of reprisal

❑❑ Handled incident(s) by myself

❑❑ I did not think anything would be done about it

❑❑ Incident(s) did not seem important enough to report

❑❑ Other, please specify_____

49. For any incident(s) that <u>you witnessed</u>, did you report the incident(s) to a designated person or any other official empowered to handle such complaints? (displayed if "Never" count in 46 does not equal "0")

○○ Yes (if selected, go to 49 or End of Survey)

○○ No (if selected, go to 48a)

48a. What is the most important reason(s) that you chose not to report the incident(s)? Please select   all that apply.

- ❑❑   Did not know what to do
- ❑❑ Fear of reprisal
- ❑❑   Handled incident(s) by myself
- ❑❑   I did not think anything would be done about it
- ❑❑   Incident(s) did not seem important enough to report
- ❑❑   Student(s) subjected to the incident(s) asked me not to report it
- ❑❑ Other, please specify_____

Please provide any feedback about this survey, including suggestions for additional items or about   the administration process.

Thank you for your participation and best wishes on the next steps in your PA career. Congratulations   on graduating!

Appendix C - Comparison of final sample with sample excluded (containing missing cases)

Variable	Final Study Sample		Missing Cases Sample		
INDIVIDUAL FACTORS	Frequency	Percentage	Frequency	Percent	Valid Percent
Male	755	24.9	78	31.3	33.9
Not Male	2283	75.1	152	61	66.1
Married	913	30.1	64	25.7	27.5
Not Married	2125	69.9	169	67.9	72.5
White	2420	79.7	157	63.1	70.1
Hispanic Latino Spanish	56	1.8	9	3.6	3.9
White and Spanish	129	4.2	15	6	6
Other race/ethnicities	433	14.3	45	18.1	18.1
Minor to no influence of personality, interest, and skills	57	1.9	0	0	0
Moderate influence of personality, interest, and skills	484	15.9	4	1.6	8.3
Strong influence of personality, interest, and skills	2497	82.2	44	17.7	91.7
Minor to no influence of education debt level	1051	34.6	12	4.8	26.1
Moderate influence of education debt level	1091	35.9	15	6	32.6
Strong influence of education debt level	896	29.5	19	7.6	41.3
PROGRAM FACTORS					
Minor to no preceptor influence	382	12.6	6	2.4	11.1
Moderate preceptor influence	932	30.7	16	6.4	29.6
Strong preceptor influence	1724	56.7	32	12.9	59.3
Minor to no faculty influence	1181	38.9	19	7.6	35.8
Moderate faculty influence	1114	36.7	16	6.4	30.2
Strong faculty influence	743	24.5	18	7.2	34
Minor to no influence of clinical rotation experience	222	7.3	2	0.8	4.3
Moderate influence of clinical rotation experience	901	29.7	14	5.6	29.8
Strong influence of clinical rotation experience	1915	63	31	12.4	66
Minor to no influence of mentors	838	27.6	6	2.4	17.6
Moderate influence of mentors	1115	36.7	9	3.6	26.5
Strong influence of mentors	1085	35.7	19	7.6	55.9
EXTERNAL FACTORS					
Minor to no influence of availability of jobs	623	20.5	10	4	21.3
Moderate influence of availability of jobs	1188	39.1	17	6.8	36.2
Strong influence of availability of jobs	1227	40.4	20	8	42.6
Minor to no influence of income potential	513	16.9	11	4.4	22
Moderate influence of income potential	1399	46.1	15	6	30
Strong influence of income potential	1126	37.1	24	9.6	48