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William Zhang

Declining Career Interest in Primary Care in Switzerland and the United States

By William Zhang

Fall Semester, 2022

SIT Study Abroad Switzerland: Global Health and Development Studies  
Academic Director: Dr. Alexandre Lambert

Rice University  
Majors: Philosophy and Biochemistry

### **Abstract**

Primary care (PC) lies at the center of modern healthcare systems as the primary point of contact between the general public and quality health care. Primary care physicians (PCPs) are known to provide high quality basic care to members of their surrounding community without consuming a large budget, and thus should be a priority for health sector investments. However, the proportion of medical students becoming PCPs is declining across the world, thus putting affordable global health at risk. The U.S. and Switzerland, even with their high health expenditures and advanced healthcare technologies, are no exception to this trend. Analysis of existing literature accompanied by personal communications with medical practitioners and medical students in both countries illustrate various similarities and differences in reasons why PC is declining. Students in both countries are often discouraged by financial reasons, perceived PC prestige and lifestyle, and intrinsic career motivation misalignments with PC. No single approach to resolve this phenomenon has stood out, but literature review and interviews with key informants have suggested some strategies that could prove effective in revitalizing PC.

### **Acknowledgements**

First, I would like to thank Dr. Barbara Broers from UNIGE and Dr. Joel Purkiss from the Baylor College of Medicine for helping publicize my project to their medical students and assisting me in gathering interviewees; without them, I would not have had the opportunity to gather key perspectives from prospective physicians in the two countries. Mr. Michael Stucki was also incredibly helpful in helping me understand the differences in healthcare organization between the U.S. and Switzerland as well as referring me to various Swiss sources for understanding the health economic factors behind the declining PC in Switzerland.

Second, I would like to thank all of the interviewees for engaging with me and providing me with various international perspectives. Celine and Thomas, a couple living in rural Switzerland, gave me valuable first-hand information on the importance of PCPs to community health. Jasper and Gerald, two American medical students with different intended career paths in medicine, demonstrated to me why American students are both enchanted by and discouraged from pursuing PC. Dr. N, an experienced PCP from New York City, offered insightful comments on how PC has changed in the past decades and will hopefully continue to improve in the future. Josef and Thierry, two Swiss medical students from Geneva with aspirations for PC, explained how the Swiss medical education pathway works and gave thoughtful answers on their experiences as medical students in Switzerland. Dr. G, an experienced general practitioner from Geneva, also illuminated the unique challenges Switzerland faces through its declining PCP population. These interviewees took the time out of their busy schedules as either aspiring or practicing medical professionals to give incredibly valuable insights to an undergraduate researcher, and I appreciate their efforts and perspectives greatly.

Finally, I want to thank the academic faculty at the School of International Training. Dr. Alexandre Lambert, Francoise Flourens, Dr. Elisabeth Meur, and Dr. Anne Golaz all put together a wonderful program that introduced me to the intricacies of global health and development policies as well as provided thoughtful comments to help me further my research.

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## Introduction

Primary care physicians (PCPs) are every community's first line of defense against human illnesses and key players in ensuring high public and global health standards (World Health Organization [WHO], 2022). By providing care for fundamental health problems and educating patients about preventative care, the primary care (PC) sector has cemented itself as a prime candidate for investment in order to maximize patient satisfaction while minimizing healthcare costs (Margolius & Bodenheimer, 2010). In order to optimize community health quality, the ideal division between PCPs and specialists is a 60-40 split; however, career interest in this essential medical profession has dwindled in recent decades, and scholars claimed that the career division was more similar to 40% general practitioners and 60% specialists in Switzerland in 2010, for example (Gaspoz, 2011).

Many countries across the world have witnessed a trend of medical school graduates gravitating toward practicing specialties such as dermatology and ophthalmology, and every year medical schools produce fewer PCPs (WHO, 2022). Citing factors such as poor pay, high stress, and lack of intellectual stimulation, young physicians often opt to become specialists over engaging in PC practices (Buddeberg-Fischer et al., 2006). The current trajectory of PC creates a worrying trend for the health prospects of global communities: a declining interest in PC causes PCP shortages and subsequently patient dissatisfaction, which feeds into a worse perception of PC for prospective doctors choosing their future field of practice (Kontopantelis et al., 2010). The growth of populations worldwide is outpacing the increase in PCPs coming out of medical schools, which will ultimately result in a weak PC system that allows for non-communicable diseases to proliferate and health quality to deteriorate (Maeng et al., 2013).

Despite being the two countries with the highest total health expenditure per capita in the world, Switzerland and the U.S. are not exempt from the declining career interest in PC. These two countries serve as interesting subjects for case studies because it could be argued that their health expenditures eclipse the rest of the world's partially due to a declining PC sector, since a sound PC system lays the foundations for cost-effective healthcare as a whole (Stucki, personal communications, 2022). Furthermore, despite a similar declining trend in the number of PCPs for both countries, the reasons behind the trends can be very different. For example, Mr. Michael Stucki from Switzerland's Winterthur Institute of Health Economics explained that financial factors potentially play a bigger role in the U.S. than Switzerland due to higher student debt in the U.S. (Stucki, personal communications, 2022). As a result, by studying how different circumstances in Switzerland and the U.S. led to the same outcomes in the PC sector, we can better understand risk factors that can discourage emerging physicians from PC and prepare adequate responses in order to maximize care quality and minimize costs.

From a macroscopic standpoint, this study can have far-reaching implications for global health and development policies, as declining interest in PC is a global phenomenon that both developed and developing countries have vested interest in. For developed countries, improving PC can make the health system more efficient by preventing unnecessary patient visits, which frees up physicians to attend to patients that have more complicated needs on a timely basis as well as saving health costs for the government in the long term (Schneider, personal communication, 2022). As such, it is paramount to understand why physicians refrain from practicing in PC, which can help cost containment in the health sector that can be re-invested elsewhere. Furthermore, these findings can also inform policy measures in developing countries for incentivizing the formation of a strong PC network, which serves as a groundwork for a

resilient health sector and improves public health (“Declaration of Alma-Ata International Conference on Primary Health Care, Alma-Ata, USSR, 6–12 September 1978,” 2004). This study thus aims to identify and analyze key factors that contribute to a declining interest in PC using Switzerland and the United States as case studies.

### **Research Methodology**

This study employs both primary and secondary data. The secondary data constitutes a literature review on the current state of career interest in PC and encompasses both gray literature and statistics from global nonprofits as well as peer-reviewed journal articles. Secondary data was found through Google Scholar/PubMed queries as well as simple Google searches. Articles and statistics were filtered by relevance to the research question; for example, articles on PC conducted outside of the United States or Switzerland were usually not relevant to this specific study and thus were excluded. However, if certain publications help demonstrate a growing global trend (i.e., declining interest in PC in Australia), then those articles were included to connect this article to an ongoing worldwide paradigm. The majority of research papers consulted are from 2013-2022, but older papers are included in order to ensure that fundamental research was not excluded from the study. Residency and PC physician employment data are gathered from the U.S. National Residency Match Program’s website ([nrmp.org](http://nrmp.org)) and the WHO respectively.

Primary data was collected through interviews with a health economics expert, active PCPs, and medical students who are considering/have considered pursuing a career in PC in both Switzerland and the United States. Interviews were formal where time and circumstances allowed, but with time constraints for the Geneva-based practitioner and the casual nature of a



discussion with a retired Swiss couple, those interviews were much less structured in nature. The primary data was qualitative, and interviewees were selected based on their expertise in the subject field and/or their firsthand experience with PC. Furthermore, physicians and medical students from Switzerland were chosen from Geneva in order to minimize the confounding variable of cultural heterogeneity within Switzerland. In the U.S., a physician and a student were recruited from New York City, and a second medical student was recruited from Houston, Texas for added perspective. Interviews except for the discussion with the health economics expert, Mr. Michael Stucki, were anonymized to protect the identities of participants.

The interview with Mr. Michael Stucki helped explain the economic aspect behind the declining interest in PC in Switzerland, while other interviews elaborated upon various reasons that may discourage students from pursuing PC. Interviewing medical students and PCPs was constructive as it provided personal perspectives from individuals that have engaged with PC first-hand and demonstrated how the stigma around practicing PC has changed in the past decades.

For data analysis, a comparative approach was taken to evaluate similarities and differences in the literature and expert opinions from both Switzerland and the United States. Qualitative primary data from expert interviews were used to fill in gaps in knowledge that were identified among existing literature in order to better understand why career interest in PC has been declining in Switzerland and the United States. Quantitative data was also gathered and analyzed from the NRMP archives and the WHO Global Health Workforce Statistics Database in order to empirically establish declining PC in the U.S and Switzerland through the graphing of quantitative trends, such as the changing proportion of PCPs among all physicians.

In order to ensure ethicality of interviews, interviewees were asked for permission to attribute their responses to them by name and to record the interviews prior to starting the interview in order to protect the participants' privacy; the majority of participants asked to remain anonymized. Furthermore, the interviewees were informed that they could preview the final report before submission so that the interviewees' opinions would be accurately represented in this study, and the interviewees were given permission to terminate the interview at any time if they felt uncomfortable. The study design was approved by SIT Switzerland's Human Subject Review board before interviews were conducted. There is no conflict of interest to declare.

There are many limitations associated with this study. Firstly, there exist many variations in PC practices, and due to the limited number of interviewees many of these practices were not adequately represented and thus could skew the results of the study. For example, PC practices can be private or part of a hospital system; they can have physicians who speak English only or are bilingual; they can be located in a city center, in a low-income neighborhood, in rural areas, etc. PCPs and medical students in various geographic areas under different cultural and systemic influences often pursue medicine for different reasons, and they also have varying experiences with primary care as a result, which means that this study provides a limited perspective on why career interest in PC is declining. Secondly, PCPs and medical students were recruited from the similar regions in the U.S. and Switzerland, which limits the generalizability of the primary data presented. Finally, non-response from prospective interviewees may lead to biases in the collective interview answers, which further complicates the data presented in the study.

## **Literature Review**

Research papers written in English since 2017 have concentrated their efforts on gauging PC trends primarily in the U.S., Australia, New Zealand, and the United Kingdoms. The majority of the U.S. papers consulted in this study review either existing literature or medical school policies and curricula, and these methodologies allow for a thorough investigation and evaluation of how medical schools can improve their policies from pre-matriculation through clerkships in order to improve turnout in the PC sector (Ledford et al., 2022; Raleigh et al., 2022). However, reviews of published materials tend to dominate the current sphere of knowledge, and the lack of novel participant input often means not enough new knowledge is contributed to the field. Two of the literature consulted utilized surveys to collect novel data, but even though surveys allow for subject participation on a large scale, a major shortcoming of surveys lies in how they do not give participants the space to elaborate upon their responses in a back-and-forth exchange. One of the survey studies, conducted by Alston et al., attempted to alleviate the issue by providing a free-writing space in surveys for respondents to elaborate upon their answers, but the format still does not allow for researchers to follow up on such responses (Alston et al., 2019). Only one other research paper identified in this study personally engages with the participants via focus groups (Alavi et al., 2019); as such, new data and analysis stemming from interactive research with medical students and medical professionals is needed to further understanding of why medical students' interest in PC careers is declining.

On the other hand, there are relatively few studies conducted in Switzerland on PCP shortages compared to those conducted in the U.S. While it was more difficult to locate Swiss studies, 4 studies consulted employed cross-sectional surveys to generate new data on some aspect of the PCP shortage in Switzerland, which is more than the number of studies that focus on the same phenomenon in the U.S. However, all four of the survey-oriented studies suffer from

the same pitfall by not giving participants the space to elaborate upon their responses (Cribari et al., 2018; Goetz et al., 2016; Markun et al., 2022; Rozsnyai et al., 2018), thus the studies yielded mostly quantitative data of subjective ratings that may overlook further nuance and rationale that the participants were not given the option to provide. In addition, while all of the Swiss studies consulted in this paper acknowledge a shortage of PCPs in Switzerland, these studies often reference other studies conducted outside of Switzerland as the basis for their project, which further illustrates the lack of Swiss studies that directly engage with Swiss medical students and professionals to understand why PC is declining in Switzerland even though it is a known local phenomenon. As a result, more research is needed to understand why PC is declining in Switzerland, especially studies that interact with Swiss medical personnel and students.

With a wealth of literature exploring how the learning environment and policies in various medical schools affect PCP turnouts among its graduates, there is now a relatively strong understanding of the role medical schools play in influencing their students' outlook on a career in PC. Similarly, literature and curriculum reviews from researchers have brought attention to potential changes medical schools can make to their environments in order to expose students to careers in PC and thus increase PCPs among its graduating classes (Ledford et al., 2022; Sairenji et al., 2022). However, the strong focus on how medical schools affect the PC sector means that relatively few interactive studies in the past years have considered other essential factors that turn students away from PC such as perceived career prestige, income disparities between specialties and PC, career lifestyle dissatisfactions, and misalignment with intellectual pursuits (Buddeberg-Fischer et al., 2006; Walker, 2006). A stronger understanding of why students are or are not incentivized to pursue PC can help complement changes in medical school policies and curricula to form effective multi-faceted approaches that help drive more prospective physicians

toward careers in PC (Pisaniello et al., 2019; Rozsnyai et al., 2018). As such, it is paramount for researchers and policymakers to also understand students' and practitioners' perspectives on what makes PC an attractive career option through personal interactions.

The vast majority of the literature consulted in this study are either literature reviews or cross-sectional studies, which give strong insights into why PC might be unattractive for medical school graduates at the present time. However, as we observe a declining trend in PC in the past decades, there is also a possibility that the public outlook on PC careers has changed with time and became less appealing relative to pursuing specialty practice. For example, it is possible that specialty pay grew exponentially while PCP salaries and billing systems remained relatively stagnant, or that specialty residencies/clerkships became more organized and appealing while PC residency programs and clerkships failed to reach the same level of appeal. Few studies have focused on the longitudinal aspect of declining PC career interest, and filling in this gap in knowledge could supplement present research findings.

## **Analysis**

### **I. Declining Career Interest in PC and its Consequences**

PCPs can come from a variety of backgrounds and the specialties that lead to a career in PC differ by country. In the U.S., the vast majority of PCPs specialize in family medicine, general internal medicine, or pediatrics, but they can also come from other specialties such as geriatrics (Agency for Healthcare Research and Quality [AHRQ], 2018). On the other hand, Swiss PCPs often come from general internal medicine and move on to become general practitioners, the latter of which is not a clearly defined specialty/career choice in the U.S. and is commonly seen as the equivalent of a family doctor. While there is no single academic pathway

that leads to a PC career, students in the aforementioned specialties frequently choose to pursue a career in PC (Phillips et al., 2019), thus for the purposes of this study, residents in general internal medicine, pediatrics, and family medicine programs will be considered prospective PCPs in the U.S., and Swiss medical students in general practice/general internal medicine will also be considered prospective PCPs.

#### **a. Declining PC Career Interest: the U.S.**

In the U.S., one of the measures that can be used to gauge medical students' interest in PC careers is the annual post-graduate year 1 (PGY-1) residency match rate for the common PC specialties: family medicine, internal medicine, and pediatrics. Over the past decade, residency seats in PC-related specialties have increased from 12000 to 17000 per year in response to the shortage in PCPs, but the proportion of seats being filled has only decreased every year (Figure 1; National Resident Matching Program [NRMP], 2022). This observation demonstrates that even though medical student classes have grown in recent years in order to produce more physicians, interest in PC specialties has not grown at the same pace; that is, a lower proportion of prospective doctors are interested in pursuing a career in PC every year. It must also be noted that over the past decades, the percentage of internal medicine residents that choose to remain in PC and practice general internal medicine has been decreasing rapidly in the U.S. (West & Dupras, 2012). This phenomenon further contributes to a declining American PC workforce that may not be properly reflected in NRMP data, since there is no distinguishment between residents who intend to remain in general internal medicine and internal medicine residents who choose to pursue fellowships in specialties. The percentage of internal medicine residents that remain in PC has reached as low as 12% between 2011 and 2015, and this trend is expected to continue (Dalen

et al., 2017), thus the quantitative analysis from NRMP data may underestimate the declining interest in PC in the U.S.

A closer look at the NRMP PGY-1 residency match data over the last 10 years (2013-2022) reveals that internal medicine and family medicine residencies typically have some of the highest numbers of unfilled residency programs and have either average or below average residency match rates relative to other specialties, often only outmatched by surgical residencies. However, since 2018, the decline in PC has accelerated. Between 2018 and 2019, the residency match rate in PC-related specialties dropped from 97.5% to 96.2%; during the same timeframe, family medicine's match rate dropped significantly from 96.7% to 93.2%, and the number of unfilled residency programs in family medicine doubled from 56 to 115 (Figure 2; NRMP, 2018-2019). The latest data published by NRMP (2022) shows that PC-related specialties has continued to suffer from declining interest and shows little signs of recovery, with the combined match rate down to 94.1% and the number of unfilled residency programs in family medicine reaching a record high of 176, topping the charts over unfilled surgical residency programs. The number of unfilled internal medicine residency programs has also increased from 14 to 91 in the past decade, and the residency match rate down from 99.4% in 2013 to 95.0% in 2022 (Figure 3; NRMP, 2022). On the other hand, pediatrics has remained strong with relatively unchanged residency match rates between 97-99% over the past decade, which is a bright spot for PC in the U.S. (Figure 4; NRMP, 2013-2022). Overall, despite efforts by U.S. health institutions to combat chronic PCP shortages domestically, PC continues struggling to display its appeal to prospective American physicians.

The general consensus on the optimal ratio of PCPs to specialists is 60-40, but PCPs should make up 40% of the available physicians at the bare minimum (Gaspoz, 2011; American

Academy of Family Physicians [AAFP], 2014). However, current research indicates that PCPs only make up 30% of practicing physicians in the U.S., and this number is expected to continue decreasing with an increase in older PCPs that are considering retirement without enough incoming PCPs to replace them (Bazemore et al., 2019), which would further exacerbate the PCP shortage faced by an increasingly aging population in the U.S. The current NRMP data does not reveal a bright future for PC either; if we take into account that approximately 12% of all internal medicine residents remain in general internal medicine and go on to practice in PC (Dalen et al., 2017), the projected percentage of all residents that pursue a PC-related residency every year since 2013 has hovered at around 25% (Table 1; NRMP, 2013-2022). As the proportion of prospective PCPs has remained constantly below the current proportion of practicing PCPs among all physicians, the availability of PCPs in the coming years seem bleak, especially when American PC associations are aiming for PCPs to make up 40% of all practicing physicians by 2034 in order to meet the increasing needs of the aging American population (Lee et al., 2022).

#### **b. Declining PC Career Interest: Switzerland**

The Swiss medical training pipeline is unlike the U.S. in that there are few institutionally organized residency programs after graduation from medical school (Cerny et al., 2016), and instead students seek out assistant physician jobs to begin their specialization (Stucki, personal communication, 2022), which makes gauging PC appeal using the residency-based methods like the U.S. difficult. Various studies have provided different estimates on the proportion of PCPs among the greater body of Swiss physicians, although most fall in between 20% (Buddeberg-Fischer et al., 2006) and 40% (Gaspoz, 2011), neither of which would be an optimal proportion of PCPs. None of the Swiss literature consulted refers to a concrete source for the current



proportion of PCPs in the Swiss health sector, thus the number of Swiss PCPs in the past decade was estimated using WHO's data from the Global Health Workforce Statistics Database (2022).

The WHO data reveals that while the number of PCPs in Switzerland has grown, the proportion of PCPs has fallen from 27.6% in 2011 to 26% in 2020 (WHO Global Health Workforce Statistics Database [GHWSD], 2022), which follows a similar trend to the U.S. Furthermore, while the proportion of PCPs was rather stable in between 2011 and 2015, from 2015 onwards the decline in PCP proportions started to accelerate, which contributed to the notable decrease in PCP proportions today (Figure 5; WHO GHWSD, 2022). The proportion of PCPs in Switzerland is projected to continue declining as fewer than 20% of the medical students in Switzerland aspire to become PCPs (Cerutti et al., 2015); in one of the survey studies by Buddenberg-Fischer et al. (2006), it was found that only 9.7% of survey respondents, all located across three medical schools in German-speaking Switzerland, had intentions of entering the PC field. These observations also reveal similarities between Switzerland and the U.S. as they face similar proportions of PCPs in their respective populations while struggling to make PC appealing to prospective physicians, leading to a decline in PCPs in both countries.

In recent years, the Swiss government has attempted to alleviate the shortage of PCPs by expanding the number of seats available in Swiss medical schools and also importing practitioners from other European countries (Stucki, personal communication, 2022). However, the PCP shortage in Switzerland is not only due to the number of physicians available, but also due to the suboptimal distribution of PCPs in different geographic areas. Swiss PCPs are often concentrated in urban areas and few PCPs want to practice in rural areas, thus making a PC practice in rural Switzerland more difficult to operate and even less appealing to prospective physicians (Cerny et al., 2016). Furthermore, over 13% of the currently practicing Swiss PCPs

are at retirement age with few adequate physicians to replace them (Hostettler & Kraft, 2021) due to Swiss physicians gradually moving away from PC and more toward subspecialties (Cerny et al., 2016). Right now, approximately one-third of the Swiss physicians are imported from other European countries, and if the Swiss physician shortage continues moving along its current trajectory, Switzerland's reliance on foreign physicians may become unsustainable in the future due to "brain-drain" in these physicians' countries of origin (Stucki, personal communications, 2022). All of the above factors at play in Switzerland creates a complex situation unlike the U.S., especially since the U.S. does not rely on imported physicians to supplant its waning population of practitioners.

### **c. Consequences of Declining Interest in PC**

The first and foremost consequence of inadequate PCP supply is that the rapidly growing populations in the U.S. and Switzerland are not receiving adequate healthcare. The contributions that PCPs make toward improving community health outcomes have been well documented over the past decades. Firstly, PCP visits significantly reduce non-communicable disease (NCD) mortality when NCDs constitute the highest mortality rates of all known diseases (Macinko et al., 2003; WHO, 2022). Secondly, sufficient supply of outpatient PCP providers reduces inpatient hospital and emergency medicine visits, which reflects an overall increase in patient health outcomes and patient satisfaction (Bindman et al., 1995; Robert L. Phillips & Starfield, 2003; Wasson et al., 1984). Thirdly, a study conducted in California, U.S. found that having a regular place of care at a high-quality PC practice "significantly improved the likelihood of receiving preventative care services" and community health as a whole (Bindman et al., 1996). Finally, regular follow-up and annual physical examinations with PCPs result in early detection of potentially debilitating diseases such as breast and colorectal cancer (Campbell et al., 2003;

Ferrante et al., 2000; Roetzheim et al., 2001). Despite the evident upsides of PC, PC has been declining in both Switzerland and the U.S., which means healthcare quality has been declining in both countries as a result. An international survey in 2020 revealed 34-38% of Swiss respondents answered that they suffered a condition within the past two years that could have avoided emergency department visits if their PCP was available, which was among some of the highest in the available dataset; furthermore, 32-45% of U.S. respondents answered similarly on the same survey question (Doty et al., 2021). Recent controversies have also emerged regarding a 2% decrease in the number of Americans with an identified PCP between 2002 and 2015 (Levine et al., 2020), which may seem negligible but represents millions of Americans who are now outside the reach of high quality PC.

Inadequate PC coverage not only worsens community health, but also induces exorbitant government spending in the health sector when the budget could be allocated more effectively or be invested for development elsewhere. According to the Swiss Health Observatory (OBSAN), Swiss PCPs, such as general practitioners and pediatricians, resolve 94.3% of all health problems while only taking up 7.3% of the current health budget (OBSAN, 2017). In the U.S., it has likewise been found that geographic areas with higher PC engagement tend to have better health outcomes and incur lower healthcare costs than those with low PC engagement, and a similar trend has also been observed on an international level (Friedberg et al., 2010), which is likely due to fewer emergency medical visits and complicated health procedures that are expensive and quickly accumulates toward high healthcare expenditures per capita (Stucki, personal communications, 2022). Health experts have also thoroughly evaluated the cost-saving aspect of preventative medicine versus treatment of diseases post-onset, and findings generally support the fact that “adopting commonsense health practices does not require expensive technology” and

thus alleviates financial burdens from government health budgets (Goetzel, 2009). PCPs are arguably the leading authorities on preventative medicine in the community, and a shortage of PCPs would naturally lead to less focus on disease prevention and an increase in health spending as a result. Some experts have claimed that preventative medicine reduces number of visits, which saves time for both doctors and patients, but also saves up to \$170 billion per year globally (Schneider, personal communications, 2022), which could theoretically be used to reinvest into PC to make the career more attractive across the world, or be invested into other projects that would likewise increase quality of life for global communities. Instead of saying that PC is declining in U.S. and Switzerland in spite of their high health spending, it could be said that high health spending in U.S. and Switzerland is a consequence of declining PC.

PC is also unique in that it typically makes the largest difference not in prosperous urban areas, but rather in underserved communities and rural areas; this is because urban areas usually have a wide array of healthcare options to choose from, while rural areas and underserved populations experience more difficulty accessing healthcare resources and therefore rely much more on PC as an equalizer (Dr. N, personal communications, 2022). When we view PC from a social sciences perspective, it is an equalizer of healthcare disparities and thus a proponent for social equity. A report published by the U.S.'s Primary Care Collaborative (PCC) argues that health disparities often arise as a result of “systemic racism and discrimination, social and economic drivers, health behaviors, and built environments” (PCC, 2022). However, PC provides a space to bridge these gaps through regular, longitudinal care that strives to build connections between physicians and patients, which then serve as mitigating factors to the “social and structural drivers of inequities” (PCC, 2022). Furthermore, PC is of significant importance to underserved communities in the U.S., as it was found that communities with

markers of socioeconomic disadvantage received 45.6% of their ambulatory care from PCPs, while the communities that did not have such markers received only 30.5% of their ambulatory care from PCPs (Pettersen et al., 2018). While there have been few similar structured studies in Switzerland, residents in the rural parts of French-speaking Switzerland described PCPs as indispensable pillars for promoting health literacy and maintaining community health standards (Celine & Thomas, personal communications, 2022). Each village/commune only had one or two individual or group practices who often treated simple problems that did not warrant hospital visits, but the clinics also served as “first responders” for urgent care situations in some locations due to their villages’ distances from city hospitals (Celine & Thomas, personal communications, 2022). As such, PCPs in both the U.S. and Switzerland help ensure that the same quality of basic care is provided to everybody, regardless of race, socioeconomic status, or geographic location; the currently growing PCP shortage therefore has severe social consequences, especially with regards to growing disparities between socioeconomic classes and the propagation of racial and socioeconomic discrimination.

Finally, the declining interest in PC is a self-propagating phenomenon; the current PCP shortage has the potential to further discourage future physicians from pursuing careers in PC, which exacerbates the PCP shortage even further. In the U.S., there is an aging population that requires an especially high quality of chronic care management (Pettersen et al., 2012). When students enter clerkships and observe the demandingness of a PC career, many become discouraged and believe that they cannot manage a career in PC successfully (Whitcomb & Cohen, 2004). With a waning proportion of PCPs among U.S. physicians and an expanding senior population, the workload for each individual American PCP would presumably increase, which only discourages physicians from entering PC. Switzerland suffers from a similar problem

where doctors are concentrated in cities, and few serve in rural areas. This inefficient distribution of physician resources makes rural careers more demanding, and an urban PC career seems more appealing in comparison (Cerny et al., 2016). Future physicians would therefore be more drawn towards practicing in urban settings, further exacerbating the present resource disparities between urban and rural Switzerland. The Swiss government had anticipated this problem and gave cantons the power to set regional limits on the number of practicing physicians allowed by specialties, but the long-term effects of this legislation are still uncertain. While experts expect an optimized distribution of physicians and draw more PCPs toward rural areas, they also recognize the possibility of physicians being even more discouraged from pursuing a career in PC due to losing the possibility of practicing in appealing urban environments in the future (Stucki, personal communications, 2022). As a result, in order to prevent further deterioration of PC in the future, more must be done to address the present PC shortage.

## **II. Reasons for Not Engaging in Primary Care**

### **a. Financial Incentives**

An American medical education is significantly more expensive compared to its Swiss counterpart. AAMC reports that in 2019, the median annual cost-of-attendance for U.S. medical students was \$68,000, and the median education debt for U.S. medical students after four years of medical school was approximately \$200,000 (AAMC, 2020). Swiss medical school costs are negligible in comparison; for example, the projected annual cost-of-attendance at the University of Geneva for a Master of Medicine degree, which is the Swiss equivalent for a MD, is approximately \$1000 (UNIGE, 2022). The heavy burden of student debt pushes financial incentives to the forefront of reasons why prospective physicians are discouraged from PC

careers, especially when considering that median medical student debt had increased over 220% since 1992 after accounting for inflation (Pisaniello et al., 2019).

According to Merritt Hawkins, an American physician recruiting firm, the average salary offers to the most common PC specialties – family medicine, internal medicine, and pediatrics – sit at the bottom of all practicing physicians at around \$230,000 to \$250,000 (Merritt Hawkins, 2022). With the exception of rheumatology, specialists often earn over \$50,000 more than PCPs, and many subspecialties earn almost double PCPs' salaries (Merritt Hawkins, 2022). While procedure-based specialties such as dermatology saw their salaries rise quickly over the decades, PCPs, who provide mostly cognitive health services, experienced minimal growths in compensation with occasional setbacks during the same timeframe (Seabury et al., 2012; Walker, 2006). In an informal interview with a medical student from New York City, who will be called Gerald to protect the interviewee's anonymity, they stated that

Considering the lengthiness of a medical student's training, when a physician's earning potential doubles with a few extra years of training in residencies and fellowships, and the wage gap between specialists and PCPs continues to grow, it is simply a more economically sound decision to choose subspecialty training for larger financial returns over settling for a career in primary care. For medical school debt alone, a starting salary in primary care would barely cover the debt in your first year, while a subspecialty starts paying immediately. This also doesn't include undergraduate debts with interests still racking up in the background. (Gerald, personal communications, 2022)

Another medical student from Houston planning to enter PC, referred to as Jasper for privacy reasons, echoed similar sentiments; when asked about what he thinks would make PC more appealing for him and his fellow students, he answered that while PC satisfies a lot of his intrinsic motivations, "it is difficult to approach this topic without talking about compensation" (Jasper, personal communications, 2022). The prevailing sentiment for many U.S. medical students is that even though subspecialties deserve to be paid more due to their lengthier training, PCPs get paid disproportionately little for their similar level of importance to communities and

training, which makes a career in PC unappealing, if not unfeasible, from an economic standpoint in the context of U.S. student debt (Gerald, personal communications, 2022; Walker, 2006).

On the other hand, the financial aspect of medical practices is not as pronounced among Swiss medical students as U.S. students. Not only is a medical education in Switzerland less expensive, but the latest data published by the Swiss Federal Office of Public Health shows a slightly less pronounced wage difference among Swiss physicians by specialty than the U.S. Like the U.S., pediatricians and general internists earn the least among Swiss physicians with a median salary of 160,000 CHF per year, and specialists often earn around 40,000 CHF per year more than PCPs (Office fédéral de la santé publique [OFSP], 2018). While there are specialties that earn almost double a PCP's salary (OFSP, 2018), those are usually surgeons; one Swiss medical student, referred to as Josef to protect his anonymity, opined that due to surgeons' extensive training, the difficulty of their jobs, and their relatively short careers as a result of those demands, surgeons' higher salaries are often seen as justified (Josef, personal communications, 2022). Similarly, due to specialists' depth of knowledge and extra years of training, their higher wages in Switzerland are understandable for the most part, although some specialties still get paid very high amounts such as radiology and gastroenterology (Josef, personal communications, 2022). However, when asked about one thing they would change to make PC more appealing, a medical student from Geneva, referred to as Thierry to protect their anonymity, answered that "the first thing that comes to mind is changing the low GP reimbursement rates from insurance companies" (Thierry, personal communications, 2022). It should be noted that the latest official data on Swiss outpatient physician salaries were published in 2018 on the salaries in 2014, and a lot could have changed over the past eight years, but it seems that the consensus is Swiss PCPs



continue to earn less than their specialist counterparts. Overall, the prevailing sentiment among Swiss medical students is that due to the affordability of the Swiss medical education pathway, they have more space to pursue the specialty that appeals more to their personalities or career goals, although money remains a strong motivating factor (Thierry, personal communications, 2022; Stucki, personal communications, 2022).

### **b. Exposure to PC During Medical Education**

One of the primary focuses of U.S. health policy researchers is on how medical schools can foster learning environments conducive to fostering an interest in PC. Over the past decades, medical students' exposure to PC has undoubtedly improved, although many agree that more can be done to promote PC to medical students throughout the American medical education pathway. A private PCP in New York City, referred to as Dr. N to protect the subject's anonymity, described that when he was in medical school 20-30 years ago, clinical experiences were all electives. Many students at the time already had a good idea of which specialty they wanted to go into, and specialties that were perceived to be less prestigious such as family medicine were thus less popular because students did not have to pursue clinical experiences in those specialties, and as a result, negative perceptions of those specialties remained unchanged (Dr. N, personal communications, 2022). The medical student from Houston, Jasper, said that this is no longer the case; while many top medical schools remain focused on inpatient experiences, mandatory outpatient clerkships are starting to become the norm to expose students to a broad assortment of specialties, although PC still constitutes a relatively small part of the clinical experience and thus many prospective physicians remain poorly informed about the realities of practicing as a PCP (Jasper, personal communications, 2022).

Another medical student, Gerald, further explains that the quality of current U.S. clerkships could be improved in addition to the quantity of exposure. Firstly, inpatient clerkships show the consequence of inadequate PC, as hospitalization can be avoided through high quality chronic care, which makes PC appear more difficult and demanding due to the severity of the problems that medical students observe at teaching sites. These experiences discourage students as inpatient clerkships occupy most of the rotations in later stages of medical education, and this phenomenon has become more observable in the aftermath of COVID due to the increased burdens on the healthcare system and the continued struggles of elderly COVID patients (Gerald, personal communications, 2022). Secondly, some outpatient teaching sites for PC are still in the process of adopting patient-centered care models that make modern PC successful (PCC, 2022), which means many medical students are not being exposed to the optimal form of PC and thus do not see its potential (Gerald, personal communications, 2022). These observations are in line with the criticisms from healthcare experts; specifically, Whitcomb and Cohen (2004) argue that for similar reasons, prospective physicians are discouraged from becoming PCPs “because they are concerned that they will not be adequately prepared to meet the responsibilities of such a practice.” While the article by Whitcomb and Cohen was published in 2004, it is interesting that a decade and a half later, medical students continue to echo the same sentiments, which demonstrates that medical schools have yet to establish an experiential learning curriculum in medical school that makes PC appear appealing despite recent attempts.

A lack of exposure to PC in medical schools could reinforce a low perceived prestige of PC specialties such as family medicine, which may discourage U.S. medical students from pursuing PC. The Houston medical student, Jasper, stated that “prestige [of family medicine] isn’t the big thing, but I think that is the perception that early on trainees see” (Jasper, personal

communications, 2022). Jasper himself did not enter medical school with the idea of becoming a PCP; when he shadowed a PCP in high school, his impression of PC was that PCPs just referred people to specialists and managed chronic conditions, which he felt had relatively little agency (Jasper, personal communications, 2022). However, as he moved through outpatient clerkships, he realized that the modern model of PC is becoming the opposite of what he once believed, and that U.S. PCPs have the freedom to treat patients as long as they are comfortable in their abilities, while more complicated problems are referred to specialists at the PCPs' discretion (Jasper, personal communications, 2022). According to the NYC PCP, Dr. N, Jasper's initial understanding of PC is a common misconception many newer medical students hold, which makes PC appear less prestigious than it is in reality due to the low amount of agency PCPs seemed to hold (Dr. N, personal communications, 2022). These conditions create pre-existing negative opinions on PC among first- and second-year medical students before they have the opportunity to experience PC first-hand, which are difficult to change without mandatory outpatient clinical experiences within the medical education pathway.

Furthermore, researchers have found a growing phenomenon of "specialty disrespect" both from and toward PCPs that medical students are exposed to during clinical experiences in their medical education. A 2019 study at the University of Washington Medical School (Alston et al., 2019) revealed that when the respondents expressed a desire to enter family medicine, they were met with comments from specialists and institution faculties such as "Don't you want to be a real doctor?", "you're too smart [to be a PCP]", and "get ready for food stamps", and other students reported that "family med hates on everyone else which made me actually dislike family medicine." Nearly four out of five students in the Alston et al. study reported experiencing specialty disrespect. With the dominance of inpatient experiences in U.S. medical schools

(Jasper, personal communications, 2022), positive experiences in PC clerkships can easily be overwhelmed by badmouthing from inpatient mentors insinuating that PC careers are inferior in quality due to lower pay and a perception of lower intellectual stimulation. Furthermore, if PCPs at teaching sites behave inadequately, those experiences could reinforce pre-existing negative sentiments toward PC and push students further away from a career in PC. Overall, due to a disproportional exposure to inpatient clerkships throughout a medical student's education in conjunction with specialists' and medical school faculties' low opinion of PC, specialty disrespect can overwhelm a student's preference for PC careers.

In Switzerland, medical students' exposure to PC has moved on a similar trajectory to that of the U.S. in that it has improved, but still remains relatively weak. In an interview with Geneva-based physician, referred to as Dr. G for privacy purposes, Dr. G complained that when she was a medical student 10-20 years ago, there were nearly no mandatory clinical experiences incorporated in the Swiss medical education curriculum, which is in accordance with Dr. N's experience as a U.S. medical student (Dr. G, personal communications, 2022). The medical student from Geneva, Thierry, states that at the University of Geneva (UNIGE), there are now various mandated internships incorporated throughout their six-year medical curriculum in order to ensure that Swiss medical students can get a taste of all the major paths of specialization that they can pursue after graduation. Specifically, UNIGE has one mandatory general practice internship in their second year, and another mandatory general practice internship in their master's degree section (Thierry, personal communications, 2022). The academic counselor for UNIGE's medical program, Dr. Barbara Broers, clarified that the initiative is unique to UNIGE, although Swiss medical schools all have their "Institute for Primary Care Medicine" that "propose clerkships in order to prepare the students for their final exam and clinical needs" (Dr.

Broers, personal communications, 2022). At UNIGE specifically, there are two compulsory 8-week clinical experiences in Community Medicine and Primary Care that were implemented in 1998, one in the students' Bachelor years and another in the students' Master years; furthermore, a third 1-month elective in PC was made available to students in 2009 in the students' final year (Dr. Broers, personal communications, 2022).

It can be seen that the UNIGE program has made various efforts to expose its students to PC more frequently, and UNIGE gives PC more representation among its internship selections than its American counterpart with two compulsory internships, the first of which is the first internship that UNIGE students are exposed to (Thierry, personal communications, 2022). However, it could be argued that 8 weeks and 1 month are not enough to give students a full understanding of the realities of PC, especially the longitudinal aspects of patient care as well as establishing connections with the physicians' potential host communities, which may turn students away from a PC career. Furthermore, another Swiss medical student, Josef, argues that short-duration medical internships in PC don't work because they "show all the weaknesses of primary care without properly showing its strengths", by which he means that students witness their teaching doctors go through large amounts of administrative paperwork but can't see the long-term impact of PC work (Josef, personal communications, 2022). As such, Swiss medical students may have a warped view of PC after their clinical experiences that don't align with their professional goals.

Unlike the U.S., however, the Swiss medical education pathway has a glaring weakness in its lack of institutionally organized residency options post-graduation, which prevents long-term exposure to the PC work environment. Researchers in Switzerland have identified that a majority of the practicing PCPs decided on their career path during residency, and thus

concluded that “Residency is a more important time-period than medical school for career decisions to become a GP” (Tandjung et al., 2013). However, the difficulty lies in getting medical students to choose PC residencies in the first place. Swiss researchers have further found that continuing education in PC often is self-organized and scarce in Switzerland, unlike other specialties. These difficulties meant that aspiring Swiss PCPs may have to spend extra resources or move long distances to even receive further training in PC, which acts as a deterrent (Cerny et al., 2016). Cerny et al. also criticize the misalignment of Swiss theoretical training in PC with practical experiences found both in PC internships and post-graduate PC training, which may be off-putting for recent medical school graduates and further discourage them from becoming PCPs. Dr. G’s statements were also in accordance with the Swiss researchers’ findings when she said that she had to move halfway across the country after graduating from medical school in order to secure post-graduate training in PC, which also incurred higher costs of living for her as well as moving costs (Dr. G, personal communications, 2022). As such, while residencies are a strength in cementing prospective Swiss PCPs onto their respective career paths, the positions are scarce, difficult to accommodate relative to other specialties, and have more convoluted application processes, which act as strong deterrents that prevent students from entering PC residencies in the first place.

Medical socialization has also been a reported phenomenon in Swiss medical schools, which reinforces negative stereotypes about PC that discourage students from pursuing careers as PCPs as they are overwhelmingly exposed to them. These observations are similar to the findings from the University of Washington study conducted in the U.S., but arguably to a more intense extent. Thierry stated that during his observations with PCPs, he noticed that insurance companies frequently complained to PCPs that they were spending too much time and money

with their patients, and would often ask the PCPs to send reimbursement money back because insurance companies felt that PC services were not worth it (Thierry, personal communications, 2022). On the other hand, the current Swiss TarMed catalog allows procedure-based specialists to bill significantly more from their patients on a pay-for-service model without backlash (Stucki, personal communications, 2022). As such, the discrimination against PCPs is institutionalized, and the system itself propagates the perception that PC careers are inferior. Furthermore, throughout a medical student's education, there is a "hidden curriculum" pushed by medical school faculties and the students' environments: specialist lecturers devalue PC during the students' theory-based courses in the beginning years of medical education, inpatient internships frequently badmouth PCPs (Cerny et al., 2016), and even family members and friends actively discourage students from becoming PCPs by telling them that PCPs are only "for students who got bad marks in medical school" (Thierry, personal communications, 2022). A quantitative survey study by Cerutti et al. (2015) backs up these observations as they witnessed a decline in interest and opinion on PC among matriculating medical students three years after beginning their medical education. With medical education, PC careers were found to be significantly less attractive among students as they start to bear the following characteristics: unchallenging, low prestige, high financial risks, boring, antiquated, isolated in private practices, and often the choice for students who have little ambition for career advancement (Cerutti, 2015). The learning environment for Swiss medical students is hardly conducive to even choosing a residency in PC, let alone follow through and become PCPs.

### **c. Intrinsic Driving Forces**

Among U.S. medical students, age was found to be significantly correlated with PC career choice, which was hypothesized to be due to a stronger preference for specialties with

shorter residency lengths in order to meet financial obligations (Bland et al., 1995). Dr. N confirmed this was true for him personally; he graduated from medical school in his 30s and PC specialties were the best fit for his career interests at the time. He considered Ob/Gyn and pediatrics but thought his personality did not fit those specialties very well and ended up choosing family medicine (Dr. N, personal communications, 2022). The anecdote of Dr. N reveals that for many prospective physicians, career motivation drives their choice to pursue a career in PC; likewise, on the opposite side of the coin, there are prospective physicians who are discouraged from pursuing PC due to their different career interests. The NYC medical student, Gerald, ultimately decided against PC because he “saw more room for career advancement” in inpatient specialties under hospital settings (Gerald, personal communications, 2022); for many younger medical students, they are more interested in developing a career over time for themselves over entering the workforce as soon as possible, which makes them consider PC less relative to specialties and subspecialties.

Amidst U.S. medical students’ negative outlook on PC, Dr. N concedes that there is some truth to their perspectives, albeit they are often exaggerated; for example, Dr. N admits that a career in PC could appear bland to prospective physicians (Dr. N, personal communications, 2022). Jasper, after his PC clerkships, also concedes that PCPs face a large amount of paperwork relative to specialists and also receive many patients who either have untreatable chronic illnesses or don’t need to see a doctor at all, which can make a career in PC feel unstimulating relative to becoming an inpatient specialist (Jasper, personal communications, 2022). Many students who decide to go into PC actually enjoy those characteristics, which give them the opportunity to comfort patients, teach them to live with chronic conditions and improve their lives, and have a stronger work-life balance personally (Jasper, personal communications, 2022).



However, these characteristics can also run counter to some students' intrinsic motivations, and they may seek to have more intense work experiences in the emergency department or want to be more intellectually stimulated by complex patients usually referred to specialties. The perceived lack of complex patients and administrative-heavy lifestyle of a PCP may not be appealing for everyone and can thus turn students away from PC as well.

Swiss studies reveal a similar, yet slightly different situation among Swiss medical students with regards to intrinsic career motivation. Thierry described that in his experience, he knows two types of medical students: the first type strives to strike a balance between their practice and their life outside of their practice, and the second type wants to make medical practice their life to try and work as hard as possible to advance their careers (Thierry, personal communications, 2022). Dr. G also said that when she chose to become a PCP, the primary driving factor was the flexibility in practice location and hours the job offered. Both Thierry and Dr. G's observations have been backed up by Swiss studies, which show that PC is strongly associated with work-life balance among Swiss medical students and physicians (Cerny et al., 2016), while specialists tend to be much more career-oriented and make it their main goal to get a lead position (Cribari et al., 2018). As a result, we can see that similar to the U.S., Swiss PCPs value the work-life balance that their career offers them, but this dilemma divides Swiss physicians much more than it does U.S. physicians, who are more focused on when they want to enter the workforce in addition to the different specialties' lifestyles.

Dr. G and Thierry also echoed the sentiments of Dr. N and Jasper, agreeing that the paperwork-heavy nature of Swiss PC in addition to the nature of the patients that present to PC practices may not be in line with what Swiss medical students seek to experience in their medical careers (Dr. G, personal communications, 2022; Thierry, personal communications, 2022).

However, Dr. G talks about a problem unique to Switzerland due to their extensive importing of foreign practitioners, which is that they often do not have a strong connection to local communities, and thus they tend to not enter PC and instead pursue specialties that they are more personally invested in (Dr. G, personal communications, 2022). While there has been no Swiss study that delves into this particular aspect of PC, U.S. studies have found that connection to the community of practice influences a medical student's inclination to practice PC in that community (Bland et al., 1995). Switzerland imports one-third of its practitioners from other European countries (Stucki, personal communications, 2022), who usually perform residencies in Switzerland after having their domestic medical degrees certified by the Swiss Medical Professions Commission. It is often difficult for foreign physicians to feel a strong connection to the local Swiss communities just because they grew up in a different country entirely, and in conjunction with the existing difficulties of obtaining a PC residency in Switzerland, few foreign physicians feel inclined to practice PC in Switzerland when they could either practice PC in their home country or practice a more profitable specialty in Switzerland (Dr. G, personal communications, 2022). With a significant proportion of physicians coming from abroad, these problems exacerbate the already growing deficiency in PCPs.

### **III. Potential Strategies for Increasing PC Engagement**

#### **a. Changing Financial Incentives**

For decades, American healthcare experts have cited low compensation to be one of the leading reasons why fewer students are choosing to become PCPs (Bland et al., 1995; Pisaniello et al., 2019; Walker, 2006). When asked about what would make PC more attractive to medical students in America, practicing PCPs and current medical students alike agreed that low pay is

one of the biggest barriers to PC that must be resolved (Dr. N, personal communications, 2022; Gerald, personal communications, 2022; Jasper, personal communications, 2022). Dr. N said that it is essential for PCPs' contributions to community health to be recognized and subsequently be used to leverage an appropriate compensation for American PCPs, but he also acknowledges that physician compensation does not function like a normal commodity market, and it can be difficult to achieve a consensus on what an adequate salary for PCPs is (Dr. N, personal communications, 2022). Jasper assesses that the key reason behind the pay disparity for outpatient providers is specialists' ability to bill procedure codes with higher reimbursement in the current fee-for-service scheme, although Jasper and Dr. N both agree that the U.S. government is starting to provide more benefits for PCPs in the payment system, specifically by instituting incentive payments for meeting particular community health standards (Jasper, personal communications, 2022; Dr. N, personal communications, 2022). These changes might start making PC slightly more attractive, although changes have been implemented too recently to assess their effectiveness.

However, we must acknowledge that the RVS Update Committee (RUC), which advises Medicare on how to value physicians' work, is set up so that normally only 4 out of the 22 physician seats could advocate for PC, which are the representatives for internal medicine, family medicine, pediatrics, and a representative for primary care (American Medical Association [AMA], 2022). For a field that is expected to make up at least 40% of all practicing physicians in order to properly address community needs, their representation in the RUC is only 20%, which means that their opinions on the outpatient reimbursement system would be constantly outweighed by the other 80% made up of specialists that often benefit from procedure-based payment systems (Schroeder & Frist, 2013). In order to ensure that American

PCPs are compensated fairly, PC specialties should have a slightly increased representation in the RUC so that their views on the payment system are represented proportional to their targeted representation in the physician population overall.

Directing a larger budget toward paying PCPs may further inflate the U.S. health budget and run counter to the interest of saving health costs through PC, as the tangible benefits of PC are difficult to project (Stucki, personal communications, 2022), thus it may be difficult to find a middle ground between increasing PC salaries to increase the number of PCPs and using PCPs to achieve the objective of cost containment. Another suggested solution unique to U.S. medical education pathways is scholarships or tuition waivers for students who are committed to pursuing PC, which will stop student debt from discouraging motivated PCPs from following through with their interests. Some U.S. medical schools have already implemented such initiatives, such as the Geisinger Commonwealth School of Medicine, which offers up to 4 years of tuition-free medical education in addition to a \$2,000 monthly stipend in exchange for employment as a PCP with Geisinger for each year that the student receives financial assistance as part of the program (Geisinger Commonwealth School of Medicine, n.d.). The advantages of programs like Geisinger's is that they do not lock students into PC right after matriculation; instead, they give students up to 2 years to explore their interests before committing to a career in PC in order to benefit from Geisinger's scholarship for the rest of their time in medical school. Similar programs include Indiana University's Primary Care of Scholarship, which obligates students to one year of practice in an underserved area in Indiana after residency for each year of student debt forgiven (Indiana University School of Medicine, n.d.). Since the introduction of the program in 1993, Indiana University School of Medicine has become one of the leading U.S. institutions for producing PCPs; from 2011-2017, it produced the third most graduates that

entered PC residencies among allopathic medical institutions, and 11<sup>th</sup> most overall (Phillips et al., 2019). These PC scholarships do not turn medical schools into complete nonprofits, allow prospective PCPs to pursue their career aspirations without financial burden, and contribute to underserved communities' health by supplying them with PCPs; as such, similar programs should become more popular in the U.S. to attract more students into the PC workforce.

In Switzerland, the low cost of medical education as well as a less pronounced compensation gap makes financial incentives less of a priority than it is in the U.S. (Stucki, personal communications, 2022). However, the TarMed is still outdated in a way that benefits specialists' billing tendencies over PCPs'. PCPs usually bill based on time, while specialists bill on a fee-for-service basis much like the U.S., and technological advances in the medical sector has allowed more services to be performed by specialists per unit time, which results in higher pay for specialists (Stucki, personal communications, 2022). PCPs still get paid a similar amount as the amount of total time they spend on patients does not change significantly, and specialties that perform expensive procedures benefit the most from the lack of revision to the TarMed (Stucki, personal communications, 2022). Revisions to the TarMed to better reflect the current state of medical practices both in specialties and PC practices is needed to ensure that physicians are compensated fairly. The TarMed revisions also need to be done in a way that reflects the value of Swiss PCPs, as Thierry's narrative on how Swiss insurance companies often tell their PCPs to spend less time/money on their patients also demonstrates antagonism from the health sector with regards to the PCPs' perceived contributions to the health system (Thierry, personal communications, 2022).

#### **b. Improving Quantity and Quality of PC Experiences in Medical Education**

With an observed growing trend of specialty disrespect in the U.S., there is a larger responsibility for PC teaching sites to provide quality experiences to their students in order to attract them to a career in PC, especially when PC constitutes a small proportion of U.S. medical schools' catalogue of clinical experiences. A similar problem has been observed in Switzerland where medical students are socialized toward a lesser perception of PC relative to specialties. In order to counteract these effects and give students a holistic understanding of PC's potential, it is essential to provide stronger institutional support for students pursuing PC in both countries. It is difficult to change existing faculties' and the general public's opinion on PC practices, as it is time-consuming and is highly contingent on the success of PC in future years. However, it is possible for medical schools to adopt hiring and admissions policies to foster a pro-PC learning environment, which has been found to increase the students' affinity to PC (Alavi et al., 2019). Another possible solution that could push back against negative stereotypes of PC is the establishment of PC student interest groups in which students could share their experiences and hopefully reinforce positive ideas about PC careers, and in U.S. schools where these interest groups have already been established, studies have found that participation in these interest groups are strongly correlated with entering a career in PC (Sairenji et al., 2022).

Another concern with both U.S. and Swiss students' PC experiences during medical school is the quantity and quality of PC clinical experiences provided in their curricula. Across both countries, experts and students alike have criticized PC clerkships for being underrepresented in medical education and low in duration, which is especially problematic for PC due to one of PC's main characteristics being longitudinal care (Lee et al., 2022; Thierry, personal communications, 2022). In an already underrepresented clerkship block, students are often more likely to see the pitfalls of PC without being adequately shown its long-term

successes (Whitcomb & Cohen, 2004). As such, potential solutions could either include a single long block of PC experience or multiple smaller blocks of PC experience. Although a single long block of PC clerkship can easily demonstrate the longitudinal aspect of PC, Gerald thought that it is likely to push students toward burn out and have the adverse effect on PC interest (Gerald, personal communications, 2022); on the other hand, multiple smaller blocks of PC clerkships can help reinforce PC experiences over time with other clerkships in between to make the experiences more interesting, but it might be logistically difficult to arrange the clerkships in such a way that students are exposed to longitudinal care of the same patients. Current research makes the latter option more promising as U.S. experts have found that student interest in PC increased immediately after clerkships but then decreased over time, and thus one of the primary challenges is actually on sustaining student interest in PC over the course of their medical education (Lee et al., 2022). Furthermore, longer mandatory clerkships in community care and PC could cultivate connections between emerging physicians and the local community, which is positively associated with PC choice (Bland et al., 1995). Fostering connection with the local community is especially important for Swiss medical institutions, as more domestic students should be pushed toward PC to make up for foreign doctors that might not be as interested in pursuing PC in Switzerland (Dr. G, personal communications, 2022). Overall, mandatory clerkships in PC should be extended to reflect the importance and prevalence of PC in modern healthcare systems, to dispel negative stereotypes of PC by showcasing the successes of longitudinal care, and to help students connect with local communities.

The concern unique to Swiss medical students is, as mentioned earlier, a lack of institutionally organized post-graduate training in PC (Cerny et al., 2016). The evident solution is to increase the number of training programs available and to increase organization of the

proposed training programs, but finding a suitable approach can be difficult. In 2018, a group of Swiss scholars formulated a hypothetical PC training curriculum dubbed “GO-GP”, which featured a strong focus on mentorship, peer-based learning communities, and flexibility in training according to the young physician’s personal career goals (Rozsnyai et al., 2018). The respondents, composed mostly of students interested in PC, had overwhelmingly positive reviews on the proposed curriculum and believed that the GO-GP curriculum can make PC careers in Switzerland more attractive (Rozsnyai et al., 2018). With PC being primarily associated with work-life balance and not as much with career advancement (Cerutti et al., 2015), the flexibility of GO-GP could attract students from both ends of the spectrum and help shape their PC practices to their own vision, whether be it a rigorous practice focused on rapidly advancing community health standards or a more relaxed part-time practice that gives practitioners a healthy work-life balance. Furthermore, the organization provided by GO-GP with regular peer-based community meetings and consultations with mentorship figures provides a strong focus on PC that not many present training programs offer (Cerny et al., 2016). If programs akin to GO-GP could be developed in Switzerland and be sponsored by medical schools for post-graduate training, PC could become much more attractive to Swiss students.

### **c. Modernizing PC: From Independent Practitioners to a PC Team**

To many Swiss and American medical students, PCPs seem to always be bogged down in paperwork and play a secondary role to specialists, engage with “boring” patients while having large responsibilities for public health consequences; the lack of prestige coupled with various perceived downsides are among the principal driving reasons why students do not pursue PC (Bland et al., 1995; Cerutti et al., 2015; Cribari et al., 2018). However, many of these perceptions can be changed as PC modernizes itself to better address the healthcare needs in present day. In



order to address the growing PC shortage without sacrificing quality care standards, Margolius and Bodenheimer described a model in a 2010 publication that they call the “practice of the future.” Rather than envisioning PCPs as isolated practitioners in charge of acute care, chronic care, and preventative care all at once, they suggest that PC should orient around the principle of team building, with the PCP at the center of a PC team surrounded by nurse practitioners (NPs) and physician assistants (PAs) as well as various clerical staff that carry out care at different levels. Margolius and Bodenheimer further suggest that patients should be stratified based on the nature of their needs, and the different members of the PC team would take on different levels of responsibility; for example, the PCP would take care of patients with complex chronic conditions, while NPs and PAs can assist with more routine visits such as a simple upper respiratory infection or parts of the annual physical exam (Margolius & Bodenheimer, 2010). According to Dr. N and Dr. Stucki, many PC clinics in the U.S. and Switzerland are starting to adapt these new models of care that incorporate NPs and PAs in order to optimize PC (Dr. N, personal communications, 2022; Stucki, personal communications, 2022). Research in both the U.S. and Switzerland has also backed up the practicality of NPs and PAs in the current PC landscape, as they can efficiently expand the capabilities of PC practices without exorbitant expenditures under the leadership of PCPs (Gysin et al., 2021; Josi & Bianchi, 2019; Laurant et al., 2018). Dr. N specifically says that he believes with enough training and dedication, NPs have the potential to perform all the normal clinical visits that PCPs are currently handling, although PCPs would still be needed to be in a leadership role that guides the entire PC team as well as treat elder patients that need extensive chronic care management (Dr. N, personal communications, 2022).

With this modernized model of PC, not only does PC become more efficient, but it also addresses various concerns with the older model of PC. First, some students think PC practices are too professionally isolated, lack room for career advancement, and lack the prestige of other specialties (Cerutti et al., 2015). With the introduction of a PC team, PCPs may undergo a role transformation where instead of being a lone provider who “simply” refers patients to specialists, they become the leaders of a panel of professionals that aim to take care of all fundamental health needs of the community. Professional advancement then takes the form of expanding the team and the practice to have a farther reach and perform more services as opposed to ascending through a hierarchy of titles in an inpatient setting. Secondly, students have complained that the patients in PC practices are often routine and not intellectually stimulating, while others argue that they do not feel prepared to take on the role of a PCP in the current healthcare environment (Buddeberg-Fischer et al., 2006; Whitcomb & Cohen, 2004). The introduction of a PC team model allows the PCP to exercise their leadership capabilities and delegate paperwork as well as less complicated patients across their team, which gives the PCP more space and flexibility to focus on more complex and demanding patients as well as the patients that the PCPs are more personally interested in. Overall, with responsibilities that originally belonged to a single PCP now distributed across multiple members of a practice, the PCP bears the mantle of a leader in exchange for less clerical and clinical demands, which should make the career more manageable. Jasper cites this new potential as a primary reason why he committed to PC; as the prospective leader of a PC team, he believes he has the leadership skills to delegate duties across his future team members, and the new potential in PC grants him the flexibility to focus more on what he is more comfortable practicing as a physician (Jasper, personal communications, 2022).

Modernizing PC thus not only increases community health quality, but also makes PC a more desirable career choice for medical students in both the U.S. and Switzerland.

Another possibility for PC paradigm shifts lies in the potential of multi-specialty practices. Mr. Stucki addressed that in order to make PC practices more accommodating, Switzerland has recently introduced regional programs where PCPs are placed into group practices to help lessen workload in more underserved areas (Stucki, personal communications, 2022). Furthermore, Mr. Stucki said that there have been emerging multi-specialty practices in Switzerland, which not only resolves the issue of professional isolation, but also introduces more dynamic patient demographics for all the practitioners involved to have better work experiences (Stucki, personal communications, 2022). By placing PCPs with specialists in outpatient practices to form expert physician teams, there exists a new possibility where prestige differences between specialists and generalists become equalized to make PC appealing as the career interests of the two sides become cooperative instead of competitive. PCPs in a group practice can focus on patient-centered care for chronic conditions while specialists can assist with empirical treatment procedures, which forms a synergistic practice condition that allows patients to better observe the importance of PCPs in the health system and for different physicians to gain mutual respect for each other (Dr. G, personal communications, 2022). Regardless of its composition, the emergence of new PC team models centered around PCPs can help overturn many negative perceptions of PC and make the career more attractive for both medical students and the general public.

## **Conclusion**

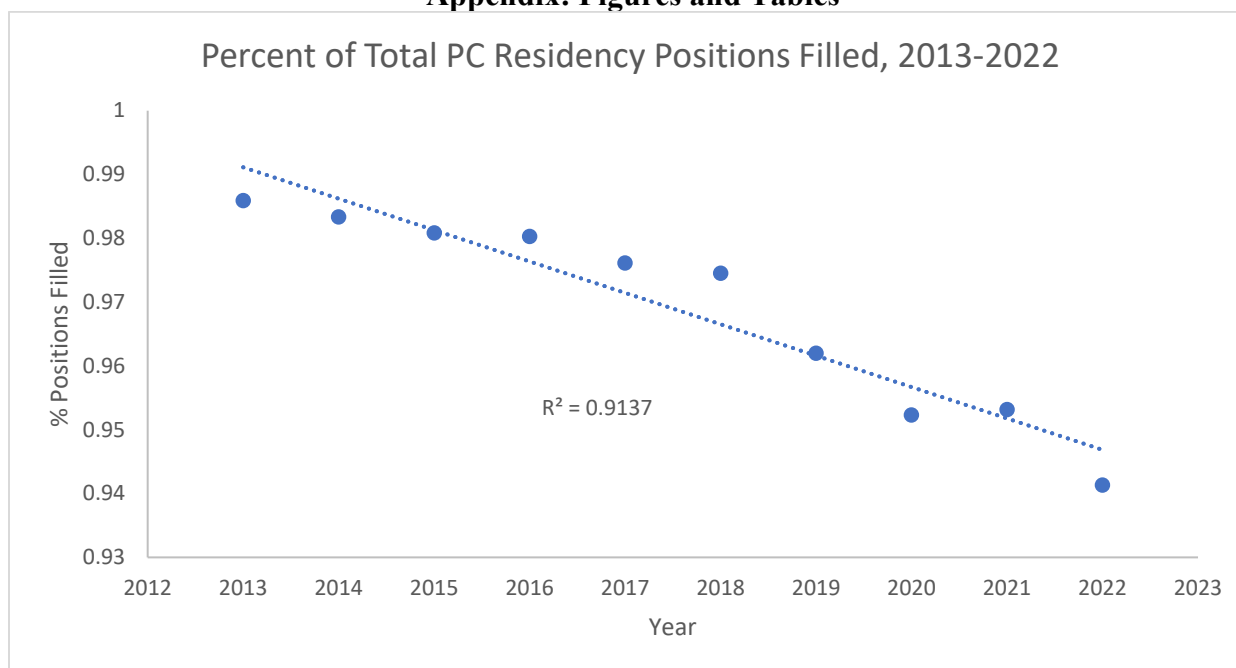
The declining interest in PC is a multi-faceted global phenomenon that is difficult to find a singular cause for, much less find a universal solution for. However, through a comparative study of two of the most robust health systems in the world in the U.S. and Switzerland, it becomes apparent that the factors contributing to a declining PC has many similarities in both countries. While there are unique factors in each country that exacerbate a declining interest in PC and similar factors can be weighted differently in U.S. or Switzerland, financial reasons, medical students' understanding of PC, and how PC aligns with students' intrinsic career motivations all play significant roles in pulling or pushing students toward or away from PC. The student debts and the larger specialty wage gap in the U.S. make financial incentives a more significant factor in the U.S., while medical socialization alongside general disrespect toward PC specialties appears to be more prevalent within Switzerland. However, both countries would benefit from more high-quality PC clinical experiences integrated into their students' medical curriculums in order to dispel negative connotations around PC careers. Furthermore, with modern PC models focusing on team practices with the PCP at the helm, PC has the possibility to subvert the negative expectations students in both countries had and become revitalized.

Future research in the field of PC interest should revolve around the effectiveness of recent interventions implemented across both countries. For example, in the U.S., Dr. N described government incentives for maintaining community health standard for PCPs, while in Switzerland there has been an increased amount of PC clinical experiences integrated into medical curricula. In both countries, PC is starting to adapt a modernized model, which could reignite student interest in PC careers. All of these changes are either still in the process of implementation or were implemented too recently to observe their long-term impact on PC career interest, thus they need to be closely tracked over the next few years to determine what

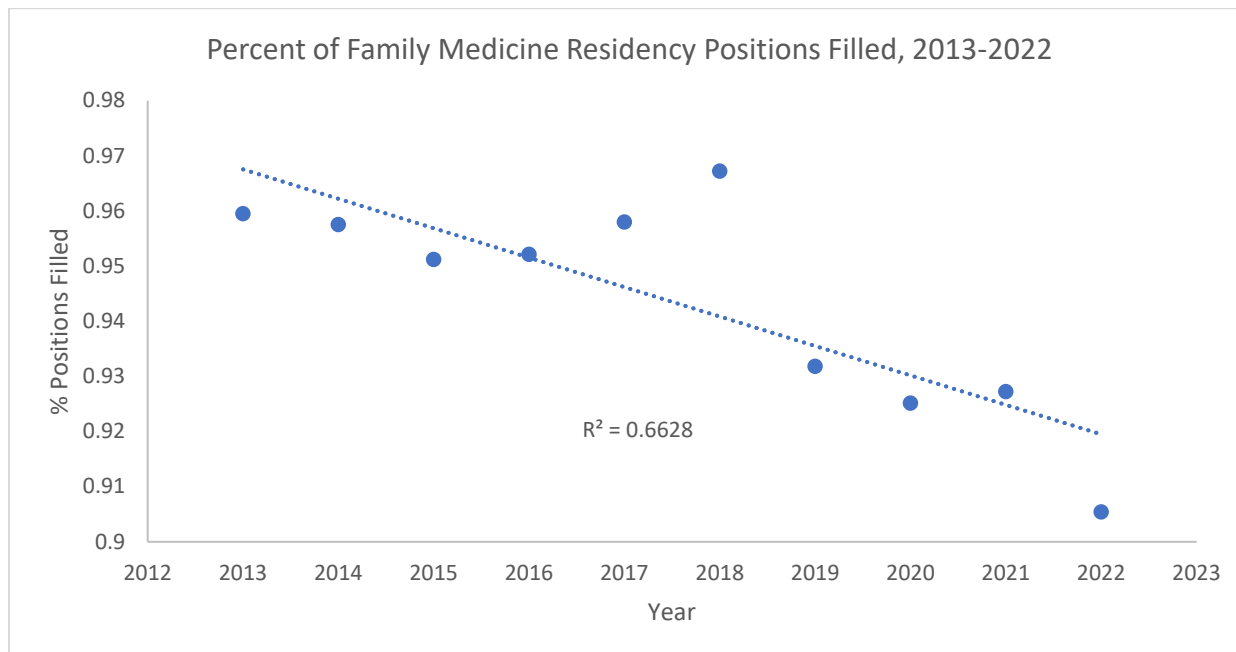
else needs to be done to improve the attractiveness of a career in PC. There are also some fields of interest for policy experts in both countries that could be targeted to increase PC engagement among their medical students, but no concrete plans have been formed yet, and future research could be focused on how potential policy changes should be carried out and how medical students/professionals would respond to those changes. For example, Mr. Stucki mentioned the need for TarMed revisions in Switzerland, but there have been few suggestions in present literature that address what could be changed in TarMed to reflect the current state of medical practices and make PC compensations fairer. In the U.S., the RUC has a disproportionate representation of specialists, but current policy discussion around the medical procedure valuation system is still relatively weak, which necessitates more discourse and research.

Finally, the research performed in this study could be extended to other countries as a general framework for the decline of PC in present day, which could spark further academic discussions on the global trends of PC career choices or serve as preventative case studies for developing countries establishing their own resilient PC foundations. As mentioned earlier in the paper, the high health spending of the U.S. and Switzerland reflects the two countries' dedication to creating a strong healthcare system for their citizens, but they can also reveal inefficiencies in those systems that happen to incur unnecessary spending. The steadily declining interest among these countries' medical student populations in PC shows a potential weakness in these countries' health budgets that might further develop in the coming decades, which can serve as a precaution for developing countries about the importance of maintaining a strong PC system for the purposes of cost containment. Developed countries may also look to improve their PCP network in order to save money in the health sector, which could be reinvested for further development. This study also reveals many shared factors between the U.S. and Switzerland that

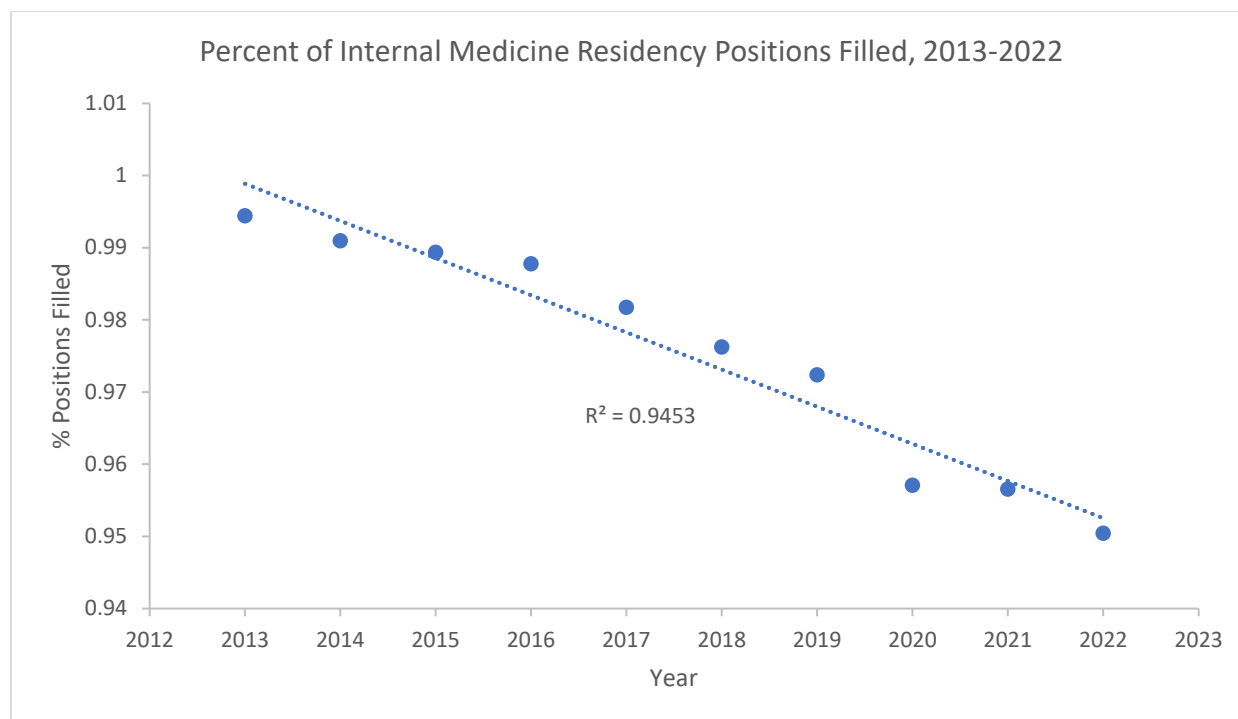
contributes to their populations' declining interest in PC careers, which could possibly be applied globally in order to identify declining PC interest or highlight risk factors that could be prevented worldwide.

**Appendix: Figures and Tables**

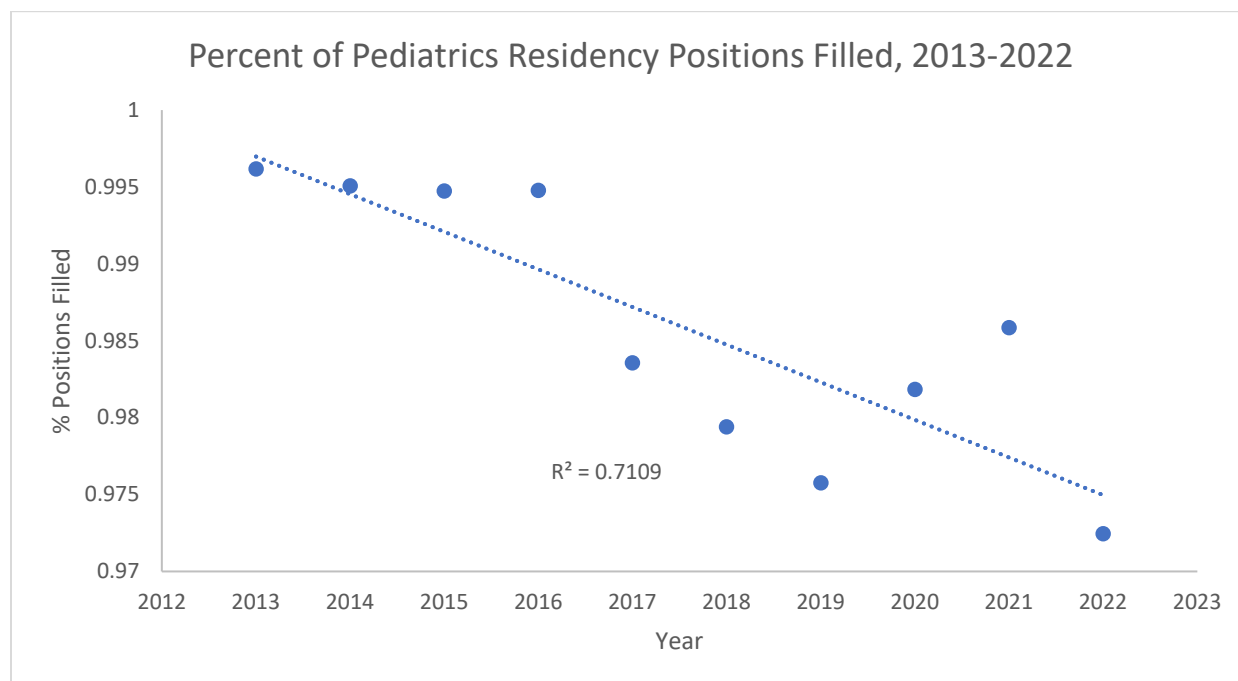
*Fig. 1.* Percent of total PC residency positions filled from 2013 to 2022, raw data from NRMP. A noticeable decline can be seen over the past decade from approximately 98.5% to nearly 94%, demonstrating that a smaller percentage of medical students are interested in PC every year.



*Fig. 2.* Percent of family medicine residency positions filled from 2013 to 2022, raw data from the NRMP. A noticeable drop in family medicine residency positions filled is seen between 2018 and 2019, while initially the percentage of positions filled was on the rise. This figure illustrates a turning point for family medicine; after 2019, the percentage of residency positions filled has only further declined.



*Fig. 3.* Percent of internal medicine residency positions filled from 2013 to 2022, raw data from the NRMP. There has been a steady decline in the percent of internal medicine residency seats filled in the past decade, down from 99.5% to around 95%.

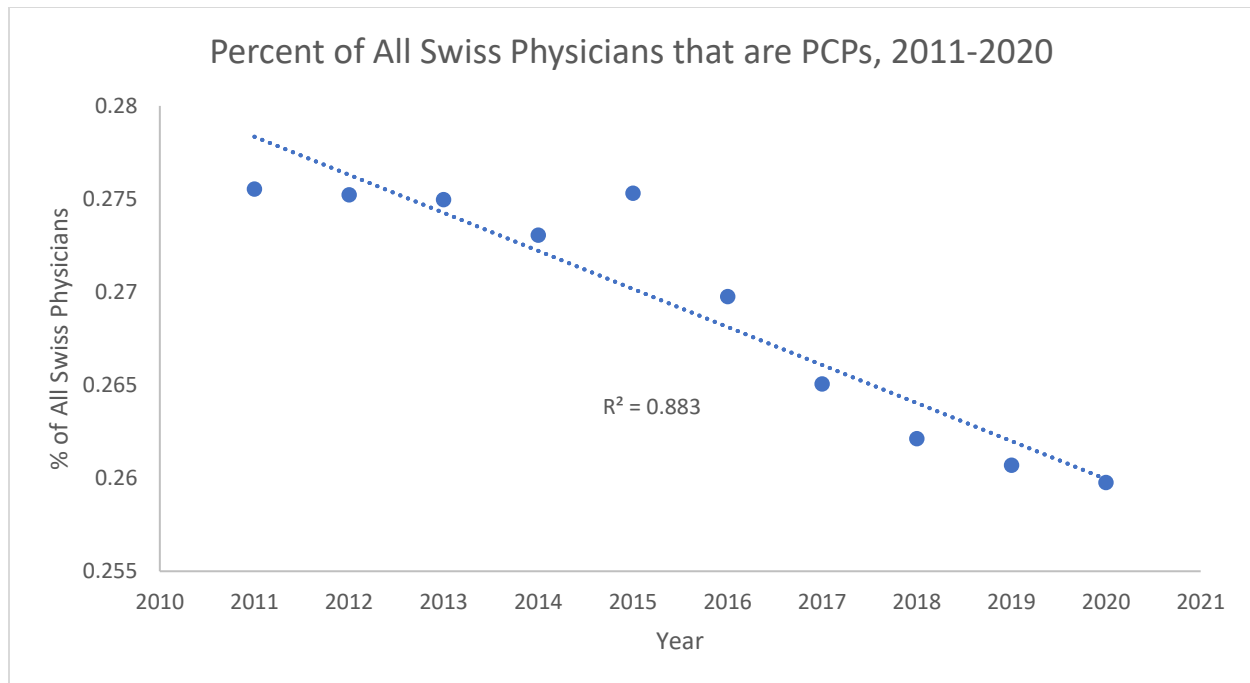


*Fig. 4.* Percent of pediatrics residency positions filled from 2013 to 2022, raw data from the NRMP. While the graph as a negatively sloping trendline, the change in percentage of pediatrics residency seats filled is only around 2%, which is not very significant.



Year	Estimated Matched PC Residency Positions	Total Residencies Matched	Estimated Ratio of PC Residency Matches
2022	8381.8	34075	0.245981
2021	8367.84	33353	0.250887
2020	8123.88	32399	0.250745
2019	7552.04	30550	0.247203
2018	7104.56	29040	0.244647
2017	6760.12	27688	0.244153
2016	6590.56	26836	0.245587
2015	6496.76	26252	0.247477
2014	6379.8	25687	0.248367
2013	6269.04	25463	0.246202

Table 1. Estimated number and percentage of residents that will go into PC, 2013-2014; raw data from the NRMP. The number of residents estimated to enter PC is calculated as the sum of matched pediatrics residents and matched family medicine residents plus 12% of all internal medicine residents, as suggested by Dalen et al., 2017. While the number of projected PC residents has increased over the past decade, so has the number of total matched residents, and the proportion of PC residents has stagnated at 25% over the past decade, much lower than the goal of 40% PCPs by 2034.



*Fig. 5.* Percent of all Swiss physicians that identify as PCPs, 2011-2020; raw data from WHO. There has been a decline of Swiss PCPs in the past decade, dropping from 27.5% to 26%. While the change isn't big, the declining trend really started in 2015, which has continued since then. Furthermore, an ideal proportion of PCPs is around 40%, and a declining trend of an already low PCP population is worrying.

### **Abbreviation List**

AAFP: American Academy of Family Physicians

AHRQ: Agency for Healthcare Research and Quality

AMA: American Medical Association

GHWSD: Global Health Workforce Statistics Database

GP: General Practitioner

OFSP: Office fédéral de la santé publique

PA: Physician Assistant

PC: Primary Care

PCP: Primary Care Provider

RUC: RVS Update Committee

RVS: Relative Value Scale

NP: Nurse Practitioner

NRMP: National Residency Match Program

UNIGE: University of Geneva

U.S.: United States

WHO: World Health Organization

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