

THE PENNSYLVANIA STATE UNIVERSITY  
SCHREYER HONORS COLLEGE

DEPARTMENT OF HEALTH POLICY & ADMINISTRATION

THE CAUSES, CONSEQUENCES, AND POTENTIAL SOLUTIONS TO THE PRIMARY  
CARE PHYSICIAN SHORTAGE IN THE AMERICAN HEALTH CARE SYSTEM

MICHAEL ZITOMER  
SPRING 2014

A thesis  
submitted in partial fulfillment  
of the requirements  
for a baccalaureate degree in Health Policy and Administration  
with honors in Health Policy and Administration

Reviewed and approved\* by the following:

Dennis Shea  
Professor of Health Policy and Administration  
Thesis Supervisor

Rhonda BeLue  
Professor of Health Policy and Administration  
Honors Adviser

\* Signatures are on file in the Schreyer Honors College.

## ABSTRACT

Recent decades have revealed a trend of higher proportions of medical students choosing to specialize instead of practicing primary care (or any form of general medicine). The declining inclination among medical students toward primary care is alarming because of the potential effects it could have on the entire health care system. Readily accessible primary care has potential to make delivery of health care cheaper and more efficient, but a shortage of primary care physicians (PCP) may force some practices to consider alternative models of care delivery. Also, patients who cannot get an appointment because of a lack of nearby doctors or incredibly long wait-times (the shortage means many primary care practices see higher patient volumes because there are fewer doctors per patient), may seek care directly from a specialist. Such practices, though sometimes harmless, can lead to waste and inefficiency when patients receive more expensive, yet not truly necessary, treatment.

The thesis that follows introduces the topic of primary care and the primary care physician shortage and provides relevant background information to explain the build up to the current situation. Methods used to complete an extensive review of relevant literature are explained, followed by the results of this review. Finally, the findings from the literature are analyzed and new proposals to help erase the shortage are explained.

Appendix B contains a sample questionnaire for premedical students that could be used in future research to collect data on their interest in primary care and any effects certain interventions could have on their specialty preferences.

## TABLE OF CONTENTS

List of Acknowledgements.....	iii
Chapter 1 Introduction.....	1
Chapter 2 Methods .....	8
Chapter 3 Literature Review Results.....	10
Chapter 4 Discussion and Policy Proposal.....	31
Appendix A Questionnaire for Premedical Students.....	45
BIBLIOGRAPHY .....	53

## **ACKNOWLEDGEMENTS**

I would like to acknowledge and thank my thesis advisor, Dennis Shea for guiding me throughout this process and helping me focus my goals. I would also like to thank Rhonda BeLue for serving as an extraordinary advisor and mentor. All of my professors from the Department of Health Policy Administration deserve credit for inciting the extreme interest I have in the primary care physician shortage.

## **Chapter 1**

### **Introduction**

Despite the United States boasting a world-class medical system, Americans consistently face higher costs and lower satisfaction than patients in other developed nations (Hawk, 2002). The three pillars of America's health care woes are costs, quality, and access. Americans are tricky, though, and difficult to please. For example, Health Maintenance Organizations (HMO) of the 1990s were able to cut health care costs with no detriment to overall patient health (Goldhill, 2013). They did this by denying claims filed by patients for treatments that were deemed unnecessary. HMO policyholders tended to disagree with these cost-cutting measures (Goldhill, 2013). They feared the future possibility of their HMO misjudging a vital treatment as superfluous, resulting in their claims being denied with no consideration given to professional medical opinions. Patients simply did not like being told "no," and they were especially bothered by the impression that an insurance company, not their trusted doctors, was dictating their course of treatment. Growing numbers of disgruntled policyholders, known as the HMO "backlash", lead to insurers reducing the use of some of their cost-cutting tools. Meanwhile, health care costs are back on the rise, access to health care is unevenly distributed, and quality of care varies by region and demographics (Goldhill, 2013). For over 50 years, various health policy experts, physicians, politicians, and others have offered revamped primary care as a solution to the cost-quality-access puzzle (Hawk, 2002).

Primary care physicians (PCP) serve as the "gatekeepers" to the medical sector; they act as the patient's first contact point and can replace unnecessary and expensive treatments, with guidance, support, and instructions on how to make impactful lifestyle changes. Now, they are in

short supply at a time when their role in coordinating patient care, preventing excessive care, and providing patients with their time and attention is vital to accomplishing the goals of cutting costs, eliminating waste, and maximizing health outcomes for patients.

The importance of primary care has been stressed for decades, but there exist some inconsistencies about what it actually is. In 1996, the Institute of Medicine (IOM) defined primary care as the patient's point of entry into the health care system and "care positioned between self-care and the remainder of the clinical enterprise" (Hawk, 2002, p.150). Primary care has been in a state of constant evolution since the 1960s, adding to the confusion about its exact definition. The term "primary care" was first used in 1961 and formally defined by the Mills Commission in 1966. The commission called the PCP "the primary medical resource and counselor to an individual or family." By 1978, primary medical care was conceptualized as first contact care. PCPs were held responsible for the continuity of care for each patient, for referring patients to specialists or hospitals when necessary, and for fully integrating all services patients received to provide coordinated comprehensive care.

Primary care in the United States was developing a focus on the individual, while primary care models in other countries, such as Canada, were moving in the direction of public health. A public health model promotes healthy living and disease prevention at the community level. By the 1980s, attempts to attach goals of public health to the delivery of primary care took root in the United States. The result was community-oriented primary care (COPC). COPC was based on consistent research indicating public health measures, such as increased supply of clean water, better nutrition, and education about disease prevention, have much larger impacts on lifespan and general health than any kind of medical intervention. The general health of a nation is affected most by lifestyle and environment, not by the quality or quantity of medical care available (Hawk, 2002). Because United States health care is set up to cater to the individual on a personal basis, COPC never flourished here. Many consider this a huge failure because of the

potential for public health initiatives to increase the overall health of populations at much lower costs (Hawk, 2002). Although primary care was progressing conceptually, by the late 1990s it was clear many common problems had emerged, affecting how other physicians viewed PCPs and how patients assessed primary care practices.

Both patients and physicians have come to view primary care as an afterthought (Goldhill, 2013). More than ever, doctors consider careers as generalists to be unattractive, and possibly a negative reflection on their skills as physicians (Reuben, 2007). Additionally, PCPs' "gatekeeper" role has, for many patients, become nothing more than an annoyance to be endured before receiving care from a specialist. The lack of emphasis on primary care and many patients' difficulties finding PCPs with available appointments have created a trend in which patients seek the care of specialists right away. With these patients, PCPs no longer serve as the first point of contact in the medical sphere. They are cut out of the picture, unable to counsel these patients and determine if more expensive care from a specialist is truly necessary. Meanwhile, since these patients receive most, if not all, care from specialists, they may begin to view the PCP as inconsequential (Goldhill, 2013).

In modern medicine there are specialties and subspecialties of physician concentrations dealing with every tissue, organ, and system of the human body. An increasing number and proportion of physicians are pursuing careers in these more advanced specialties (Reuben, 2007). Medical specialties allow physicians to delve into the most complex or obscure aspects of the human body to heal patients no one thought were capable of recovery. The devotion that exists in medicine to find new treatments and decipher the mysteries of the human body is a product of the American spirit of innovation, determination, and hard work. By comparison, PCPs (pediatricians, family practitioners, geriatricians, internists) may seem of feeble importance; yet their disappearance could spell disaster for many Americans.

The shortage of PCPs leaves many populations throughout the country vulnerable and underserved, placing tremendous stress on an already failing system. Effective primary care improves health outcomes, reduces disparities among minority groups, increases access to care, and curbs expenses (Hawk, 2002). Primary care is extremely beneficial, yet 60 million Americans live in medically underserved areas without access to routine PCP check-ups (Goldhill, 2013). Compounding this predicament is the declining interest among medical students in primary care. The Journal of the American Medical Association (AMA) published a report highlighting that a mere two percent of current allopathic (schools granting the “MD” degree) medical students plan to go into primary care (LocumLife, 2008). Apparently, allopathic schools have failed to teach and present primary care in a manner that piques students’ interests or addresses their concerns. One of the main apprehensions medical students have when considering a career in primary care is lifestyle. PCPs tend to work irregular hours, receive less pay for their services, and despite the importance of the field, there is little prestige associated with the job (Lakhan & Laird, 2009). If the exodus from primary care is to be stopped, current problems must be addressed to make it more attractive to the doctors of the future. This involves reforming America’s health insurance system so that excess burden does not constantly fall on the primary care provider and giving patients the ability to utilize primary care in a way that makes it a worthwhile and profitable business.

There are various interest groups within medicine that realize a serious problem exists and needs immediate attention. Doctors, medical students, medical schools, the AMA, hospital administrators, and non-physician practitioners (NPPs) are all key stakeholders who stand to incur major setbacks if this problem is not solved. In November 2008, the AMA passed a new policy dealing with the shortage of PCPs. The average medical student graduates with \$140,000 in debt. The AMA plans to increase incentives for students by offering scholarships and loan



repayment plans to those who pledge to go into general practice (Science Letter, 2008). The AMA policy will enable those students pursuing primary care to avoid some of this debt.

The nation's medical schools have started adjusting their policies to create new educational programming to address the PCP shortage. Many schools have already set goals to increase overall enrollment by 15 percent within the next decade (Lakhan & Laird, 2009). Though such a policy may increase the total number of practicing physicians, it fails to address the lack of interest medical students currently have for primary care. There is no guarantee that an increase in medical school enrollment will lead to an increase in supply of primary care doctors. Simply increasing class size cannot be relied upon to correct the PCP shortage.

Osteopathic schools (schools granting the "DO" degree) and the American Osteopathic Association are contributing to the solution by training physicians inclined toward primary care. Primary care correlates nicely with osteopathy's holistic approach to medicine. The American Osteopathic Association released data in 2004 showing there were approximately 40,000 licensed doctors of osteopathic medicine (DOs) practicing in the United States, 47 percent of whom were general practitioners (Lakhan & Laird, 2009). A relatively large proportion of osteopathic graduates consistently choose primary, so osteopathic schools could be relied upon in the future to continue educating quality PCPs. Osteopathic medical schools are usually proud of this tradition and encourage students to consider primary care.

Efforts of health policy experts to correct the PCP shortage have frequently centered on the role of non-physician practitioners (NPPs) and how they contribute to the structure and delivery of primary care. Studies have consistently shown that care provided by NPPs is adequate and extremely satisfying to patients. NPPs often have better interaction with patients, convey important information in more simplistic terms, and emphasize the wants and needs of the patient over anything else (Cole, 2007). However, if the role of NPPs in the delivery of primary care is to be expanded, many states would have to change their scope of practice laws in order to allow

them freedom to provide more care without the direct supervision of a doctor (Jacobson & Jazowski, 2011). Even so, NPPs represent a valuable asset in the primary care work force currently being underutilized.

While many of these other efforts may help address the shortage in primary care, none of them aim at the root of the problem. The core issue is that health care does not operate in the capitalist free market system that most American businesses enjoy. Instead, it is a regulated industry with the government and private insurers taking the place of individuals as health care's true purchasers. The set up of the current health care system is considered necessary to protect individual patient-consumers from fraud, excessive treatment, and the overwhelming expense of various medications and procedures (Goldhill, 2013). Insurance also addresses consumer concerns about the financial risks associated with illness, although modern health insurance does much more than this. Many patients use health insurance as a means to cover all health care expenses, not just those that would truly cause financial distress. Meanwhile, patients have little understanding of health care costs and often mistake quality health insurance for quality health care. The government institutions that regulate and pay for health care (e.g. Medicare, Medicaid) and private insurers have, in affect, contributed to the creation of an industry that operates on perverse incentives. These incentives, which are unlikely to arise in a free market system, are partially responsible for the astronomical sums spent on health care today. The current system has also created a hostile environment for PCPs because these doctors are not well paid for the most valuable thing they offer patients: their time. Regulated and administered pricing/reimbursement is largely liable for the misdistribution of physicians across specialties. Market pressures of supply and demand could correct the PCP physician shortage, but these aspects of free markets do not exist in health care. These economic forces cannot correct market failures in the highly regulated and complex environment currently in place.

Unfortunately, the United States has neglected its primary care infrastructure for too long. The importance of primary care and its role in maintaining good overall population health has been ignored. The shortage of PCPs comes at a time when both demand and access to health care are increasing as a result of the Patient Protection and Affordable Care Act, a growing population, and an aging population. Since changing the thought process of an entire nation and undoing almost 50 years of health care legislation might prove a painfully slow process, the issues with primary care will first have to be solved under the rules of the current system. Future and more drastic reforms might take hold once some of the barriers to real change are broken.

In order to uncover the full extent of the PCP shortage and the factors contributing to it, an extensive review of pertinent literature was conducted. The subsequent chapters explain the methods used followed by a thorough description of the results of the review. The last chapter discusses these results and posits new solutions to the PCP shortage.

## Chapter 2

### Methods

In reviewing the literature, the goal was to find relevant studies and other works that either supported or challenged the notion that the diminished state of primary care is an underlying cause of inefficiency in treatment and misdistribution of physicians, and that current policy fails to address the fundamental flaws in the health care system that have brought primary care to its current state. Also desired were sources that argued for or against a free market approach to health care, supported by sound economic principles.

The studies and sources referenced in this report were found using Penn State University Library's *lionsearch*. This online tool acts as a search engine, scanning for relevant sources throughout every database to which Penn State subscribes. Searches were refined by indicating requirements for results to be in English, to be written no earlier than 1990, and to be published in an academic journal. Search keywords and terms included "primary care physician shortage United States," "ACA primary care," "non-physician practitioners primary care," "physician choice of specialty," "physician reimbursement," "impact of medical school debt on specialty choice," "fixing primary care," "primary care benefits," "primary care health care efficiency," "universal health care," "health care free market structure," and "free market economics health care." The initial pool of selected literature was supplemented by altering some search restrictions. The date cut off was pushed back to 1975. This allowed for the incorporation of studies that showed and/or predicted current trends in primary care and physician specialty choice. Search parameters were also changed to allow sources other than academic journals, but

attention was paid to ensure all selected sources was credible and well supported by the rest of the literature.

The goal was to find 10-15 quality sources that would support the thesis and function, in the literature review section, as a good representation of works in the general pool of literature. It was also important to find multiple sources to support each nuance of the primary care physician shortage to be discussed. The sources were organized by subtopic. These subtopics included: origins of the PCP shortage, strategies to address a failing primary care system (including increased utilization of NPPs), significant variables affecting/patterns in physician specialty choice, and free market principles applied to healthcare.

The findings of past research confirmed the existence of the primary care physician shortage and highlighted possible causes. A common shortcoming of many of the studies, however, is their age. This is important not only because of the possibility of significant changes in patterns and characteristics in medical care, but also because most research was conducted prior to the passage and implementation of the Affordable Care Act (ACA). Even when assuming the ACA has yet to significantly impact health care and physician behavior, the health care environment today is very different than it was just ten years ago. Therefore, the context in which many studies were designed and analyzed is no longer valid. Older findings, however, still provide important clues to pinpointing what caused physicians' exodus from primary care and insight into physician behavior. A comprehensive understanding of behavior and preferences may prove to be a powerful tool in designing initiatives to attract medical students to primary care and create a more even distribution of physicians with regards to specialty and geography.

The sources were summarized in the literature according to subtopic. The literature review section was written to present a general idea of the credible information available on this topic and the many research efforts that have already focused on it. The sources are analyzed, critiqued, and incorporated into the arguments of the thesis in the discussion section

## **Chapter 3**

### **Literature Review Results**

The purpose of this review of the literature is to summarize and examine previous scholarly works on the primary care physician shortage, physician specialty choice, and free market-inspired health care reforms, especially those with potential to affect change in primary care. Such reforms also allow for less worry about physician shortages and specialty choice, but open up primary care to other professionals. This review is necessary in order to propose a new health care model (see Chapter 4) that strengthens existing primary care practices, recommends strategies to attract medical students to general medicine, and institutes a radical reform of the health care system with incremental changes phased in slowly to allow a tolerable transition.

A crumbling primary care infrastructure in the United States exists at a time when demand for services is likely to surge due to expansions of private insurance coverage and Medicaid (via the Patient Protection and Affordable Care Act) (Field, 2011). There will also continue to be increases in Medicare coverage as the population ages. Although uncertainty exists as to exact figures, the Patient Protection and Affordable Care Act (ACA) is bound to increase the number of people with access to physicians and health services. Despite the fact government is providing the instrument for millions to obtain health insurance, the medical/health care sector has not secured a mechanism to guarantee these new patients access to high quality, cost-efficient primary care.

The fatal flaw with primary care is increasingly smaller proportions of medical students are interested in practicing any form of general medicine. Adding to the scarcity, PCPs currently in practice are concentrated in suburbs or wealthier sections of big cities, leaving many rural and inner-city locations underserved (Reuben, 2007). The ACA might make more insurance

affordable to more people, but an influx of new customers on such a large scale will make the PCP shortage all the more evident and palpable.

Primary care services must be preserved because they are essential to streamlining the delivery of care and forming an efficient health care system focused on patient needs. PCPs develop strong relationships with patients, built on trust. Quality PCPs maintain the long-term health of their patients and provide guidance with difficult medical decisions, such as those related to end-of-life care. They recommend the care of a specialists when necessary, preventing misuse or overuse of health resources. In this way, PCPs play the crucial, but forgotten, role of “gatekeepers” of the health care system. When patients see multiple doctors, the PCP should coordinate with all members of the health care team, providing background health information and ensuring high quality treatment with minimal risk for error. Unfortunately, all PCPs are not able to fulfill these tasks for patients because of the stresses of a depleted workforce, availability and prevalence of specialists that do not require referrals from PCPs, insufficient compensation, and additional breakdowns in health care delivery (Reuben, 2007).

While some research has broadly examined the status of primary care in the United States in order to develop methods and policies to shift primary care providers back into their role as “gatekeepers” of the health care system (Reuben, 2007), other research has focused on trends in physician specialty choice. Multiple studies have been conducted to determine how and why physicians choose a specialty and the significant variables that impact this decision. Findings have allowed researchers to predict specialty choice, to varying degrees of accuracy, using statistical models. The ability to accurately predict specialty choice and understand why medical students choose particular paths over others could be valuable information for efforts aimed at increasing PCP numbers (Bazzoli, 1985). Other research and proposed solutions, although more polemic and controversial, suggest a free market system applied to health care could correct the PCP shortage (Goldhill, 2013). One thing is certain: continued government intervention and the

enormous role it plays as a payer of medical expenses and administrator of care have created an inefficient system unable to fully meet the needs of patients (Schansberg, 2011). Strategies other than those requiring more government regulation in health care deserve consideration.

There is an acknowledged shortage of primary care physicians in the United States. In 2005, the Council on Graduate Medical Education (COGME) reported the total number of physicians would likely grow by 24 percent between 2000 and 2020, but the rate of population growth would exceed this. The COGME also predicted the increasingly larger proportion of the population aged 65 and above would increase demand for physician services. The COGME, as a result, recommended that US medical schools increase enrollment 15 percent by 2012 in order to supply enough physicians to meet future demand (Kane et al., 2009).

Uncertainty around the future overall physician census in the United States indicates trouble for primary care, a field already having problems attracting new doctors. The numbers of PCPs and other general practitioners in the United States are falling at an alarming pace. Reuben (2007) asserts the number of medical school graduates entering family medicine decreased 12 percent since 1998. Within the field of internal medicine, the number of physicians pursuing a subspecialty increased 21 percent. In 2003, only 27 percent of third year internal medicine residents planned to practice general internal medicine. Doctors are losing interest in careers as generalists, and a higher proportion of doctors completing internal medicine residencies are avoiding careers in general practice in favor of more specialized fields. In 2008, the Association of American Medical Colleges (AAMC) released a report predicting a shortage of 124,000 full time equivalent (FTE) physicians by 2025. Thirty seven percent of this physician shortage is represented by PCPs (Kane et al., 2009). In other words, by 2025, the AAMC expects a shortage of roughly 60,000 PCPs. It is important to note that this estimate was made prior to passage of the ACA, which will increase demand for doctors. One step to address this impending shortage is to attract more medical students to primary care, a task that has proven increasingly difficult.



All medical schools in the United States employ the same general curriculum. The first two years are largely classroom based and prepare students for the first part of the United States Medical Licensing Examination (USMLE -1). In the third year, students gain clinical exposure as they complete clerkships in specialties like family medicine, internal medicine, obstetrics/gynecology, surgery, psychiatry, and pediatrics (Hamilton, 2014). The third year of medical school is the first chance students have to explore different medical specialties in clinical settings. The bad and good experiences students have during these clerkships can determine the career path each aims to follow.

The fourth year consists of additional rotations, with students granted more responsibility in the delivery of medical care. Fourth year medical students also chose electives in areas that most interest them. Fourth year students take the USMLE -2 exam and must indicate their specialty preferences. Then, they enter into a residency match process that places students in the various positions available. Certain residency slots, such as those in highly desired specialties or those at world-renown health care institutions, are more competitive and harder to match with than others. Interviews, extracurricular work by students, and board examination scores are considered. Residencies in various specialties differ in length; the shortest being three years (e.g., pediatrics, internal medicine). Physicians desiring to practice in a subspecialty complete additional years of training after residency, called fellowships. Generally, physicians with more years of training earn more income. This is the tradeoff every medical student must consider (Hamilton, 2014). Graduating medical students must weigh the pros and cons of additional years in training and salary expectations against their true affinity for a particular field.

Hospitals and health care organizations accept residents because they provide a cheap source of labor in exchange for professional development. The federal government subsidizes graduate medical education (GME) slots at accredited teaching institutions because appropriate postgraduate training of skilled physicians benefits all of society. Since all medical school

graduates must complete a residency, the number of GME slots available acts as a cap on the number of practicing physicians. Currently, the number of GME positions is fixed. The Balanced Budget Act of 1997 required the number of federally funded GME positions in each residency program to remain at the 1996 level (Kane et al., 2009). One way to address the growing PCP shortage might be to fund more primary care residency positions, especially at teaching hospitals in underserved areas. The current cap, however, makes this impossible. Even as the AAMC helps to start new medical schools and pushes existing schools to increase class sizes to meet growing demand for physicians, there has not been a corresponding increase in federally funded GME positions to provide postgraduate training (Kane et al., 2009). Also, an increased supply of medical graduates will not be enough to save primary care. Medical students must develop an interest in primary care, nourished by programs that emphasize its importance and validate it as a fulfilling career. A number of studies have examined the determinants of physician specialty choice.

Watson and Croft (1978) applied multiple discriminate analyses (MDA) to the problem of uneven distribution of physicians across specialties. The dependent variable was specialty choice of an individual physician. Independent variables included admissions, medical training, and practice characteristics. The statistical model used in this study correctly classified general practitioners at a high rate (42.1 percent correctly classified compared to 18 percent for other specialists), suggesting MDA could prove a useful tool in identifying medical school applicants likely to become generalists (Watson & Croft, 1978). This study is outdated; medical students of today face a very different environment than their counterparts in the 1970s and 1980s. It is, however, useful in that it demonstrates the ability of statistical models to accurately identify student most likely to go into general practice. Medical schools interested in attracting more students to primary care could use updated versions of these models to identify the best applicants.

The distribution of physicians across specialties and geographic areas has long been the focus of health policy initiatives that aim to create a balanced physician workforce accessible to all patients. According to Hurley (1989), efforts to prevent physician shortages in the late 1970s were successful, actually leading to a surplus. Medical school graduates of the 1970s generally viewed family medicine as desirable. Thus, the distribution of physicians shifted toward primary care. Primary care attracted doctors because it involves patient-centered medicine and the ability to establish long-term relationships with patients. The field had yet to acquire its current stigma. By 1982, however, medical school graduates began to demonstrate more interest in specialization. A misdistribution of physicians across specialties gradually emerged, and the behavior of medical school graduates suggested the problem would only worsen. Between 1982 and 1985, the number of medical school graduates interested in family practice fell 12.6 percent. The number of occupied general internal medicine residency positions decreased 25.9 percent (Hurley, 1989). The differences between medical students of the 1980s and those of the 1970s were the increasing financial strain of paying for a medical education and the new payment system that rewarded specialists with higher reimbursement rates. Policies aimed at stopping the flood of medical students away from general practice have failed to accurately account for the financial incentives behind physicians' specialty choice (Hurley, 1989). Redistribution policies have largely failed because the role of financial incentives in specialty choice is poorly understood.

Hurley set out to understand these financial incentives and their impact on medical students' career decisions using a simultaneous decision model of a physician's choice of specialty, community size, and mode of practice. The principal data source was the Association of American Medical Colleges (AAMC) Longitudinal Survey of the Medical School Class of 1960. The survey followed physicians from entry into medical school until 1976. Full records were obtained for 873 participants in eight specialties, seven community sizes, and three practice

modes for 168 possible practice combinations. Results showed that expected income significantly affects the specialty, location, mode triplet chosen by an individual. The average income elasticity was 1.05 (an increase of one percent in income in any of the 168 practice alternatives correlates to a roughly one percent increase in the number of survey subjects predicted to take that alternative) (Hurley, 1989).

The same model was applied to health policy initiatives aimed at increasing the number of PCPs and encouraging practice in rural and inner-city locales. The effectiveness of these policies was determined by how physicians respond to income differentials. In one simulation, all income differentials among the 168 practice alternatives were eliminated. This resulted in a dramatic drop in the number of physicians predicted to choose high paying specialties and a corresponding increase in the number and proportion predicted to choose a primary care (Hurley, 1989). Many physicians are drawn to primary care and internal medicine because of the types of doctor-patient relationships these fields facilitate but are lured away by the more lucrative specialties. Declining numbers of PCPs are potentially less indicative of physician preference and more an indicator of the effect of the large income differentials among the various specialties.

In a second policy simulation, the expected income of physicians practicing in the smallest communities was increased by 10 percent. The model showed a 9 percent increase in the proportion of physicians practicing in the smallest community size. Specialty choice also favored primary care and internal medicine. The third simulation increased the expected incomes in psychiatry, pediatrics, and general/family medicine by 10 percent and decreased the expected incomes in surgery, radiology, and anesthesiology by a corresponding percentage. The model predicted specialty choice matched the changes in expected income. Community size and practice mode variables were not significantly affected by these alterations (Hurley, 1989).

While Hurley's study shows how incomes can impact choices, a study by Nicholson and Souleles (2001) was designed to determine the specific factors contributing to *how* medical

students form the income expectations that eventually influence their career paths. The study was also designed to determine whether income expectations actually affected behavior. The Jefferson Longitudinal Study, a survey of 7,433 graduates of Jefferson Medical College between 1968 and 1998, supplied data for the study. The database also supplied students' board scores and other information on their performance during medical school. Students completed the survey in the fourth year of medical school and were asked to predict the following with regards to their careers as physicians: specialty of practice, their income with 5, 10, and 20 years post-residency training, their peak income, and the characteristics of their medical practice. The survey also asked respondents to predict the number of hours they will work per week, the proportion of their time they will allot for research and teaching, the socioeconomic makeup of their patients, and their retirement age.

The study found that students form income expectations based on their own potential and the contemporaneous income of physicians practicing in the students' intended specialty. These expectations, however, are not static; students consider new trends in health care and changes in the political atmosphere when predicting their income. The study also found students' explicit income expectations to be useful predictors of behavior, since statistical models based on these forecasts correctly matched the most survey respondents to their actual specialties (Nicholson & Souleles, 2001).

In 1997, the median income of PCPs was \$155,000 compared to \$230,000 for specialists. In order to test medical students' awareness of the economics of wages Nicholson and Souleles (2001) asked survey respondents to estimate the current incomes of physicians in family practice, internists, surgeons, pediatricians, OB/GYNs, and psychiatrists. Respondents underestimated the median income of physicians in their preferred specialty by an average of \$17,400. Students intending to become surgeons expected their peak income to be an average of \$73,000 greater than the expected peak income of students entering family practice. Between 1973 and 1996 the

actual peak income of surgeons increased 32 percent, while the peak income of family practitioners decreased 18 percent. Between 1974 and 1987, medical students entering family practice accurately predicted peak incomes that matched those earned by practicing family physicians. In 1974 the incomes of family practitioners and other generalists began to fall, and students appropriately adjusted their predictions. This demonstrated at least some awareness of students to the current wage market of physicians. Since 1987, family practice income has increased but students' expectations have stayed fairly constant, indicating that a negative impression of PCP income has been ingrained in the minds of medical students.

The study also showed medical students forming income expectations respond to impending health care legislation. For example, the incomes of surgeons steadily increased over the 1980s and 1990s. As predicted, income expectations for students interested in surgery also increased until 1993. In 1993 students expected their peak incomes as surgeons to be 25 percent less than the average estimate by students one year earlier. Income expectation for surgeons began to increase again by 1994. The sudden change in students' expectations corresponds with the introduction of President Clinton's health care reform plan in 1993 and its failure to gain enough support to become law in 1994 (Nicholson & Souleles, 2001). Students evidently perceived their incomes as threatened by more government involvement in health care.

Other results regarding income and student characteristics were of note. Students' performances on national board examinations affect their income expectations, which, in turn, influence specialty choice. Statistical analysis of the Jefferson data demonstrated students with high scores on their USMLE-1 exams predicted their peak career income to be \$10,000 greater than the predicted peak incomes of students with average scores. Also, students who planned to devote more of their career to research and teaching expected to earn less money (Nicholson & Souleles, 2001).

Altering the real incomes of physicians also changed expectations. A dollar increase in the actual peak income of physicians in a given specialty corresponded with a \$0.67 increase in the peak income predicted by students planning to enter that specialty. The study found a \$10,000 increase in the contemporaneous income of specialists over primary care physicians increased the probability of students choosing a non-primary care specialty by 1.4 percent. A \$10,000 increase in a student's expected income as a specialist compared to a PCP results in 5.7% increase in the likelihood the student will enter a non-primary care specialty (Nicholson & Souleles, 2001).

Using students' explicit income expectations, the statistical model accurately predicts the specialty choice for 85.6 percent of the sample. When contemporaneous income data was used, the model was only 57.3 percent accurate (Nicholson & Souleles, 2001). The study successfully shows that answers to subjective questions about expectations can help predict behavior. Students are also fairly knowledgeable about the contemporaneous income of physicians, which they incorporate into their own expectations.

Borges, Gibson & Karnani (2005) aimed to develop a tool to help medical students choose a specialty. Although the primary goal of the study was to help students choose a career, researchers examined job satisfaction among various practicing physicians, exposing differential patterns across the specialties. Borges et al. (2005) also set out to add to the predictive validity of the relatively untested Medical Specialty Preference Inventory (MSPI). The MSPI was used as a counseling tool to improve students' understanding of each field, and to, eventually, decide on a specialty. The MSPI was developed with intentions to help students select a specialty that is a good "fit" for their skills, interests, preferred lifestyle, etc. (Borges et al., 2005).

Created in 1976, the MSPI analyzed student preferences to match them with one of six medical specialties: family medicine, internal medicine, obstetrics and/or gynecology, pediatrics, psychiatry, and surgery. The MSPI used characteristics of the six specialties as reported by physicians in those fields; it considered the traits of the practice of a particular specialty, not the

personal traits of physicians in that specialty. In total, the MSPI incorporated 199 items on various topics such as, patients, diseases, treatment, procedures, and knowledge (Borges et al., 2005). Researchers hypothesized physicians with MSPI results correctly predicting their specialty would have higher job satisfaction than incorrectly matched physicians. Study participants also answered questions about job satisfaction, boredom at work, changing one's job, and other job characteristics. to receive a score on the Job Satisfaction Scale, developed in 1986, and used previously to gauge job satisfaction among physicians. The scale has an alpha reliability coefficient of 0.88 (Borges et al., 2005).

A sample of 75 physicians was studied. It consisted of 41 females and 34 males, with ages ranging from 24 to 52. The 75 respondents were divided into "congruent" (n=17) and "incongruent" (n=58) groups. Physicians in the congruent group had MSPI results that matched their specialty and those in the incongruent group had MSPIs that conflicted with their actual specialty choice. Some physician participants (24 of the 58 in the incongruent group) indicated specialties not included in the MSPI. These physicians were eliminated from the study, shrinking the sample size to 51 subjects. The MSPI correctly predicted the specialties of 17 physicians, or 33 percent of the sample. It was incorrect in 34 of 51 cases, or 66 percent of the sample. The predictive validity of the MSPI jumps from just 33 percent to 61 percent when congruency is redefined as a physician's specialty matching with one of the top two specialties predicted by the MSPI (Borges et al., 2005)

Statistical analysis of the Job Satisfaction Scale results showed a significant difference in job satisfaction between congruent and incongruent physicians. Congruent physicians were significantly more satisfied with their careers than incongruent physicians. Physicians in practice for seven years had the greatest mean job satisfaction (compared to physicians with one, two, three, four, five, or six years of practice). Across specialties, surgeons had the highest mean job satisfaction score; psychiatrists had the lowest. The mean job satisfaction score of family



practitioners was slightly higher than that of psychiatrists. The difference, however, was statistically insignificant, making family practitioners tied with psychiatrists as the least “job satisfied” physicians, according to the Job Satisfaction Scale (Borges et al. 2005).

The Borges et al. (2005) study is just another indication that primary care faces serious hurdles if it wants to survive. The study lacks a large sample size and random selection of participants, but, despite its flaws, reveals important aspects of the PCP shortage. Being ranked as the least satisfied physicians does nothing to help efforts to attract physicians and students to family practice and general medicine. Also, the low job satisfaction scores may imply there is something inherently wrong with today’s primary care practices because PCPs are so unsatisfied with their work. Primary care may need a reboot in both its image and how it is practiced to, once again, make it attractive to students and fulfilling for physicians.

Interventions to attract medical students to primary care have been largely unsuccessful despite the increasingly urgent need for more PCPs in more locations throughout the country. Americans now largely receive specialty-centered treatment despite research suggesting primary care-centered health systems generate superior health outcomes at lower costs (Bennett & Phillips, 2010). Primary care-centered health systems also demonstrate greater propensity to reduce gaps in quality of care experienced by different segments of the population (Bennett & Phillips, 2010). Effective interventions to attract physicians to primary care should focus on the process of career decision-making, starting at the premedical stage.

In an extensive review of the literature, it was found that the most common characteristics of PCPs were female gender, a public medical school education, and lower expected income. Physicians who were raised in a rural location or indicated an interest in practicing in a rural location were also more likely to become a PCP (Bennett and Phillips 2010). The same research also suggested the possibility of a “hidden curriculum” at certain medical schools that discouraged students from careers in primary care. Although models for predicting

medical school students' specialty choice were imperfect, such studies consistently revealed students on the primary care track were less interested in research or prestige and were more likely seeking to serve others. Students choosing primary care were also more likely to decide on their specialty before beginning medical school (Bennett & Phillips, 2010). Finances also had some weight, but expected lifetime income was more influential on specialty choice than medical student debt. The studies reviewed showed no linear correlation between debt and choice to practice primary care, and students choosing primary care frequently had more debt than those who specialized. Extremely high levels of debt, however, have been linked to a decreased likelihood of students choosing primary care (Bennett & Phillips, 2010). This suggests there is a debt threshold that, once reached, makes debt more influential in career planning. Such a threshold, however, is likely to vary from student to student depending on each individual's comfort with high levels of debt and predictions about lifestyle and income.

Bennett and Phillips (2010) created their own conceptual model for specialty choice. Past conceptual models for predicting specialty choice were invalid because they treated student as a homogenous group, but the process through which a given intervention affects which specialty is chosen will vary among students. The Bennett and Phillips model divided students entering medical school into four groups: primary care committed, primary care positive, undecided, and non-primary care committed. Interventions to increase the number of PCPs must be tailored according to the characteristics of students in each group. Primary care committed students should be targeted, recruited, and provided with academic support to keep them on track throughout their education. Studies suggest medical schools could do a better job of recruiting and retaining primary care committed students by blinding medical school interviewers to students' GPA and MCAT score, provided certain benchmark scores have been reached. Primary care committed students generally attain MCAT scores and GPAs lower than those of their non-primary care committed counterparts. Medical admissions committees overlook these students

because inferior scores may draw attention away from applicants' propensity to be a great PCP. More research, however, is needed before instituting such an admissions policy.

Non-primary care committed students, on the other hand, should not be pressured to change their minds, but taught the value of quality primary care. Medical school curricula should also teach the importance of inter-disciplinary collaboration to improve communication between specialists and generalists, allowing for more efficient and streamlined treatment of patients.

Primary care positive and undecided students represent a large pool of potential future PCPs. These students, however, are usually the hardest to identify, making it all the more difficult to develop programs to attract them to primary care (Bennett & Phillips, 2010). Developing methods to pinpoint these students upon matriculation to medical school and exposing them to curricula that emphasize the importance of primary care should be the focus of future research.

The impact that debt has on physician specialty choice has not always been clear to researchers, as past studies have revealed surprising and/or inconclusive results. As stated above, Bennett and Phillips (2010) found expected income to be more influential than debt. The heavy financial burden students face has led those in the medical community to generally assume that debt impacts career decisions in some way. Baker and Barker (1997) realized what they believed to be a flaw in previous empirical studies on this topic. Past studies analyzed the affects of debt on physicians at the population level. Researchers wanted to uncover systematic changes debt may have on the entire physician population, but found little supporting evidence.

Baker and Barker (1997), instead, examined the effects of debt on the individual. They believed past population-level studies masked interesting results that come from analysis at the individual level. A sample of 5,175 physicians was analyzed. Only 3.2 percent of the sample reported debt to have a major influence on their specialty choice, and 1.8 percent indicated debt caused them to rule out additional training. Multivariate logistic regression was used to calculate

an odds ratio of 1.02 ( $p < .01$ ). A \$1,000 increase in a physician's total debt increased the likelihood that debt was significant to specialty choice by 2 percent.

Physicians with specific characteristics, however, had more drastic reactions to higher debt. For example, physicians with children during medical school were three times more likely to view debt as a major influence on their specialty choice. Attendees of private U.S. medical schools were 1.5 times as likely to say debt influenced their career choices than physicians who went to public U.S. medical schools. Physicians with parents in the middle to upper income levels were 40 percent less likely to consider debt significant, while those from lower income families were about three times as likely to report debt made additional training in a specialty unfeasible. Physicians who considered debt significant did not have uniform responses with regard to career decisions. Analysis found that 70 percent of these physicians chose specialties with shorter residencies, while 20 percent chose specialties with longer residencies (Baker & Barker, 1997).

The study results confirm more recent research that debt has a complex impact on specialty choice. It clearly affects choice, but not in a simple way. Despite its complexity, debt remains an important focus because physicians with particular characteristics, such as having children in medical school or coming from lower socioeconomic background, are more sensitive to it. Interventions aimed at attracting student to primary care through debt reduction programs may appeal to these students but not others, making a targeted approach necessary.

The American Medical Association (AMA) found another issues with previous studies that analyzed the affects of debt on specialty choice (Bazzoli, 1985). Student debt comes from a number of sources, such as the Guaranteed Student Loan (GSL), the National Direct Student Loan (NDSL), the Health Professionals Student Loan (HPSL), and the Health Education Assistance Loan (HEAL). Previous studies grouped all of these sources of debt as a single variable. Bazzoli (1985), using data from the AMA's 1983 Survey of Resident Physicians,

designed a study that ungrouped student debt as a single variable to analyze the impact that the source of a student's debt had on specialty choice.

Initial exploratory analysis revealed significant factors that positively increase the likelihood of a physician to practice primary care. These factors included marriage, spousal earnings, potential earnings, subsidized debt (nonwhites only), and other types of debt. Parental education and HEAL debt had a negative impact on the probability of practicing primary care. Race, sex, graduation from a foreign medical school, and subsidized debt (whites only), were insignificant (Bazzoli, 1985).

The effects of subsidized loans (GSL, NDSL, or HPSL) varied from the effect of HEAL loans, most likely due to the different repayment plans associated with each loan type. Physicians must begin to repay subsidized loans while still completing their residencies. Repayments of HEAL loans, however, are deferred until a physician completes residency and enters into medical practice. Therefore, those with subsidized loans may choose primary care because the residency period is the shortest. Primary care physicians do not earn as much as specialists, but a resident under tremendous financial burden paying back subsidized loans would begin earning a full salary sooner than those who specialize. Residents who desire to specialize endure more years of training, but if their debt comes from HEAL loans repayment does not have to commence until residency is complete. HEAL loans have higher interest rates, but by the time they have to be paid these physicians will be practicing in specialties and earning high salaries, compared to PCPs. Despite this theoretical prediction of the effects of different loans, statistical analysis confirmed findings of other studies that concluded debt may have some influence on specialty choice, but it is small (Bazzoli, 1985).

Analysis showed that a \$10,000 increase in a physician's total subsidized debt increased the probability of choosing primary care by just 5.3 percent for nonwhite residents. For white residents the effect, if any, was minimal. A \$10,000 increase in the amount of HEAL debt

decreased the probability of selecting primary care by 7.5 percent for all residents. Given average debt from HEAL loans among white residents was \$1,000 and \$1,200 for nonwhites, a \$10,000 increase is extremely large (Bazzoli 1985). Nonetheless, such a large increase in debt had a comparatively minute effect on specialty choice. If policy makers in the future determined the small effect of HEAL loans to be detrimental enough to the PCP shortage, then changing the types and availability of loans offered might help direct medical students to practice primary care.

With fewer physicians choosing generalist careers, the existence of many medically underserved regions of the country, and the potentially large increase in demand for health services due to the ACA, health policy makers have started to reconsider the delivery of primary care. Utilizing the services of non-physician practitioners (NPPs), such as nurse practitioners (NPs) and physician assistants (PA) is a strategy that compensates for fewer PCPs while also providing potential cost savings. There are those in the medical community who have concerns about the quality of care provided by NPPs and hesitate to equate the care provided by these professionals to the care provided by a primary care physician, making it harder for changes to take place.

Some research indicates a large portion of office visits at primary care practices could, however, be handled safely by NPPs. McCally et al. (1981) reviewed 17 separate studies on NPPs and concluded that 90 percent of pediatric office visits and 80 percent of adult visits could be safely handled by NPPs (as cited in Lukacs, 1984, p.54) According to Record et al. (1980), the substitution ratio is 0.63: one NPP can substitute for 63 percent of an MD (as cited in Lukacs, 1984, p.55). It is important to uncover, however, whether substitutions of NPPs for PCP affects the quality of care received by patients. Also, it is crucial that NPPs are efficient. They must be productive and cost effective in order to ease the workload on physicians and keep primary care practices running smoothly.

Substituting NPPs for physicians is not a viable plan if NPPs are not as productive as MDs or DOs. Record et al. (1980) concluded, “given no disparity in case mix analysis or delivery context,” NPP output equaled MD output (number of patients seen) (as cited in Lukacs, 1984, p.55). NPPs are more productive handling patients delegated to them than MDs who choose to handle all patients. Physicians’ productivity drops 26 percent when handling a patient with complicated medical issues. NPPs could step in to treat routine cases when physicians are preoccupied with their trickiest patients. Nurse practitioners (but not PAs) were found to spend more time with patients than MDs. Adding NPPs to office staff could allow a primary care practice to schedule 40 to 50 percent more office visits annually (Lukacs, 1984).

The huge salary differential for NPPs and MDs represents an opportunity for cost savings at primary care practices. Schneider and Foley (1977) determined delegation to NPPs could lead to significant cost savings as long as NPP salaries are less than 52 percent of physician salaries. Due to the large differences in education costs for NPPs and physicians, NPPs can be educated, trained, and used to provide patient care at an estimated 38 percent of physician costs.

Any strategy to “save” primary care would likely need to address the significant income gap between generalists and specialists. The shortage of PCPs is a result of mispricing physicians’ time (Goldhill, 2013). The PCP shortage means that health issues that were once corrected through lifestyle changes, as recommended by PCPs, are now treated with expensive procedures, performed by specialists. The pay gap between PCPs and specialist has persisted, despite the need to attract new physician to primary care.

Medicare is largely responsible for this pay gap and, therefore, indirectly responsible (at least partially) for the PCP shortage. Medicare bases physician reimbursement rates on the “relative value unit.” As a result, payments to physicians are a “function of the time it takes a practitioner to perform each service” (Goldhill, 2013). This policy, in practice, is illogical because fails to address issues of supply and demand for different services, and it leads to

different rates for the same service. As pressures to cut medical costs have reverberated throughout the health care sector, payers like Medicare and private insurers have looked for ways to save money by decreasing reimbursements to doctors. The reimbursement for physicians' time was the first target, since procedures and tests have more tangible costs. Delivery of medical care, as a result, has shifted in favor of procedures, which are reimbursed at higher rates. Specialists withstand cuts in reimbursement better than PCPs because they typically have a whole range of increasingly extensive treatments to offer patients. PCPs, on the other hand, must see as many patients as possible per day, taking away from valuable time spent with each individual patient, in order to stay in practice (Goldhill, 2013). Due to the current payment structure, physicians have incentives to spend less time with patients and order more tests and procedures, some being excessive and harmful.

David B. Reuben (2007), of the David Geffen School of Medicine at UCLA, proposed a model to fix primary care by improving its efficiency and taking steps to attract physicians, once again. The details of this model below are included because they address the topics previously examined by other studies, incorporating many of the issues into one proposal.

According to Reuben (2007), primary care operates under an "artisan" model; a single physician is expected to know every last detail of his patients' health. If PCPs were to discard this outdated image of their profession, they could begin to market themselves as specialists. PCPs specialize in the comprehensive care of patients and should act as the leaders of health care teams. Reuben proposes the burden of remarketing the role of PCPs should fall on the American College of Physicians, the American Academy of Family Physicians, and other similar professional organizations.

The next step in reforming primary care is to apply a systems approach. A systems approach could improve quality of care through utilization of improved information systems, delegation of certain tasks to NPPs, and creating efficient health care teams to effectively manage



each patient's health (Reuben, 2007). In other words, a systems approach would remove the chaotic elements currently associated with primary care practices and allow physicians to practice better medicine and find more fulfillments in their careers. They would have the freedom to consult with their patients without worrying about time constraints and reimbursement.

Over the course of their education and postgraduate training, students and residents must be exposed to primary care practices that have already started to incorporate these recommendations (Reuben, 2007). A student or resident placed in a hectic and dysfunctional primary care office might be forever turned away from the field, contributing even further to the PCP shortage. Additionally, state and local governments, recognizing the importance of quality primary care to public health, could raise funds and initiate programs to accomplish the necessary reforms. Medicare and private insurers need to also need to adjust their reimbursement schedules to start providing PCPs with fairer pay. Reuben (2007) suggests reaping higher rates for PCPs by evening out the reimbursement schedules for all physicians.

Reuben (2007) exposed primary care's current blemishes and proposed logical approaches to a solution. The model, however, is merely a skeleton. It lacks any mechanism to follow the recommendations and affect substantial change in primary care. The model was only a theory, which may eventually guide sound policy, but it only reiterated elements of a decade's old issue without offering a focused plan or timeline to fix primary care. The recommendations also failed to acknowledge underlying flaws with health care policy that would prevent many of the proposed changes from becoming practice or law.

Many aspects of the American economy are governed and guided by the principles of the free market. Historically, however, even those with favorable views of free market economics have been hesitant to apply a market-based approach to the problems of medical goods and services. It is generally assumed that free markets in medicine would exclude the poor from access. A free-market delivery of health could be practical, moral, and superior to the current

system run by the government and private insurers. Such a system would not provide health care solely on a market basis. Real and incremental reforms aimed at freeing the market from the current obstructions could effectuate significant change.

The ACA presents a serious problem because more government regulation of health insurance could potentially make the issue of rapidly rising health care costs even worse. Since the 1960s the government's spending on health care has risen from 25 percent to over 50 percent of total government spending, and cost estimates for government health programs completely missed the mark. In 1965, when Medicare legislation was passed, it was estimated that Medicare expenses by 1990 would total \$12 billion. In fact, Medicare spent \$110 billion in that time period. (Schansberg 2011). The government has a historically poor report card in controlling costs with most programs it initiates. Free markets could be the key to control costs. Free markets in health care could increase competition, lower costs, and provide more choices to patients.

Health care providers have rational responses to perverse economic incentives inherent in the United States health care system. The most significant of these is the central role insurance plays. The current model forces patients to turn over their role as health care consumer to "surrogates." Government reforms to place patients back in the role of true consumers and the implementation of practical new methods for financing health care based on market principles are crucial to steering American health care in the right direction. With patients in the role of customers in the health care sector, providers will be forced to target and attract patients with competitive pricing, better service, and high quality care. The government's future role should be expanded, but simplified. Government should fund a national health insurance program to cover all Americans from catastrophic health issues and get out of the business of directly purchasing care for patients (Goldhill 2013). A free market approach to health care can address and cure the PCP shortage while also attacking many other backward and faulty characteristics of the current system.

## Chapter 4

### Discussion and Policy Proposal

Problems with primary care today are largely two-fold: 1) PCPs currently in practice are dissatisfied with their careers and lifestyle; 2) Medical students are aware of dissatisfaction among PCPs and of the lower pay they receive despite tireless work. As a result, a shrinking portion of students are interested in exploring primary care, choosing more lucrative specialties instead. The literature reveals it is mostly expected income, not total educational debt, which drives specialty choice. Although debt can weigh heavily on students, interventions to assist with the financial burden of medical school do not appear to be the most effective strategy to get more students to consider primary care (Nicholson & Souleles, 2001).

There are a number of short-term interventions that can establish a foundation for even more far-reaching changes in physician markets. These short-term programs include rebranding curriculums, research on premedical students, and expanding GME slots for primary care. This section of the thesis describes these changes.

Short-term interventions to fix primary care need to focus on rebranding its image to both student's and physicians. Alterations to medical school programming and curricula are fundamental to realizing this change. Medical schools should reevaluate their programs to make sure student are exposed to enthusiastic primary care physicians working in exemplary practices. This can be accomplished by providing students with volunteer opportunities at free clinics and by involving students in public health initiatives. Medical school curricula need to emphasize the importance of primary care before students start rotating in different specialties. Once students start their clerkships in the third year of medical school, primary care specialties are treated as

equal substitutes for career choices. Before students begin rotations, they should have a deep understanding of the importance of quality primary care and the role it could play in reducing costs, expanding access, and providing coordinated high quality care. Medical students should be taught about what the PCP can be in the future, rather than just seeing the negatives that exist now and immediately dismissing it as a career path.

One medical school, The Commonwealth Medical College (TCMC), in Scranton, Pennsylvania, has designed a curriculum to bring primary care back to the forefront of medical education. In year one, students take a course on patient centered medicine and another course titled “Physician and Society” (“TCMC Admissions”, 2012). These classes ingrain in students the qualities that make excellent PCPs. They also demonstrate how PCPs can play more of a role in community health, an altruistic goal with potential for significant outcomes. The COPC movement in the 1980s unsuccessfully attempted link primary care and public health, but the concept, at least at TCMC, is being re-explored.

In year 2, students are provided with three weeks with no classes or exams. During these “clinical/community weeks,” spread out across the year, students work on service projects to help patients in underserved communities throughout Northeastern Pennsylvania. Students not only obtain the necessary skills to organize community-wide public health events, but they also see how, even when in a clinical setting, physicians can still connect with and serve patients in the community.

At the start of their third year students begin their clerkships, but TCMC has a very different model than most medical schools. This model, called the Longitudinal Integrated Clerkship (LIC), is designed to help students appreciate primary care and instill a patient-centered approach to care. TCMC students complete clerkships within the same core disciplines that are part of most medical school curricula: internal medicine, surgery, pediatrics, psychiatry, OB/GYN, and family medicine. Unlike at other schools, though, these clerkships are longitudinal

and follow a model that better mimics physician office practices. Students evaluate ambulatory patients and follow them over the course of treatment, into the inpatient setting if necessary. Students are paired with a faculty member in each discipline and a panel of patients to follow over the year. They follow these cases from start to finish. When the attention of multiple specialists is required, students accompany patients to different appointments and observe all care administered over the entire course of treatment. This is very different from clerkships at a majority of medical schools. Usually, students complete clerkships in each core discipline over a defined period of time. When this time is up, they rotate to the next discipline. Clerkships, besides family medicine, are almost exclusively completed in inpatient settings at hospitals and clinics. TCMC students are exposed to hospitals as well, but working more hours in physician offices exposes them to how these practices actually operate. The office setting also provides a more intimate environment for students to develop relationships with faculty mentors. The hospital environment is frequently fast-paced, impersonal, and stressful, so it is not always the most ideal setting for interacting with mentors and patients. Also, clerkships at other schools make no attempt to mimic the practice of patient care in a non-teaching environment (“TCMC Admissions”, 2012). A student completing his clerkship in surgery might see one set of patients for a week, but by the next week he is dealing with all new cases. This model fails to establish the principles of continuity of care and patient-centered medicine, unlike the LIC model.

The Commonwealth Medical College is a great example of a short-term solution to the PCP shortage. Opening its doors in 2008, TCMC is one of the nation’s newest medical schools with a novel approach to medical education. The medical school was founded with the intent to serve as an instrument to bring quality health care to the medically underserved areas of Northeastern Pennsylvania. Although, TCMC prepares its students for residencies in any of the medical specialties, the curriculum orients students with primary care early in their education, teaches the importance of community-based health initiatives, and offers a redesigned clerkship

model, the LIC, to instill qualities inherent in all good PCPs. Of course, not all graduates of TCMC match with primary care residencies. Even for those who do, there is no guarantee that they will come back and practice in the Northeast, PA region. TCMC, however, has pioneered a program that develops in students an appreciation of the principles that constitute effective primary care. Students are free to explore residency positions in specialties but encouraged to apply the principles of primary care to whichever field they choose. These principles include patient-centered care, community-based health initiatives, and understanding the importance of working well on an interprofessional health care team to coordinate and manage patient care.

Medical schools throughout the country should take note of the new curriculum developed by TCMC. Only close observation over the next several years will tell if its strategy is working and its philosophy is taking hold with students. Of course, every medical, or every new medical school, does not have to have the same goal as TCMC to produce PCPs to serve the surrounding regions. All schools could, however, make efforts to incorporate the doctrines of the TCMC curriculum that expose students to the importance of primary care, give students the opportunity to follow patients longitudinally as a PCP would, and instill respect for primary care and the importance of coordinated care even among the most specialty-oriented students. These changes to medical school curricula, if carried out effectively, may not close the salary gap between PCPs and specialists, but they will present primary care in a much better light to students, help them develop a shared appreciation for the part PCPs play in delivery of quality health care, and carry with them into other specialties many of the traits and approaches of quintessential high quality primary care.

Teaching medical students about the importance of primary care and the qualities that make good PCPs may not be enough; this training should take place as early as possible. The literature revealed that many medical students have picked a specialty or ruled certain ones out even before they start their first year of school. Understanding exactly how, why, and when

students make these decisions is important for several reasons. It shows whether students are using factual information on which to base specialty preferences, and reveals any preconceived notions students may carry regarding certain specialties. Understanding premedical students also indicates how accurate students are in their estimates of physician salaries and educational expenses and demonstrates the importance of expected income in final career choice. A questionnaire designed to extract this information from premedical student, specifically, is located in Appendix B. This questionnaire can be distributed to premedical undergraduates at any stage in their college education, although older students might exhibit more forward thinking with regard to their careers and have had more time to potentially research medical school expenses and lifestyles of physicians in various specialties. If this survey were used as part of a longitudinal study, however, tracking the changes in students' answers to the same questions periodically as they progress through college and enter medical school could possibly help researchers extrapolate when and why certain changes in attitudes, expectations, and preferences take place. The questionnaire requires students to indicate some demographic information, GPA and MCAT scores, and current specialty preference. It also requires students to indicate their expected income at various stages in their careers and asks them indicate whether certain hypothetical interventions would affect their inclination toward a career in primary care.

Such a questionnaire might have several uses. Medical schools, such as TCMC, could use results to look for applicants interested in primary care. Medical schools would also be able to identify students who may not be interested in primary care but demonstrate the attributes of a future physician who understands the importance of primary care and the coordination of care between specialists and PCPs for the best possible patient outcomes.

The questionnaire also provides premedical students with the opportunity to consider aspects of a career in medicine that had not yet occurred to them. For example, some students may be unaware that a PCP shortage exists, while other may have no idea about the payment

differential between PCPs and specialists. The earlier premedical students start thinking about the challenges that face them while paving the way to careers as physicians, the more time they will have to evaluate, consider, and understand all of their options. Thus, the questionnaire is both a self-awareness check for students, and a possible tool for medical schools to better identify certain kinds of students. Targeting students interested in primary care, while still admitting a balanced class of applicants, would allow medical schools to follow and nurture potential PCPs. Schools could then evaluate which strategies effectively kept primary-care inclined students on track and identify any factors that turned students away. Making sure students have a thorough orientation with primary care and enjoyable experiences in primary care clinical settings could start to reverse the exodus from primary care currently taking place. More medical students choosing primary care residencies may not fix the inherent problems with the health care system that have caused this shortage, but it will be adding physicians to the PCP pool with a genuine commitment to primary care and a comprehensive understanding of its vital importance. This infusion of new, enthusiastic, PCPs could start to improve primary care practices even before any reforms addressing payment differentials and the failures of the health care system take effect. `

Another feasible short-term remedy would be increasing the number of federally funded GME slots for primary care/internal medicine residencies. Even if the funds are not available to add new GME positions, the proportion of available primary care residency positions can be increased. This policy would not alter the total number of federally funded GME slots, but each year a larger number of primary care positions would be available relative to other specialties. This causes residencies in the more specialized fields to become even more competitive. Medical students, who fail to match with a specialty, would most likely settle on a residency in primary care or internal medicine to move forward with their careers.

Although it may not be ideal to have students entering into primary care residencies as a last resort, it is possible for them to gain appreciation for the field as they complete their



postgraduate training. Just like with medical school curricula, residencies in primary care and general internal medicine must be tailored to demonstrate the positive aspects of the field.

Obviously, residents will inevitably experience many of the vexations inherent in primary care practices today or even become frustrated by the comparatively meager income they expect to earn. No physician, however, should enter into medicine for the money. Doctors may eventually earn six-figure salaries, but the path to becoming a practicing professional is long, expensive, competitive, and grueling. Also, a fixation on expected income contradicts the altruism and devotion to help others that all doctors should demonstrate. This is why good medical school programs that preach the importance of primary care and a patient-centered approach to treatment, supplemented by strategically designed residencies in primary care or internal medicine, have potential to lift general medicine out of the depths. By instilling in students and residents an appreciation for primary care, these students may be much more likely to become stalwarts in a field about which they have become passionate. Effective educational and training programs that motivate students and residents to better the field they are in will make PCPs of the future less likely to complain about their careers and/or leave their practices and more likely to fight to restore both the image and delivery of primary care services.

The short-term changes recommended above offer no guarantees that primary care will start attracting more students or that future residents in generalist specialties will infuse optimism and determination into an effort to revitalize general medicine. Even if most doctors are not or should not be primarily motivated by income, medical students will naturally consider the approximate income and lifestyle a specialty offers before diving into one. The pay gap between generalists and specialists still exists along with the prestige associated with specialization and the notoriety attached to primary care. Studies, such as several of the ones mentioned in the literature review, consistently found expected income to be one of the most significant determinants of specialty choice. These unfortunate realities are likely to continue to scare

students away from generalist careers. Improving the things that can be changed in the relatively short-term, such as medical school curricula, clinical exposure experiences, and training programs can, however, alter current medical students' way of thought in order to increase the odds of having a larger and more committed pool of future PCPs.

Primary care and general medicine will likely never be able to undergo a truly transformative renaissance unless a series of radical changes are made to the entire United States health care system. The goal is to loosen some of the restrictions and regulations on health care in order to allow the industry to operate more like a consumer-driven free market. Markets, unhindered by overregulation, frequently correct market failures, such as shortages, on their own by establishing a new equilibrium between supply and demand. The proposed long-term changes that follow may prove a difficult undertaking, but employing a strategy to phase in reforms, step-by-step, while educating the general public on the basis for these changes, could make this revolution feasible.

Before delving into the plan for health care of the future, there are several fallacies regarding health care in the United States that must be addressed in order to expose the backwardness of the current system that has contributed to the PCP shortage, among other nightmares. Health care "costs" represent one peculiarity of the current system that is generally ignored or misunderstood. Oddly, in health care, there never seem to be prices like there are in other industries. It would be highly unlikely to hear a patient in the hospital asking her doctor the price of the bypass surgery she is about to receive. The term "price" is rare in health care because patients view expected payment as preordained. Patients also do not grant themselves the same power they possess as consumer in other industries. For example, it is very rare to see a patient bartering with a physician for a better deal. It also makes people uncomfortable to think about the "price" your doctor charges for an emergency procedure, or the "price" a hospital charges for cancer treatment. It is calming and reassuring to conceptualize the "prices" for such care as

“costs” the health care system imposes on hospitals and physicians. It is as if “cost” is just a polite term for “price.” In other industries, prices serve as valuable market indicators to both consumer and supplier. Prices help with the allocation of resources, they spark competition, and they lead to improved efficiency. In health care, “prices” are “costs,” but the sector does not look at “costs” as valuable market signals (Goldhill, 2013) Instead, “costs” are viewed as problems in need of more regulation in order to keep under control.

Many of the perverse economic incentives ingrained in health care have led to unchecked excess. Patients seek out insurance to cover costs of more care while doctors have incentives to order more costly tests and procedures due to the ineffective administered pricing system currently in place. Despite the excess and waste, many areas of the country are experiencing a severe *shortage* of PCPs. About 65 million Americans, or 20 percent of the total population, live in “primary-care health-professional shortage areas” (Goldhill, 2013). In these areas new patients seeking the care of a PCP are likely to face a 90-day wait before appointments become available. Ironically, while the American population continues to age as members of the Baby Boomer generation become seniors, there are currently only 7,160 geriatricians practicing in the United States. This represents a ratio of one geriatrician per 2,620 Americans age 75 and older (Goldhill, 2013). The proportion of all physicians practicing in any general medicine concentration has been in steady decline over the past 40 years and the culprit is the mispricing of physicians’ time. This failure is result of a health care system that relies on rules, instead of markets, to set prices.

A free market, unhindered, prevents the occurrence of long-term shortages (Goldhill, 2013). For example, assume a shortage of PCPs exists in the fictional country of Freedonia. The health care sector in Freedonia operates as a free market. With fewer PCPs, but the same number of patients seeking primary care services, each individual PCP becomes busier with higher patient volume. PCPs currently in practice would be able to raise their prices. Since there are not enough PCPs for everyone, patients will be willing to pay more per office visit. This may, at first, sound

bad for patients. Medical students, however, would notice that PCPs are now able to charge a premium for their services, so more would be attracted to primary care upon graduation. This is a safe assumption since Nicholson and Souleles (2001) demonstrated medical students base their income expectations on physicians' contemporaneous income while incorporating their future expectations on income and the awaiting political environment. As medical students recognize the higher incomes of PCPs, a higher proportion will enter the field, eventually alleviating the shortage while driving down the price patients face for primary care. In the United States health care system, where there are only a few actual payers (Medicare/Medicaid, private insurance) and patients are not true consumers, the market feedback mechanism imagined in Freedonia to raise PCP income during a shortage is blocked by an administered system that reimburses physicians at fixed rates. The caps in place on medical school admissions and available residency positions also make it impossible for free market pressures to correct misdistribution and shortages. The rates PCPs received from Medicare and private insurers, however, are not indicative of the conditions in the market for physician services, and their static nature makes efforts to correct failures slower and more difficult, with unpredictable outcomes.

Medicare and private insurance companies are such huge players in the current health care system that it seems impossible to imagine how things would operate without them. At the same time, however, it has become increasingly clear that the administered pricing system followed by these companies and government programs have essentially created the PCP shortage, incentivized over-treatment of patients, and created the fallacy—held as truth by most Americans—that health insurance is the only way to finance care and that more health insurance means better health care for all. In the long-term, the way to fix health care in the United States is to drastically rethink the role of insurance in health care and push the government out of the “business” of health insurance, entirely (Medicare and Medicaid are government run programs that follow an insurance model) (Schansberg, 2011).

The proposed new health care model consists of three apparatuses to cover health care costs: high-deductible catastrophic insurance, health savings accounts, and health loans. A separate health savings account will be set up for each individual. Individuals will add funds to their accounts, on a tax-free basis. Everyone will be required to contribute a percentage, up to a set maximum, of pretax income to his or her health savings accounts each year. The funds in the savings accounts will be used to pay the premiums for the cradle-to-grave catastrophic health insurance issued to all. Because this insurance is a form of social insurance, the best way to finance it and prevent discrimination is to create one risk pool encompassing the entire population (Goldhill, 2013). The government's new role in health care administration would be running and mandating this insurance program. If patients ever face health care expenses they cannot afford, they will have the ability to take out a health loan. With health loans, patients are able to borrow against future contributions made to their health savings accounts.

A commonly cited statistic is that, in any given year, 70 percent of health care costs are attributable to only 10 percent of the population (Goldhill, 2013). This represents \$1.8 trillion spent on 31 million people, or about \$60,000 per person. If the goal were to cover half of these expenses, then a catastrophic health insurance program would need \$900 billion in funding each year. Currently, each year, \$2.5 trillion is pumped into the health care system. Studies also show that 25 percent of health care funds are wasted. Assuming this to be true, the United States could potentially save \$65 billion annually. Excluding the amount needed to fund the catastrophic insurance program, this money could now be funneled through each individual's health savings accounts, giving everyone a foundation from which to start paying medical bills (Goldhill, 2013).

Of course inefficiencies will exist in this new system, and all potential savings may not be captured. The RAND study of 2011, however, found that people saved 15 percent a year on health care spending with \$1,000 deductible insurance plans (the deductible serves as an incentive to only seek care when necessary). Applying the results of the RAND study to the 30 percent of

the population that consumes health care resources less intensely, a consumer-driven free market approach could allow for 15 percent savings on 30 percent of current health care spending, or approximately \$115 billion (Goldhill, 2013). The costs of insurance administration also represent potential for savings. The insurance industry currently faces \$150 billion in direct costs. If this new system manages to convert just two thirds of these costs into savings, then a total of \$215 billion could be saved on care each year (Goldhill, 2013). The \$900 billion the catastrophic insurance program would require annually for funding would represent a \$3,000 premium for every American. This is a fairly high premium, especially for younger Americans but they could be adjusted so that those under age 21 pay \$750, those over 21 but under 30 pay \$2000, and every else pays \$4,000. Premiums could also be varied according to income. People with savings in their health accounts will be able to use these funds to pay their insurance premium.

Deductibles for the insurance program will be even higher than the one used in the RAND study. If the catastrophic insurance were set up to cover half the costs faced by the 31 million people who represent 70 percent of current spending, then everyone would face a \$30,000 deductible (Goldhill, 2013). However, this could be adjusted so that it starts at \$10,000 for the youngest Americans and rises gradually up to \$50,000 for the oldest Americans. Increasing the deductible with age is logical since older Americans will have had more time for their health savings to grow. Lifetime deductibles, instead of annual ones, could also be considered. These are very large deductibles, but Americans will no longer be paying premiums for private health insurance, and the government will no longer be taking taxes from Medicare and Medicaid out of every paycheck.

Health loans would be in place for anyone without enough savings to cover their deductible. Funding for health loans could come from the government or a government guarantee on money from private lenders. Loans would be repaid with funds from the health savings accounts, so the government would have to mandate and enforce minimum annual contributions

to these accounts. Health loans will make possible a system without insurance because they will enable consumers of health services to transfer money from their future selves to their present-day selves. Funding health care through debt is a better alternative than insurance since insurers take about 20 percent of their clients' premiums for profit and to cover operational costs (Goldhill, 2013). Additional money is wasted on unnecessary, repetitive, or overly aggressive care.

Consider an example that incorporates all three aspects of the policy proposal: Rex is 35 years old and works at a consulting agency. His deductible for the national catastrophic health insurance is \$30,000, and he is charged a \$4,000 premium. He currently has \$10,000 in this health savings account. One day Rex decides to go bungee jumping and the cord snaps. Rex has a terrible fall from a great height, giving his body plenty of time to accelerate and hit the ground with massive force. Rex has broken bones and internal injuries. After being rushed to the hospital and evaluated, he is told his treatment will cost \$15,000. Rex only has \$10,000 in his health savings account to put toward care. He has not had any other health expenses this year, so the catastrophic insurance will not cover the remainder of this medical bill. Rex, however, does not face financial ruin. He can simply take out a \$20,000 health loan to pay the rest of his bill. Rex could pay this loan back over time using his personal funds or accumulated savings in his health savings account (although the balance of Rex's account is now zero, each year he must make a minimum contribution). Rex faced serious injuries that required expensive care. Yet the three components of the proposal work together to allow patients to pay their bills without insurance.

The strict confines and myriad regulations present in health care prevent the occurrence of an economic process known as "creative destruction". Articulated by economist Joseph Schumpeter in the 1950s, creative destruction is the result of innovation in capitalist markets that creates something new while destroying the old in the process. For example, the innovation that enabled firms to produce quality laptop computers at affordable prices shrunk ("destroyed") the

desktop market and drove prices down. The introduction of tablet computers further contributed to the “destruction” of the desktop market. In health care, however, creative destruction does not take place, just like other free market forces. The government’s increased role and its attempts to protect the interests of health care stakeholders makes health care less open to the new ideas, innovation, and experimentation that could result in the “creative” part of Schumpeter’s term (Goldhill, 2013). With no need for private health insurance and a scaled back role of government, health care could finally benefit from this phenomenon of consumer-driven free markets.

With regard to physician reimbursement, patients, under the proposed model, would use their own personal funds and funds from their health savings accounts to pay for physician services. The highly subsidized and regulated interactions between insurers, providers, and consumers will no longer occur. As a result, there would be more competition among providers to capture patients as “clients,” and patients will face more choices just as consumers do in other free markets. Costs should decrease to finally make health care in America a sustainable enterprise (Schansberg, 2011). Patients, paying directly for their medical treatment, will act as rational consumers do in other markets. They will search for bargains, expect quality service, and decide which treatments are worth the expense and which are not. If patients become dissatisfied with a provider, they are free to take their business elsewhere. Health care providers will be forced to use competitive pricing--prices that represent true costs--to attract patients. Providers will also be more accountable to patients. When they see that medical errors or poor service results in fewer customers they will be forced to change their approach or go out of business. With no administered pricing system nothing arbitrarily assigns higher value to specialty treatment than primary care. Primary care physicians would receive fair compensation, established by equilibrium between physician supply and demand for services.



**Appendix A**  
**Questionnaire for Premedical Students**

1. What is your gender?

- ◇ Male
- ◇ Female

2. How old are you?

\_\_\_\_\_

3. What is your marital status?

- ◇ Single
- ◇ Married
- ◇ Divorced
- ◇ Other (e.g., unmarried but in long-term/serious relationship)

4. Do you have any children?

- ◇ Yes
- ◇ No

5. Do you envision yourself getting married *before finishing* medical school?

- ◇ Yes
- ◇ No

6. Do think you will be married *before* completing residency?

- ◇ Yes
- ◇ No

7. Do you think you will have children *before* completing residency?

- ◇ Yes
- ◇ No

8. What is your current GPA (on a 4.00 scale)?

\_\_\_\_\_

9. Student Classification

- ◇ Freshman
- ◇ Sophomore
- ◇ Junior
- ◇ Senior
- ◇ Other

10. What is your current major?

\_\_\_\_\_

11. What year do you plan to matriculate to medical school?

\_\_\_\_\_

12. Which types of medical schools are you interested in attending? Check all that apply.

- ◇ Allopathic (MD)
- ◇ Osteopathic (DO)
- ◇ Caribbean medical schools
- ◇ Other foreign institutions

13. In which of the following ranges does your MCAT score fall? **If you have not yet taken the MCAT, skip ahead to #14.**

- ◇ 24 or lower
- ◇ 25 – 29
- ◇ 30 – 35
- ◇ 36 – 40
- ◇ 41 – 45

If you feel comfortable, indicate your actual scores:

Verbal Reasoning \_\_\_\_\_  
Physical Science \_\_\_\_\_  
Biological Science \_\_\_\_\_

14. **Skip to #15 if you have already taken the MCAT and do not plan to take it again.** What is your target MCAT score?

\_\_\_\_\_

15. Estimate your score if you were to take the MCAT today. A range is acceptable if you want to indicate best case/worst case scenario. This estimate may be the same as the target score indicated above if you feel you are likely to achieve it.

\_\_\_\_\_

16. Do you plan to use loans to finance your medical education? **If you select “No,” skip to #18.**

- ◇ Yes
- ◇ No

17. Which type(s) of loans are you likely to utilize?

- ◇ Private loans
- ◇ State loans
- ◇ Federal loans

- ◇ Combination of any/all available resources
  - ◇ Unsure
18. What other resources do you plan to utilize to finance your medical education? Check all that apply:
- ◇ No other resources (loans only)
  - ◇ Personal savings/income
  - ◇ Contributions from parents/family
  - ◇ Private merit-based scholarships
  - ◇ Military scholarship (Health Professions Scholarship Program)
19. Estimate the total amount of debt you will incur over the course of your medical education?
- ◇ Less than or equal to \$50,000
  - ◇ Greater than \$50,000, but less than or equal to \$100,000
  - ◇ Greater than \$100,000, but less than or equal to \$150,000
  - ◇ \$150,001 or greater
20. At this point in your education, which medical specialties are you most interested in perusing? Please choose 3 options. Mark your choices with "1," "2," and "3," with the number one indicating your top choice, and so on.
- ◇ Primary Care (family practice, pediatrics, general practice, gerontology)
  - ◇ Surgery
  - ◇ Dermatology
  - ◇ Internal Medicine
  - ◇ OB/GYN\*
  - ◇ Radiology
  - ◇ Oncology/Hematology
  - ◇ Pathology
  - ◇ Anesthesiology
  - ◇ Allergist/Immunologist
  - ◇ Cardiology
  - ◇ Nephrology
  - ◇ Neurology
  - ◇ Ophthalmology
  - ◇ Otolaryngology (ENT)\*
  - ◇ Psychiatry
  - ◇ Pulmonology
  - ◇ Rheumatology
  - ◇ Urology\*

◇ Other

\* Although these specialties are not classified by this questionnaire as surgical subspecialties, practitioners in these areas are trained in various surgical procedures.

**21. If you DID NOT select “surgery” in #20, skip to #22.**

Please specify an interest in either general surgery or a particular surgical subspecialty.

- ◇ General Surgery
- ◇ Thoracic Surgery
- ◇ Colon/Rectal Surgery
- ◇ Neurosurgery
- ◇ Ophthalmic Surgery
- ◇ Oral and Maxillofacial Surgery
- ◇ Orthopedic Surgery
- ◇ Pediatric Surgery
- ◇ Plastic and Maxillofacial Surgery
- ◇ Vascular Surgery
- ◇ Other

**22. What type of setting would you like to practice (in an ideal situation)?**

- ◇ Rural
- ◇ Suburban
- ◇ Small urban
- ◇ Metropolitan
- ◇ Inner city

**23. Do you prefer to attend medical school in your home state?**

- ◇ Yes
- ◇ No
- ◇ No preference

**24. Do you prefer to practice medicine/establish your professional career in your home state?**

- ◇ Yes
- ◇ No

◇ No preference

25. Are you interested in rotating in a medically underserved rural or inner-city community during your medical education or residency?

◇ Yes

◇ No

◇ Yes, but only if I received some type of incentive

26. Predict your annual income 5 years after completion of residency in your intended specialty.

\_\_\_\_\_

27. Predict your annual income 10 years after completion of residency in your intended specialty.

\_\_\_\_\_

28. Predict your annual income 20 years after completion of residency in your intended specialty:

\_\_\_\_\_

29. Predict your peak annual income (throughout the course of your entire career as a physician)

\_\_\_\_\_

30. When contemplating your career path, which 2 variables most heavily influence your specialty preference? Clearly indicate the #1 variable and the #2 variable.

◇ Amount of debt after medical school

◇ Length of residency required for particular specialty

◇ Prestige associated with intended specialty

◇ Current income of physicians in your intended field

◇ Your expected peak income

◇ Lifestyle (time on call, days off, ability to have a family)

◇ Qualities of the workplace (setting, number of patients seen, time spent with patients, time spent with nonphysical clinicians).

31. *Suppose you are in your second year of medical school. You schedule a meeting with a counselor in the school's financial aid office. She informs you that your projected total debt at the time of graduation will equal \$150,000. What influence will this debt have on your intended specialty?*

- ◇ It will have no influence on my specialty choice.
- ◇ I will be more likely to choose a specialty that requires a shorter residency. *A shorter residency will allow me to earn the salary of an attending physician in less time; I will be able to start paying off my debt sooner. If I've already started a family, I will be able to support it sooner.*
- ◇ I will be more likely to choose a more specialized field with a longer residency. *I may be paid as a resident for more years, but my income as an attending physician will be significantly greater, compared to less specialized fields with shorter residencies.*

32. Would you agree to commit to primary care in exchange for a debt forgiveness plan that eased the burden of your student loans?

- ◇ Yes
- ◇ No

33. *A medical school offers you free tuition for four years if you commit to a career in primary care. Would you accept the offer, regardless of your preexisting interests? (Rejecting the offer would not affect your admissions status).*

- ◇ Yes
- ◇ No

34. If you fail to gain acceptance to medical school during your first application cycle, what will be your most likely course of action?

Work to improve GPA, MCAT score, and/or other weaknesses in application in order to apply again next cycle and be more competitive.

Consider becoming a physician's assistant, nurse practitioner, or other highly trained clinician. Look for opportunities to work in health policy or as a health care manager, administrator, or consultant.

Explore opportunities to do research related to medicine look to study or work in an entirely new field.

35. Is the United States facing a primary care physician shortage?

- ◇ Yes
- ◇ No

36. Do you think a depleted/sparse primary care workforce represents a serious failure of the current health care system?

- ◇ Yes
- ◇ No

37. Indicate any benefits you believe increased access to a rejuvenated primary care infrastructure that provides quality care will have for patients and the U.S. health care system at large?

---



---



---



---

38. What would be the most effective strategy for addressing such a shortage, assuming it exists? Rank from 1 to 6: 1 indicating the least effective strategy and 6 indicating the most effective strategy.

- ◇ Medical school debt forgiveness programs
- ◇ Medical school philosophy shifts
- ◇ Increased scope of practice for non-physician practitioners (NPPs).
- ◇ Increased reimbursement rates for primary care services.
- ◇ Decreased reimbursement rates for certain specialty services.
- ◇ Health care/Health insurance/Medicare/Medicaid reform (new legislation from state and local governments).



## BIBLIOGRAPHY

- Admissions Office. (n.d.). *The Commonwealth Medical College* -. Retrieved April 2, 2014, from <http://www.thecommonwealthmedical.com/Admissions>
- American Medical Association; AMA works to reverse primary care physician shortage. (2008, November 25). *Science Letter*, 3287. Retrieved from <http://www.newrx.com>.
- Baker, Lawrence C., Barker, Diane C. Factors associated with the perception that debt influences physicians' specialty choices. *Journal of the Association of American Medical Colleges*, 1997;72:1088.
- Bazzoli, Gloria J. Medical education indebtedness: does it affect physician specialty choice? *Health Affairs (Project Hope)*, 1985;4:98-104.
- Bennett, Keisa L.,Phillips, Julie P. (2010, Ocotober). Finding, recruiting, and sustaining the future primary care physician workforce: a new theoretical model of specialty choice process. *Academic Medicine*, 85(10)2010):S81-S88.
- Borges, N. J., Gibson, D. D., & Karnani, R. M. (2005). Job Satisfaction of Physicians with Congruent Versus Incongruent Specialty Choice. *Evaluation & The Health Professions*, 28(4), 400-413.
- Cole, C. (2007). Nurse practitioners, physician assistants ease primary care physician shortage. *Tribune Business News*.
- Field, R. I. (2011, June). Government as the crucible for free market health care: regulation, reimbursement, and reform. *University of Pennsylvania Law Review*, 159(6), 1669+. Retrieved from <http://go.galegroup.com.ezaccess.libraries.psu.edu/ps/i.do?id=GALE%7CA262691580&v=2.1&u>

=carl39591&it=r&p=LT&sw=w&asid=fd7b0d28e5ba8069ddc3a01e99d60720

Goldhill, D. (2013). *Catastrophic care: why everything we think we know about health care is wrong*.

New York: Vintage Books, a division of Random House LLC.

Hawk, C. (2002). What is primary care? *Journal of Chiropractic Medicine*, 1(4), 149-154. doi:

10.1016/S0899-3467(07)60029-9

Hurley, Jeremiah E. Physician's Choice of Specialty, Location, and Mode. *The Journal of*

*Human Resources*, 1991;26:47.

Jacobson, P. D., Jazowski, S. A. (2011). Physicians, the Affordable Care Act, and primary care:

disruptive change or business as usual? *General Internal Medicine*, 26(8), 934-937. doi:

10.1007/s11606-011-1695-8.

Kane, G. C., Grever, M. R., Kennedy, J. I., Kuzma, M. A., Saltzman, A. R., Wiernik, P. H., et al. (2009).

The Anticipated Physician Shortage: Meeting the Nation's Need for Physician Services. *The American Journal of Medicine*, 122(12), 1156-1162.

Lakhan, S. E., Laird, C. (2009). Addressing the primary care physician shortage in an evolving medical

workforce. *International Archives of Medicine*, 2(14). doi: 10.1186/1755-7682-2-14.

Lukacs, J. (1984). Cost-Effectiveness of Non-Physician Health Care Professionals. *The Nurse*

*Practitioner*, 9(10), 54-59.

National survey foresees escalating primary care physician shortage. (2008). *LocumLife*,

4(6), 5-5.

Nicholson S, Souleles NS. Physician Income Expectations and Specialty Choice. National

Bureau of Economic Research; 2001.

Reuben, David, B. (2007). Saving Primary Care. *The American Journal of Medicine*, 120(1), 99-102.

Schansberg, D. E. (2011). Envisioning a Free Market in Health Care. *Cato Journal*, 31(1), 27-58.

Retrieved from <http://search.proquest.com/docview/858458613?accountid=13158>.

Watson CJ, Croft DJ. A multiple discriminant analysis of physician specialty choice. *Computers and Biomedical Research, an International Journal*. 1978;11:405-421.

## **ACADEMIC VITA**

Michael Zitomer  
305 East Prospect Avenue  
State College, Pennsylvania 16801  
MJZ5059@psu.edu

---

### **Education**

The Pennsylvania State University – University Park, PA

Bachelor of Science in Health Policy & Administration – Expected May 2014

### **Honors and Awards**

Schreyer Honors Scholar

College of Health and Human Development Scholarship Recipient

Dean's List – Six Semesters

### **Association Memberships/Activities**

Theta Delta Chi International Fraternity, Sigma Triton Charge

- Vice President of Operation

Member of the Order of Omega – Greek Honor Society

Penn State Dance Marathon (“THON”)

### **Professional Experience**

Premedical internship, Abington Memorial Hospital

Completed HPA internship at the Delaware Center for Maternal and Fetal Medicine