Improving Recruitment and Retention of Underrepresented Minorities in Health Professions at Penn State

Policy Proposal

Presidential Leadership Academy

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Executive Summary

The healthcare industry's lack of diversity has become a frequently discussed topic in the past year. The COVID-19 pandemic shed light on the discrepancy in both hiring and patient care that communities of color often face. Ensuring diversity in this field begins with education and creating access to pre health undergraduate programs for communities of color. If we can ensure that the educational programs designed to push students into the medical field are adequately diverse, we can begin to address some of the inequality that exists there. Our policy is focused on creating more diversity in Penn State's undergraduate pre health programs and majors.

To craft a diversity policy for Penn State, we first needed to understand our current demographics. We analyzed the data on racial demographics in the three Penn State colleges most relevant to pre health and the healthcare field: the Eberly College of Science, the College of Health and Human Development, and the College of Nursing. We found that all three of the colleges lack the level of diversity that we strive to have at Penn State. In order to understand some of the possible reasons behind this, we looked at the level of outreach that Penn State exhibits in four southeastern Pennsylvania high schools. Two of these schools, Strawberry Mansion and Chester High, are majority students of color while the other two, Abington Heights and Upper Dublin, are not. We found that Abington Heights and Upper Dublin receive far more involvement from our admissions programs than Strawberry Mansion and Chester High. When considering this, the fact that Abington Heights and Upper Dublin send almost ten times as many students to Penn State than Strawberry Mansion and Chester high is less surprising. The data indicates a link between the level of outreach a high school receives and the amount of students it sends to Penn State. To help increase our diversity in these pre health majors and colleges, we need to ensure that our high school outreach is diverse and equitable.

Penn State has employed programs to increase diversity university-wide, as well as opportunities for individuals with specific backgrounds and career interests. In order to make progress in healthcare education specifically, however, more direct and impactful actions need to be taken. As a result, it is advisable to look at successful programs started by higher healthcare institutions. Based on research we have selected some case studies that can give insight into what DEI initiatives have worked in the past and can be applied at Penn State and its healthcare systems. The three systems we analyzed were Atlanticare Health System, Rutgers-Robert Wood Johnson University Hospital, and the Henry Ford Health System. We described their strategies, the positive results that came from those strategies, and how they are applicable to Penn State.

The implementation of the policy proposed aligns with the sustainability goals set by the 2015 United Nations legislation. More specifically, Goals 3 and 8 fit best within the ideas of increasing ethnic and racial representation in pre-medical higher education. Goal 3, good health and wellbeing, promotes a higher quality of medical care for marginalized communities that are home for these diverse physicians. Goal 8, decent work and economic growth, falls in line with the principle that these medical jobs can build generational wealth for individuals whose families have never had the opportunity due to systemic barriers and lack of access to quality work.

Penn State benefits both as an institution and as a reputation from the policy at hand. From a national standpoint, Penn State can become a premier institution for black and brown students to get undergraduate training and preparatory education to apply to professional schools. In terms of job placement, Penn State benefits as research and medical institutions will look to the university as a source of high quality, well cared for, diverse applicants into their programs. Finally, the alumni network strengthens as more POC students move into the workforce and make connections back to undergraduate students like them hoping to follow in their footsteps.

The office will have two initiatives in order to sustain a growth in underrepresented minorities in the prehealth. First, the office needs to work on recruitment of the applicant base from underrepresented minority (URM) populations. Undergraduate students and faculty of underrepresented populations will be tasked with visiting these schools to educate students on the wide variety of healthcare positions and also any summer opportunities provided by Penn State that could help launch their pre health education. Second, this office will focus on retention of URM students who are in the pipeline. The National Institute of Health suggests that retention should come from supplemental summer programs, scholarships, and interactive peer mentoring, and these recommendations will serve as a guideline to the DEI office. Students coming from URM populations will need to join the Minority Association of Prehealth Scholars, and a new DEI office can help increase summer internships and other opportunities available to this organization. Overall, the DEI office will address the failures that come from prior

systemic education gaps where less URM students can enter the health field, with the goal to increase applicants and graduates in our healthcare related majors.

A Diversity, Equity, and Inclusion office within PreHealth Advising would require sufficient funding, faculty, and infrastructure. To minimize the pushback in the implementation of these policies, we primarily focus on building upon already existing DEI infrastructure within the three colleges and the school of medicine.

Introduction and UN Goals

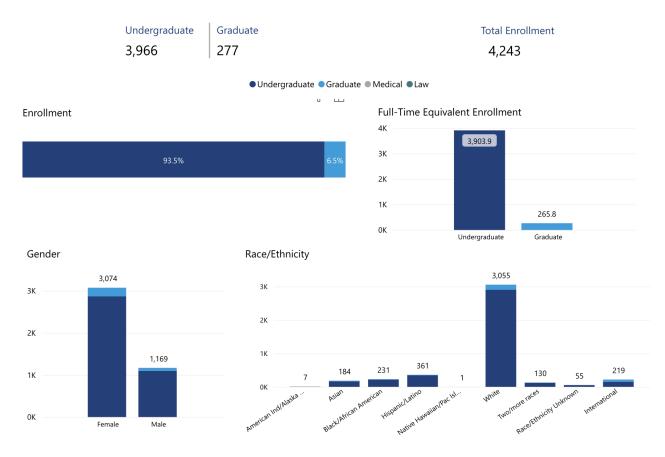
Penn State is, and always has been, a predominantly white university.All universities should, and most are trying to rectify the effects of past discrimination in college admissions through scholarship, inclusion, and outreach programs. Still, we can be doing more—especially in certain career paths. Over the past few years, we have grown our diversity and inclusion staff and seen some good results, but looking at the raw data tells us that we have much to do. In order to address Penn State's lack of diversity, we needed to understand it. We pulled data from the Penn State University Budget Office as well as the Penn State Planning, Assessment, and Institutional Research center on the racial demographics of the three Penn State colleges most relevant to health professions: Eberly College of Science, the College of Health and Human Development, and The College of Nursing.

The medical field is notorious for its lack of diversity and this affects both the quality of care for patients of color and the socioeconomic opportunities for communities of color. As a public university, our role in rectifying this should be creating more diversity in our pre health education programs. The data below from the College of Nursing analyzes the current state of diversity in one of Penn State's most successful pre health programs. We can see that this College is overwhelmingly white, exactly ____% In each of the 2012, 2013, 2014, 2015, and 2016 graduating classes, there were no more than four black students. Only in 2012 and 2016 did all four of those nursing students graduate as nurses. This is especially troubling because it means that not only are we not recruiting enough black students to our programs but we are also failing to keep them in our



programs. The retention rate for white students in 2019 was 97.6 whereas the retention rates for African American students as well as Hispanic students does not even hit 90%. We need to address both our application outreach policies and our retention ability.

These issues are not limited to the College of Nursing, though. Both the Eberly College of Science and the College of Health and Development have similar numbers to the College of Nursing in terms of racial diversity. The Eberly College of Science (top) and College of Health and Human Development (bottom) Statistics shown below indicate that have done a more substantial job recruiting Asian students and international students but have struggled with replicating that success with African American and Hispanic students . This isn't so surprising when we consider that Penn State created a task force to target international students back in 2019. There is often a clear link between our highest population of a demographic and our level of outreach to that demographic.



In our initial research for this project, I did a few one on one interviews with current Penn State minority students in pre health majors. When our group initially got the topic of healthcare, we wanted to understand what was happening within these majors so that we could best craft our policy to the needs of the school. In these interviews, we first noticed that among the students of color in these programs, the vast majority are South and East Asian. We clearly are having much more success recruiting those communities than we are recruiting their African American and Hispanic counterparts. We started noticing a trend in the interviews—many of these South and East Asian students came from affluent, suburban, majority white high schools. We decided to examine which high schools received the most 'attention' from Penn State (visits, college fairs, info sessions, brochures) and which received the least.

Interviews of Local HighSchools

We decided to do a small case study of four high schools around the state of PA, two of which are on Pennsylvania's list of Comprehensive Support and Improvement and Targeted Support (economically underprivileged) Schools and two of which are not. We want to compare and contrast the types of outreach that Penn State demonstrates to each school. Our four schools are Abington Heights High School in Clark Summit, Philadelphia, Lower Merion High School in Ardmore, Chester High School in Chester, and Strawberry Mansion High School in Philadelphia. We interviewed a principal or counselor from each of these schools to ask about their interactions with Penn State recruiters: the frequency and nature of their visits as well as the programs advertised at school.

Abington Heights High School

Township: Clark Summit, PA

Average number of Penn State students in graduating class: 15-20 Average number of Penn State visits per year: 2-5

In my speaking to Abington Heights High School, it is clear that they have a very healthy and active relationship with Penn State. Every year, more than 10 students attend the University Park campus and many others attend branch campuses. This is unsurprising because Penn State puts a lot of effort into recruiting from this school. The school counselor told me that Penn State makes at least two visits to the school each year. In these visits, students in their senior year can ask questions about Penn State and the application process. A former Abington Heights student of color who is now in the pre med program at Penn State told me in an interview that "Penn State representatives visited my high school two times a month, if not more, during the college application season." Penn State's presence in Abington Heights is frequent and this is rewarded with consistent enrollment in our programs. It is important to note that Clark Summit, PA is a 96.4% white township.

Chester High School

Township: Chester, PA

Average number of Penn State students in graduating class: 2-3 Average number of Penn State visits per year: 1

Chester High School is a perfect example of a PA high school that Penn State should be heavily involved in. Unfortunately, Penn State is relatively uninvolved and we are losing their students to many other out of state schools. The school's counselor informed me that Penn State does visit once a year as a part of an in house college fair. This college fair is a part of Chester High's impressive and extensive college prep process. Despite being on the list of Pennsylvania's Comprehensive Support and Improvement schools, Chester High provides many valuable resources to students. The counselor told me about a yearly trip that the senior class takes to look at southern colleges together. Chester High takes their senior class to tour schools in the south because the majority of those schools are more affordable for their student body. While many of these schools may be fine institutions, Penn State needs to be working harder to maintain retention of their in state students. There are many scholarships and financial aid programs that could help Chester High students afford Penn State but the information about them is clearly not being spread in a productive way.

When we consider that this project is focused on creating diversity in pre health majors and programs, studying Chester High School becomes even more important. Chester, PA is almost 70% African American—an racial group that is severely underrepresented in pre health at Penn State. Chester High School offers their students an immersive pre college program for students interested in medicine called the Prestige Honors Academy. This program works closely with Main Line Health to provide shadowing, internship, and educational opportunities to these students. Chester High School is overwhelmingly dedicated to both getting their students into college and preparing their students for pre health fields. Penn State's lack of outreach and interest in this high school is costing us educated, prepared students and furthering our lack of diversity.

Case Studies and Analysis

There is a pressing need for healthcare workers of color - disparities in care are becoming more and more prevalent, and have been especially exposed by the COVID-19 pandemic. Systemic inequity in healthcare is a product of many different factors. When there is perceived discrimination and individuals don't receive great quality of care, a profession in that field can become undesirable or unreachable.. This problem is prolonged because individuals that do find an opportunity to pursue a healthcare related-career, staying in their original community can appear as a lack of opportunity for advancement. Too often the cultural competency of medical professionals doesn't relegate equally among patients, resulting in disparities displayed by higher infant mortality among women of color or higher perceived pain tolerance among black patients. There is mounting evidence that there is a link between who is hired, where they're from, and the quality of care. These disparities can be seen in communities, public housing units, and local schools - largely because individuals do not see healthcare providers who look like them. Of course, no provider can choose their patient on an individual level, which makes this the product of a systemic fault rather than an individual minority problem. The world, today, however, has shown increased value for DEI work, demonstrated by diversity programs in colleges, companies, and healthcare systems across the nation. As a result, fair access to affordable education is something that is increasingly benchmarked and tracked over time.

Healthcare systems, hospitals, and educational systems have been focused on different methods to increase the diversity of their faculty and student pool for decades.

Multiple solutions have been implemented in the past, and they have had varying degrees of success. Many believe that there needs to be exposure at the elementary level to healthcare careers and an enabling environment. The primary reason most individuals who are members of underprivileged communities join organizations like boys and girls clubs is to simply get their meals. The most common medical professions are Doctors and Nurses, but there are many other medical professions in areas like pulmonary care, pathology, lab technology, where minorities are heavily underrepresented.

When Atlanticare, a system that oversees many hospitals in Southeastern New Jersey, set out with their diversity initiative, they stated that their goal was to "Create a culture of inclusion, where people could show up to work everyday, feeling welcomed and authentic to themselves." The goal was also to stimulate the discussion of inclusion and give employees a voice to finally speak out about how they really felt about the work environment. Atlanticare recently began implementing focus groups through the employee resource center, which is tackling asking employees all have to respond to. This is on top of the yearly engagement surveys that employees all have to respond to. They have sent out poll surveys to help learn more information about their LGBTQIA community and benchmark against other hospitals. There is also a continued partnership with local schools and community organizations to create recruitment pipelines. Systems like Atlanticare, pay 100% tuition upfront, for recruited individuals to go back to school and pursue a career as a nurse, doctor, nurse practitioner, medical lab technician, respiratory therapist, or EMT, if they work for 6 months. This means that if you work in

entry level jobs, as the trend lines indicate many minority communities do, such as housekeeping, kitchen, and security, you have an opportunity to work in healthcare. Some examples of partnered organizations are local churches, Boys and Girls Clubs, and Friday is Tie Day, which are geared towards college and career development. Recently that employee resource group went out, got a list of individuals who weren't vaccinated, and got people in local communities registered for the COVID-19 vaccine. This helps the community by getting people of color to exit those entry level jobs through partnerships with various colleges.

In addition, one proposed solution is to institute programs that increase workforce diversity in hiring and leadership positions. This is in order to create a top down waterfall effect as individuals in executive positions have a greater ability to influence the diversity initiative. In 2012, Robert Wood Johnson University Hospital started a 3-year strategic plan to improve equity and increase workforce diversity. Their goal was to work from the top-down and increase the amount of minorities and women in executive positions. The hospital started by collecting quarterly data relating to patient race, ethnicity, and language preferences to find and get rid of various sources of systemic racism. They also started a supplier-diversity program with 10% of their contracts related to minority and women-owned businesses. The hospital ramped up its telephone translation services, as well as an employee-medical interpreters program. Lastly, the hospital built a relationship with the New Brunswick Health Sciences Technology High School to provide exposure to healthcare careers and provide internships to high school students from diverse backgrounds through a new Health Professions Scholars Program. The results of these

efforts have been astounding. 40 of the past individuals from this program are now employed at Robert Wood Johnson's hospital. Underrepresented minorities in executive leadership positions increased by 34%. 42% of RWJ's executive leadership team is now women while ethnic and racial minorities now constitute 22% of the board of directors. At least 1200 people are given diversity training at the hospital annually. This displays that equitable hiring practices are essential for increasing diversity within the healthcare field, and are models by which we can draw implementation tactics from.

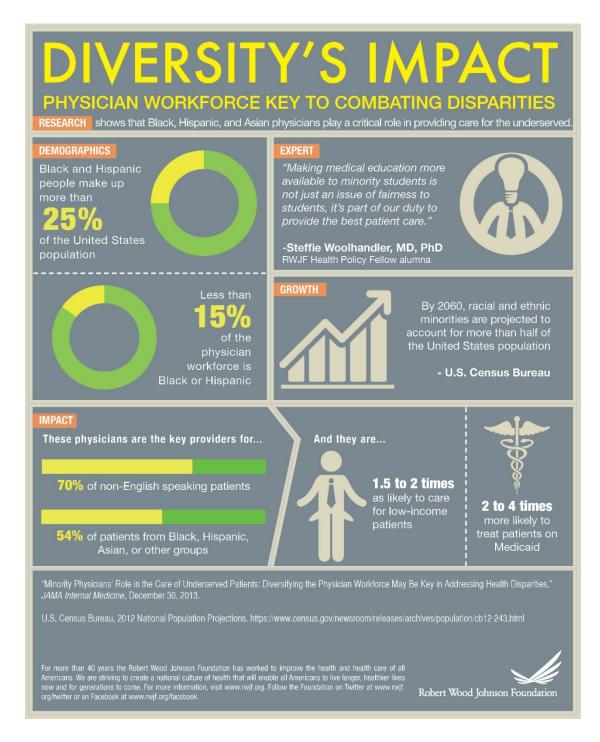


Fig. 4: Robert Wood Johnson Foundation

A second strategy is to dedicate specific financial and information resources to various organizations that support minorities in health. The Henry Ford Health System in Michigan, for example partnered with the Women-Inspired Neighborhood or WIN Network in Detroit. This project was undertaken in order to combat the disparity in the high infant mortality rates between high income communities and underprivileged ones. 6 organizations known as Community Neighborhood Navigators (CNNs) had a goal to each recruit 1500 African-American women ages 18-34 in Detroit to join the program. They also provided healthcare equity training sessions to 500 physicians and providers. They also sent out representatives to local high schools to encourage establishing educational and supportive products that will engage the broader community in promoting good health status prior to and during pregnancy. Of the 200 women who have enrolled in the program given birth so far, there have been 0 infant deaths compared to Detroit's average of 3.2 per 200. Another solution is to bolster the employment of people who were helped by programs within those programs, creating a positive feedback cycle. This was an example of the right way to work with community organizations to make programs and information sessions widely available and accessible.

Unilaterally, across these case studies, the most effective strategies have involved consistent communication of the DEI strategies and involving employees in the solutions by giving them specific steps they can follow to remedy the problem. For the administrations to be successful, they need buy-in from the employees as early as possible so they can be as involved in the strategies as the manager. This involves getting early feedback and making sure there is a role for employees in the process. It is also crucial to spread awareness of the DEI initiatives to students and patients, so they

are aware that work is being done. The largest hurdle, by far, however, is pinpointing the problem, and drafting specific strategies that will address it.

Policy

Penn State University has long forgone the needed changes to create an equitable environment for increasing applicant pools from our most vulnerable high schools in the commonwealth. As mentioned earlier, the most vulnerable high schools in the commonwealth are rarely reached by Penn State except for the occasional football recruiting. Moving forward, this policy suggests a plan to build upon existing outreach infrastructure where these schools are sought after by faculty, staff, mentors and undergraduate student leaders who will become resources for healthcare-related fields and sparking students' curiosity on a possible path in healthcare. As a base, this policy suggests that there should be increased resources that should be devoted to a DEI office in PreHealth Advising. By securing funding, the office can directly focus on increasing the outreach and retention rates of our current URM PreHealth students. Through integrative networking, mentorship, and increased support systems, this additional funding to a DEI office will create an equitable environment that will help our disadvantaged URM students keep their heads above water in the PreHealth pipeline. While the DEI office has roles in the retention of these students, they will also be responsible for active recruitment too. Due to the high cost of tuition at Penn State, students will certainly need financial support throughout their time. This office will create a competitive applicant pool from active recruitment for possible scholarships offered.

Recruitment Rationale

In order to continue the growth of URM practitioners and healthcare-related fields in the United States, the implementation of this policy must happen at the high school level in order to ensure an increased URM applicant base for future applicant pools. There is no doubt that this issue has been a priority for change in the National Institute of Health. Their guidance to enhance diversity in the medical school pipeline is to recruit at underfunded high schools, sponsor a summer research program for undergraduates, and invite prospective applicants to visit the campus and research labs (NIH). Examples of this implementation in our own state come from the efforts of Drexel, University of Pennsylvania, University of Pittsburgh, Rutgers, and Temple. The Bridging the Gaps program is a conjoint effort to create PreHealth opportunities through summer internships, structured mentorship, and classes about the key healthcare issues regarding vulnerable populations. Since their start 30 years ago they have had over 2,500 students attend their seminars. In the last 15 years they have 250 students graduate from their clinical medical program, and 150 from their scholar program (BTG). Bridging the Gap's continued efforts will create the change needed to address long standing racial inequities within healthcare. A program modeled like this could certainly work at Penn State University.

The Penn State College of Medicine has already addressed this issue of increasing Diversity and Inclusion with the implementation of several summers and shadowing opportunities. Their outreach, however, is rather small but very interactive. Their Short-Term Educational Program for Underrepresented Persons (STEP-UP) is a

program where around 20 students enter a program for 10 weeks over the summer to build a knowledge base of biomedical, behavioral, and clinical science research. This program is a tremendous resource for these populations, however 20 students per summer class will not repair the gaping lack of URM doctors. Through the promotion and expansion of the resources provided by the College of Medicine through a DEI office in PreHealth Advising, this implementation will increase the applicant pool for these summer internships and shadowing opportunities provided by this college.

The College of Eberly Sciences, Health and Human Development, and Nursing have all set goals to increase the diversity in their incoming classes, but have still fallen behind on these goals. The DEI office in PreHealth will coordinate with the respective DEI offices in these colleges in order to meet their desired goals. The recruitment pathway could take on many forms due to the interactions from the College of Medicine, Health And Human Development, Eberly, and Nursing, but at the center of it all should be a newly established office of DEI in PreHealth advising. Through this action the individual efforts from the separate colleges will become a more uniformed effort to reach out to more high schools that have not been reached before with the main goal to increase the presence of URM in the prehealth pipeline.

Advising and Retention Rational

Retention rates of those in the PreHealth pipeline have always been an issue with the general population, however this is even more so in our URM students. According to

a report by the U.S. Department of Education which had analyzed STEM attrition rates between 2003 and 2009, their results were staggering(Chen). For students interested in a STEM field at the start of their bachelor's degree, black students had the highest rates of leaving post-secondary enrollment without a degree (29.3 percent), and the highest rates of switching to a non-STEM field major (36 percent)(Chen). Hispanic students also fall near these data points, but one thing is for sure, these figures are significantly higher compared to white student populations. These failures come from prior systemic education gaps, and since systems are failing to create equitable environments throughout high school, this burden is on higher education. One action that must be a part of this policy is financial support through scholarship of these students. Through financial support, Penn State can play a crucial role in securing students to begin their journey in the PreHealth pipeline.

When modeling Penn State's retention systems of these students while they are enrolled, we should check out our Big Ten brother, Maryland, and their Meyerhoff Scholars Program. The way that they have increased retention rates is by creating a like minded group of hardworking individuals with similar goals to go onto graduate school education and medical school. Maryland mentioned that,"high concentration of high-achieving students in a tightly knit learning community, students continually inspire one another to do more and better"(MSP). The program has been recognized by the National Science Foundation and *The New York Times* as a national model (MSP). While this program has already been modeled by Penn State with the Millennium Scholars Program, there is one thing that both systems model extremely well that can be

emphasized within our proposed office, communication among members in the community. While this program will not model the Mayeroff and Millennium programs structurally, students in this program should be required to join the Minority Association of Prehealth Scholars (MAPS). A DEI office could help increase activities and opportunities that this group can do inorder to stay competitive in their fields. Also this is where students can interact and become a part of a supportive community throughout their undergraduate journey. Without a social group tied to this prehealth program, retention rates may be lower because students may feel racially isolated in their field, which is currently the case at Penn State like we mentioned earlier. Along with the creation of a social group, undergraduates can learn from upperclassmen mentors of similar backgrounds. The purpose of this is to create a structured learning environment where students feel as if they are not alone in the endless fight against the disadvantages of being a URM student.

Finally, the retention program will include summer programs available at Penn State which are specifically tailored for URM in health. The NIH recommends that in order to, "Sustain the interest of undergraduate underrepresented students in biomedical fields through active learning, building learning cohorts, providing support systems, and giving students access to authentic research experiences"(NIH). When taking this recommendation into consideration for this policy, we suggest that students recruited into this program should be required to enroll into the LEAP program where these students will have additional experiences to complement this program. As the NIH points out, students from these backgrounds do not have the same shadowing experiences as

the average preheath student. It is crucial to have supplemental shadowing and lab tour experiences to spark their interest in the wide variety of resources that are available to them at Penn State.

Along with these experiences, advising in the DEI PreHealth will be faced with responsibilities to encourage and guide students into paid summer programs at Penn State and around the commonwealth in order to supplement their learning in the classroom. The NIH also supports this citing that experiences like these help retention of students and ensure a competitive applicant despite faults that may occur academically due to prior education.

Implementation

In the most basic sense, the establishment of the DEI office in PreHealth advising requires hiring of new faculty, allocation of new space, and allocation of new funding. Ideal faculty candidates may be those who are already familiar with advising, education, and / or the Penn State PreHealth professions experience. and as such could be redirected from the DEI office of The Eberly College of Science, College of Health and Human Development, or within the Penn State Hershey Medical School. Regardless of whether the faculty search is internal or external, the use of equitable hiring practice (such as use of nondiscrimination statements and transparent policies for applicants)("Affirmative Action in Employment at the Pennsylvania State University | Penn State Policies") is of utmost importance to ensure the maximum impact of the office and should be facilitated by the Affirmative Action office. Furthermore, modeling of implementation of the successful practices seen within Atlanticare and the Robert Wood Johnson Foundation hiring practices should be taken into account when finding the right candidate.

Space and funding pose the largest challenges, especially with the Eberly College of Science strategic plan citing, "lowering budget amounts"(Pennsylvania State University). However, the online infrastructure established in the light of the COVID-19 pandemic may prove useful in establishing the groundwork reach of the office, and may be used as a temporary avenue while the PreHealth advising office is restructured to accommodate the additional faculty of this new DEI office. For example, advising meetings may be conducted in a hybrid format: some online meetings while they share

the space with current PreHealth advising for in-person meetings. In terms of mentorship, MAPS and other mentoring programs established by the office may be allowed to use the new Science Engagement space found within the Ritenour building, spaces within the new BBH building, or a reservation within the up and coming collaborative space in the Boucke Building ("ArcGIS Web Application")

Funding resources may come from the support of generous donors, and efforts by the Office of Development may need to be implemented in order to ensure the establishment of this office. In June 2020, a scholarship matching program was used by Development and Alumni Relations to incentivize donors to donate for the sake of improving Diversity, Equity, and Inclusion ("Penn State Offers Match for Scholarships Supporting Diversity I Penn State University"). Mobilizing initiatives for Development and Alumni Relations within the three respective colleges to push for the establishment of this office is an essential step in ensuring its future.

In regards to the specific initiatives by which the office was established for, the outreach programs may use existing infrastructure that is concurrently utilized by the Eberly College of Science, College of Health and Human Development, and College of Nursing. The College of Science's described success of the outreach to different high schools through the Community Recruitment Centers in Philadelphia, Pittsburgh, and Harrisburg may be used as a basis to open up further avenues for further recruitment in not only the medicine and health professions, but within the Eberly College of Science as whole (Pennsylvania State University). Thus, this is a mutually beneficial initiative that may attract students to both pathways. The faculty of the newly-established DEI office may

use their experience in the health professions in order to best work with this initiative. Expansion of this program should be data-driven, using student survey responses and focus groups in order to make it more efficient, similar to the implementation methods used in the case studies and recommended by the NIH. Similar initiatives may be used within the College of Health and Human Development and the College of Nursing, and further studies of implementation are required.

Although PreHealth may seem like Further implementation practices require closer collaboration with the DEI offices at Penn State Medical School, Eberly College of Science, College of Health and Human Development, and College of Nursing. However, building upon already established initiatives may entail expanding the public health ambassadors, SMART, the summer programs at Penn State, the HCEP program, and the PMM program.

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