STRATEGIES TO REDUCE BARRIERS FOR UNDERSERVED STUDENTS IN HEALTH PROFESSIONS PROGRAMS

ADDRESSING RURAL AND URBAN HEALTH PROFESSIONAL SHORTAGES BY BUILDING A DIVERSE HEALTHCARE WORKFORCE

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Section 1. About the Arizona Health Improvement Plan

The Arizona Health Improvement Plan (AzHIP) is a collaborative process that identifies priorities to improve health and wellness. Led by the Arizona Department of Health Services (ADHS), the AzHIP is informed by data, input from communities, and partners across the state. The health improvement planning process is a core activity of state and local public health departments and is required to achieve public health department accreditation.

The most recent AzHIP covers a five-year period, 2021 to 2025. The priority areas for this AzHIP are listed below and each area includes multiple strategies, tactics, and indicators. The AzHIP 2021-2025 can be found here.

- ► Health Equity

- ► Health in All Policies/Social Determinants of Health

- ► Mental Well-Being

- ► Rural & Urban Underserved

The Arizona Center for Rural Health (AzCRH) is the designated State Office of Rural Health (SORH) in Arizona. Established in 1981 as the Rural Health Office, the mission of the AzCRH is to "improve the health and wellness of Arizona's rural and underserved populations. The AzCRH accomplishes its mission by supporting and coordinating statewide rural health initiatives. AzCRH leadership are active participants and members of the AzHIP Steering Committee.

In 2022, AzCRH received an interagency services agreement (ISA) from ADHS to work on the Rural and Urban Underserved AzHIP priority area, focusing on the strategy to "address health professional shortages by building a diverse healthcare workforce" and tactic A of this strategy, "develop strategies to reduce financial and other barriers for underserved students in health professions/provider education programs."

The availability, distribution, and diversity of the health care workforce are important factors to support the overall health and well-being in the state. Arizona has shortages of primary care, behavioral health, and dental health care professionals across the state.[1–3] Rural and certain underserved urban communities face disproportionate health workforce shortages that contribute to limited access to health care. Two of the key health care workforce challenges Arizona faces are 1) maldistribution, the over-concentration of health care providers in urban compared to rural areas, and 2) the mismatch between the socio-economic, racial, ethnic, linguistic, and cultural diversity of the state population as compared to healthcare providers.

The Rural and Underserved strategy to address health professional shortages by building a diverse healthcare workforce specifically focuses on these two key challenges in tactic A, "develop strategies to reduce financial and other barriers for underserved students in health professions/provider education programs."

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Section 2. Approach

Our approach to the AzHIP Priority Area, "rural and underserved health," Action Area "address health professional shortages by building a diverse healthcare workforce" and tactic A "develop strategies to reduce financial and other barriers for underserved students in health professions/provider education program" included three core activities and a fourth follow-up activity.

1) Identify successful components of health professional education pathway and training programs that aim to serve underserved students and/or expose students to education experiences in rural and underserved areas,

2) conduct key informant interviews with a) program directors of pathway and rural and underserved education experience programs, and b) health professions college student services professionals to better understand the financial and other barriers experienced by underserved students in the health professional education programs,

3) provide direct support to students and programs at the University of Arizona (UA) and Rural Health Professions Program (RHPP) students at any of the three public Universities, and,

4) present the findings to the ADHS and AzHIP partners for further consideration and action.

These activities focus on pathway programs because the goals of these programs aim to address two of the health workforce challenges identified in the prior section: the concentration of healthcare providers and health professions training programs in urban areas, and the cultural, linguistic, socio-economic and other gaps between the population and providers in the state. Pathway programs include both programs that aim to address health workforce shortages by providing students with training experiences in rural and underserved communities to increase the likelihood that students will work and practice in those areas, and programs that aim to improve the diversity of the health workforce by directly supporting underrepresented students from these communities to enter the health professions.

This report presents the findings from the key informant interviews and integrates these findings with our formative literature review of the many types of health professional education pathway and training programs. Our approach defines underserved students as those students who are non-traditional (older, veterans, foster youth, first-generation college students), from low-income families, and/or who belong to minoritized groups that had/have unequal access to the resources needed to enter, persist, and complete undergraduate or graduate training in a health professional field. Underserved students also include students with racial or ethnic backgrounds that are underrepresented in health professional fields relative to their population.

We identified key informants who work with, manage, or lead health professional pathway programs or who work in student services roles at any of the four UA Health Sciences (UAHS) colleges (Pharmacy, Nursing, Public Health, Health Sciences, and Medicine). We also identified key informants who were part of Arizona's Area Health Education Center (AzAHEC) Program and Regional Centers or AzAHEC funded Rural Health Professions

Programs (RHPPs) at Arizona's three public universities: UA, Arizona State University (ASU), and Northern Arizona University (NAU). This sample aimed to include individuals who: work directly with students in graduate health professional education programs, manage pathway programs that improve the representation of underserved students in health professional education programs, and lead programs that expose and engage health professional students in training experiences in rural and underserved communities.

We compiled a list of 35 potential interviewees and conducted key informant interviews with 15 participants, a 42% response rate. Our interviews were designed to elicit feedback on the following questions:

► What financial and other barriers do underserved health professions students face?

► What strategies are currently available to address and reduce financial and other barriers for underserved students?

► What reforms, resources, or interventions are needed to support underserved students?

We conducted interviews via Zoom, transcribed the interviews using Zoom and Otter.ai transcriptions tools. To analyze the interview data, we used a thematic analysis informed approach and the MaxQDA qualitative analysis software. We used a deductive approach to coding to identify concepts and themes that would

assist in answering the interview questions and inform recommendations. We integrated and grounded the findings in the context of our formative literature review of successful components of existing programs.

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Section 3. What We Asked

To develop the interview questions, the AzHIP team performed a literature review of pathway programs and their activities. The aim of the review was to inventory common and successful features of health professions pathway programs. To identify the literature, we conducted keyword searches using the PubMed and EBSCOhost databases, accessed through the UA library. After two rounds of screening against our inclusion and exclusion criteria – firstly, the titles and abstracts and, secondly, the full articles – 26 articles were included for review. We then collated information on each pathway program and summarized our findings.

Common program practices can, for the most part, be placed into two categories: instructional and financial. Instructional support refers to the education and training opportunities provided to students. This instructional support is intended to support students to meet the academic requirements of the health professions program to which they are applying, strengthen their application components, and support their success in the health professions coursework. Financial support is the monetary aid programs provide to students to overcome financial barriers faced while pursuing health professions education. Table 1 lists the most common forms of instructional and financial support.

Less common forms of financial support found in the literature include tuition waivers, financial literacy education, and paid clinical, mentor, and research positions. An overview of pathway program activities and a summary of each article reviewed is provided in the report "Health Professions Pathway Program: A Literature Review."

The findings of this review were used to inform our key informant interview questions (Appendix A). The interview process comprised two parts: first, a pre-interview online survey administered through the Qualtrics survey platform and, second, the semi-structured interview via Zoom. We used the survey to gather basic program information, while the interview was to elicit key informant perspectives on program activities, challenges, and strategies to address student barriers. Both the literature review and interview findings were then used to develop the recommendations we make in this report.

Table 1. Common Pathway Program Support

Instructional Support		Financial Support	
Academic Enrichment	Science course, lecture series, or seminar	**Stipends**	
Mentorship of shadowing	Peer, faculty, or clinician	**Scholarships**	Both are used to cover housing, required travel, food, tuition and fees, textbooks, examination preparation, and professional school application fees.
Clinical or practical skill development	Clinical rotation or workshop		
School admissions preparations	Test (e.g., MCAT) course, tutoring, application preparation, or mock interview		

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Section 4. Findings

This section presents the findings of the AzHIP team's analysis of the interviews in four key themes: Financial, Administrative, Social, and Systems-Level Needs. Our key informants are directly involved in health professional education programs (e.g., the degree program) and health professional pathway programs. Pathway programs are in addition to or complementary to the degree program and have varied structures and embeddedness within the education program. Two types of pathway programs were represented by the interviewees, programs that aim to improve the inclusion of underserved and underrepresented students in health professions education programs and programs that aim to expose students to clinical and other education experiences in rural and underserved areas in Arizona with the intent of increasing the likelihood that these students will practice in a rural or underserved area.

Our interviews focused on the education and pathway programs within the University environment. The interviewees represented mostly graduate degree programs, but some are undergraduate programs (e.g., Bachelor of Nursing). While these findings are not intended to be generalizable, they may be informative to other education organizations. Our goal is that the recommendations based on these fundings can be taken up by the AzHIP network for further consideration and possible implementation.

Key Terms

University: An institution of post-secondary education that offers academic training and confers undergraduate and graduate degrees.

Health Professions Colleges: Units within the University that focus on a field or area of study (e.g., College of Nursing).

Health Professions Education Program: Offered within the health professions colleges, specific education programs that lead to an undergraduate or graduate degree and are intended to prepare students for employment, certification, licensure or continued graduate training depending on the requirements of their field. For example, the College of Nursing offers multiple levels of health professional education programs e.g., the Bachelor of Science (BSN), Master of Science (MS), Doctor of Nursing Practice (DNP), and Doctor of Philosophy in Nursing (PhD).

Pathway Program: The two health professions pathway programs discussed in this report are ones that 1) support underserved or underrepresented students apply to and matriculate in health professions education programs, and 2) expose students to clinical and other education experiences in rural and underserved areas in Arizona. Pathway programs aim to encourage underserved and underrepresented students (see definitions below) enter the health professions and f increase the likelihood they practice in a rural or underserved area.

Underserved or Underrepresented Students: Underserved students are those who are non-traditional (older, veterans, foster youth, first-generation college students), from low-income families, and/or who belong to minoritized groups that had/have unequal access to the resources needed to enter, persist, and complete undergraduate or graduate training in a health professional field. Underserved students include those with racial or ethnic backgrounds that are underrepresented in health professional fields relative to their population.

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Key Theme 1: Financial

SUMMARY

Despite existing financial aid, scholarship, and stipend opportunities, health professions students face significant financial barriers. Some pathway programs offer financial support, but barriers remain.

Health professions education programs are expensive. The financial cost (tuition, fees and costs of living) of pursuing these degrees can deter entry into and completion of education and training. Universities and other higher education institutions provide financial support to mitigate cost burdens by coordinating financial aid, providing scholarships, and connecting students to other financial assistance. In support of underserved and underrepresented health professions students, pathway programs provide financial support, including stipends, scholarship opportunities, and education on financial aid opportunities. However, health professions students face considerable financial barriers because support is limited and often fails to fully cover costs.

BARRIERS

Students in health professions education programs face numerous financial barriers. The most significant is tuition. Compared to their peers seeking non-health career degree programs, health professions students are charged greater tuition and fees. For example, in state resident undergraduate annual base tuition and fees at Arizona Board of Regents (ABOR) universities ranged from $12,051 to $13,615 in 2023-2024.[4] Current (June 2024) website information shows that the annual estimated Arizona resident tuition and fees for undergraduate UA College of Nursing education (BSN) is $19,256;[5] College of Pharmacy is $28,000;[6] Colleges of Medicine Phoenix tuition and fees are $39,678 and the College of Medicine Tucson is $39,796 per year in the first two years and $38,048/$38,640 in years three and four.[7,8]

Interviewees affirmed that the tuition and fees associated with health professions education are significant barriers to student entry into and completion of programs. One interviewee stated, "The number one challenge is not having enough money to pay for school."

Financial burdens can cause students to leave their health professions education program before completion. Speaking broadly of the financial burdens experienced by undergraduate students, one interviewee explained, "Students will say, you know, 'I can't come back because it's too expensive' or 'I can't come back, because I can't pay off my balance.' ... I think that undergraduate education is expensive and it's getting more so, and families are really struggling with that."

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In addition to the direct tuition costs, interviewees identified financial challenges experienced by underrepresented students in the context of the increased cost of living, particularly rising housing costs. Students must secure financial assistance to pay for food, housing, energy, transportation and other costs. They typically must consider covering these costs during the academic year and through the summer. One interviewee stated, "I see students having issues with housing. And, actually, one of the students that didn't finish the program this year – and she was like three weeks away from finishing the program – became homeless. And then after three weeks, she finally found a place. But, that is an issue every year."

Other health professional education costs pose unique burdens to underrepresented that are often not covered by financial aid or scholarships, an interviewee stated, "What folks do not understand is that when you get into medical school, it is very expensive and a lot of out-of-pocket expenses financial aid and scholarship [do] not cover." These uncovered expenses include admissions examination fees (e.g., MCAT), preparatory resources, application fees, Step Exams (for medical school), books, business attire and travel for interviews, and professional conferences.

Financial aid is often tied to the academic calendar, thus unavailable to students until the official start of their school year and may not cover summer periods or breaks. These uncovered periods can present hardship to underrepresented students, as one interviewee described:

"Right now, we end our program in May, and then they don't matriculate to the…program until July. So…there's a solid about six-week period where financial aid it is not available, and that is one of my top priorities right now to fix that because it's a big hardship for a lot of pathway students who often are now relying upon that to pay rent in downtown, or they're just struggling to make it period. So that's like a must-fix-this-now kind of situation."

While scholarships offer critical support to students, they have inefficiencies and limitations. For example, one interviewee stated, "A lot of times the money can be tied to really specific criteria where, if no one fits it, it can't be given to anybody." Another interviewee described how scholarships create challenges for students. One noted, "a lot of scholarships don't pay for cost of living, they only pay tuition. So that becomes one of the challenges." Some scholarships require that students maintain a certain GPA or pursue a specific type of specialty training to continue to receive financial assistance or face fiscal penalties.
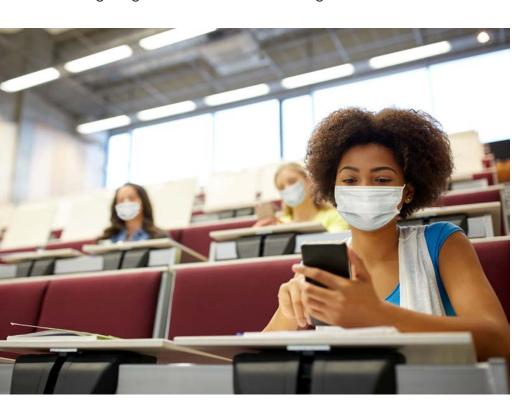
Pathway programs expose students to clinical and other education experiences in Arizona's rural and underserved areas to increase the likelihood that the students will practice in these areas. Stipends and other support can help cover the costs of transportation, housing, and other costs. Several interviewees noted that students may still shoulder some of the costs. For example, as one interviewee described, "[They] have to travel to the sites, many times you will not be reimbursed during clinical rotations." This requirement to "front" the costs and wait for reimbursement may present a greater barrier to participation for underrepresented students who are socio-economically disadvantaged.

Arizona's cost of living increased, affecting housing, food, transportation, and other costs. The health professions programs and their students feel the effects of rising costs while state funding

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remains the same or decreases. One interviewee noted, "One of the barriers that students have to go on these clinical internships is housing – like it's expensive to find housing." Pathway programs adjust their budgets to cover housing which then impacts the availability of financial support to students for other community-based training costs. Another interviewee noted the need to increase stipends to support their students during community-based rotations,

> "Each year, I advocate to increase the stipends that I'm able to offer that more closely approximates the cost. It doesn't come anywhere near... I'm able to offer some support, but it's to offset, because none of this comes close to mitigating the overall cost that our grad students have."

SUPPORTS

Pathway programs often provide and connect students to financial support to address these barriers. Our literature review found that the most common forms of support are stipends and scholarships. Although less common, some pathway programs provide students financial literacy education and paid clinical training and research positions. When describing the financial support provided by Arizona's universities and health professions pathway programs, interviewees reported an array of available support.

Stipends are often used to cover the cost of living for students who participate in community-based clinical training placements or campus- and community-based summer programs. Several interviewees mentioned the benefit of scholarships, most of which aim to support students from communities underrepresented in the health professions (e.g., Navajo Nation Future Physicians Scholarship Fund) or those pursuing in-demand professions with the intention to meet Arizona's health workforce needs (e.g., UA's Primary Care Physician Scholarship Program and Graduate Access Fellowship).

Interviewees reported other forms of financial support provided to students, including tuition and fee waivers, exam reimbursements, conference travel support, and financial aid and loan repayment education. Pathways programs are limited in the scope and level of financial support they can provide. See the Systems Level Needs section.

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Key Theme 2: Administrative

SUMMARY

Students must navigate multiple administrative and program eligibility requirements to successfully enroll in health professions education programs. Pathway programs offer multiple levels of support to underserved and underrepresented students to inform, educate, and help them navigate and fulfill these requirements.

Health professions education programs have a range of admission requirements, including grade point average (GPA), prerequisite courses, and test scores. Application requirements can include reference letters, volunteer experience, research experience and others. First-generation college students and other underrepresented students may have fewer readily accessible resources to assist them in understanding and navigating these requirements. Some pathway programs integrate admission criteria that mirror these requirements to support students to meet those standards when they apply to health professions education programs. Some pathway programs build awareness, interest, engagement and practical information and skills in pursuing health professions careers. These programs tend to recruit students more inclusively, often without academic criteria for program participation. Much of their programming is instructional and experiential (e.g., exposure to clinical shadowing, research and field experiences), to enhance the competitiveness and success of underserved students to be accepted into and complete a health professions education program.

BARRIERS

Health profession education administrative barriers include the rules, requirements, guidelines, processes, and practices implemented by the University or health professions program that govern student eligibility, admission, enrollment and graduation. These may be unduly burdensome, delay progress or impede completion of education and training. Obstacles can include highly competitive application, admission, matriculation and graduation processes, and limited access to academic and career advising, support and placement services. These barriers may contribute to delay or abandonment of plans to enter or complete a health professions program.

The competitive application process to successfully matriculate into a health program, such as medical school, is a major barrier. Admission data for the UA College of Medicine in Phoenix class of 2027 shows that 181 students were offered acceptance of 5,959 applications, a 3% offer rate for the 120 spots available.[9] Knowing what it takes to be a competitive applicant, and having the resources to meet those criteria, are essential for students to successfully matriculate. As an interviewee observed:

> *"Medical school is very competitive. And so, they really have to have a mixture of, you know, service, leadership, and clubs. They have to have research, even though they say research is not important. Research is really important for medical school. They also have to have clinical shadowing hours. And then they also have to take all their classes, whether it's if they're a science major, you know, those are usually covered. But if they're (a) non science major, then they have to make sure they have all their science coursework [...]"*

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A second barrier for students is obtaining clinical, research, volunteer, and leadership experiences to be competitive applicants. For underserved or underrepresented students, achieving these while balancing family, work and school obligations may be challenging. There are underrepresented students who must work while in school, which limits their time to obtain these experiences to make them competitive. An interviewee explained; "[...] My underserved folks don't have the privilege of just being able to volunteer to run up leadership things where they're (also) making money to help support family."

Another interviewee attested to the connection between financial support and the ability to meet the academic and administrative requirements of health professions education programs. Speaking about undergraduates, this interviewee stated:

> "...but you can imagine a student who has the financial resources to be a full-time student. I don't want to say it's a luxury, but like, it's a mindset of like, 'I have all of my needs met, and I can focus on being a full-time student, I'm not juggling other things.' [...] (than) those who are working or have...to work to support whatever needs they have, too."

Similarly, an interviewee described how students who must work while they are enrolled in a health professions program are not always able to network and connect with faculty, which is important for mentorship and requesting required letters of recommendation Describing the thinking of these students the interviewee stated, "...'oh, I couldn't apply to the program because I didn't have the recommenders' ... 90% of the students need to work. So maybe they don't realize that their boss can write a letter ..."

Another interviewee described the cost barriers to study for and take the MCAT, an exam required for admission to medical school. The Association of American Medical Colleges 2024 price for the MCAT is $335 for the standard registration and $140 if one qualifies for the Fee Assistance Program Registration.[10] Furthermore, the Kaplan MCAT prep can range from $1799 to $3600.[11]

> "Barriers, that I observe is the MCAT score. The type of applicant applying to ...doesn't have the additional funding to go to an MCAT boot camp ...purchase software or purchase books. They many times are first-generation college students, or first-generation Americans or immigrants, or first in medicine."

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SUPPORTS

Pathway programs that offer support to underserved or underrepresented students to enter and persist in health professions education programs provide assistance that help students to meet administrative requirements. Some of the more targeted pathway programs (e.g., programs targeted to a specific program like the MD program) have created enrollment initiatives that include conditional admission to a future health professions program. These programs integrate the education and other components (e.g., writing personal statements, requesting letters of recommendation) students will need to be successful in meeting the health profession program requirement.

Other pathway programs support underrepresented students to learn more about health professions programs and provide academic advising and assistance based on the student's need and wishes. One interviewee expressed the importance of ensuring students are well-informed of their options based on their future plans:

> "...if the students aren't here academically, they are not here ... if they can't maintain their minimum GPA to stay here, they're gone and then there is trying to get them back. My role really is to talk about policies regarding dropping classes and GRO (Grade Replacement Opportunities), because GRO does not apply when you go to medical school. If you GRO a class, you have to list both, and many students are under the impression that getting an A the second time means they're going to use the A."

Another interviewee noted that advising students can help them find approaches that work for their schedule and obligations to ensure they can be the best students and most competitive applicants they can be.

> "To know what they're supposed to take, and when they're supposed to take it. And sometimes that's a very personalized approach because when is based on what their timeline is. So, I have lots of students who, if they work full time, maybe aren't on a two-year path. So, what does a two and a half, three, three-and-a-half-year path look like for them? So just specific advising on what to take when."

Lastly, while interviewees discussed the support for students to meet administrative requirements in terms of academic criteria, they also discussed how they supported students to meet holistic admissions processes. Holistic admissions is a way of assessing applicants "experiences, attributes, and academic metrics" to select individuals who contribute to the goals of the education program and future health profession.[12] Interviewees described assisting students in drafting personal statements, practicing for interviews, and advising them on how to highlight their experiences within a holistic admissions framework.

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Key Theme 3: Social

SUMMARY

Underrepresented students can face challenges in health profession programs including discrimination, social isolation, and insufficient social support. Pathway programs can provide these students with social and cultural support, including peer mentorship, personal advising, mental health resources, and opportunities to establish relationships to cultivate a sense of belonging.

Social support is critical for students' entrance into and retention within health professions education programs. Racially and ethnically underrepresented students can face discrimination, social isolation, and insufficient social support in the academic environment. Gaps in the social support provided to underserved students can impact students' confidence. To address these challenges, pathway programs provide students with social and cultural support, including peer mentorship, personal advising, mental health counseling, and opportunities to establish culturally congruent relationships with students, faculty, and others. While pathway programs also provide academic and administrative support, these types of social support that focus on relationships and belonging address the social-emotional domains of student success.

BARRIERS

First-Generation Students

Interviewees described the unique challenges faced by first-generation students as they navigate higher education, especially if they wish to matriculate into a health profession career or program. One interviewee described that first-generation students do not always have readily available mentorship specific to health professions education program. "They much of the times are first-generation college students, or first-generation Americans or immigrants, or first in medicine. And so, they don't have, as I said, significant role models and mentorship to get them here."

Another interviewee highlighted the pressures that first-generation students can feel and how the lack of parental or other mentorship can present a challenge.

> *"... that lack of mentorship, many times, lack of understanding the processes, the steps. As first gen, they come in and do eighteen or twenty-one units as a freshman, and then they just struggle. And their parents didn't go to college, so they don't know how to tell them to balance things. There is often quite a bit of reservation as an undergrad to admit you're struggling or ask for help. You know, one of the things we talk about... is imposter syndrome – you know, kind of feeling that you somehow you got in by luck and you don't belong."*

Racially or Ethnically Underrepresented Students

Racial or ethnically underrepresented students can experience challenges during the admission process, tied to their racial and

ethnic identity. One interviewee shared an impactful experience of an indigenous student during the admissions interview process:

> "...he felt really uncomfortable with the interviewer who was asking unethical questions in his eyes about his heritage of being a Native person and asking questions about blood quantum and pretty much mansplaining him to him, you know, what being a Native person is, even though the person was not Native. So that really turned him off"

Interviewees affiliated with Native American/Indigenous specific pathway programs also emphasized concerns regarding representation. Particularly in instances of very low representation.

> "Across the country, there might be 20 Native students that are accepted, maybe one at an institution. Then we talk about barriers and challenges, imagine having to answer all the questions when everybody's curious about your culture, you are the person they go to. Whereas when you have other populations that might have 10, or 15, in a class"

In addition, one interviewee mentioned the lack of concordant representation between students and health education program faculty and staff.

> "I think some of that lacks in the College where, while we do have higher populations with like some underserved communities, it doesn't necessarily mean that we have faculty and staff that they're always able to see themselves in and that are that they're always able to be connected with. It can be alienating to be in a public health classroom where the example is a community you are from, being taught by somebody not from that community ... So, I think, like I said, as much as I think this program attracts people from those diverse backgrounds, I think being in the program sometimes, if you're from one of those diverse backgrounds, if you're from an underserved background, you can be the example in class."

SUPPORTS

Mentorship

One of the critical supports provided by pathway programs is mentorship and peer support. Mentorship in the form of a long-standing non-parental relationships and newly established mentorship relationships from staff and faculty contribute to the academic efficacy, success, and sense of belonging for students.[13] To support the development of these relationships, pathway programs established mentorship programs to support students. One interviewee stated:

> "We also have "big sib" programs, too, where former pathway students then are matched with a "little sib" each year. So, they have that kind of immediate mentor connection. We have wellness groups here on our campus as well, where they actually are split into teams. And they just basically have a group chat to the check in with each other and they go to dinner every once in a while."

This mentorship helps students establish avenues of support and self-confidence to apply and successfully matriculate into their desired health profession. An interviewee provided the following example of the impact of mentorship and social support provided through a pathway program;

> "... a lot of times students will hear about us, but they don't necessarily believe in themselves that they're capable of it. So, they'll kind of sort of either half apply, or they'll, you know, just kind of read it just at surface level. They'll just try to spit out a personal statement, right? They're not going to go through the whole process of developing and asking for feedback and all of that. And I think, it's sort of a self-fulfilling prophecy almost of, you know, "I'm not sure I can do it, I'm not sure I have the support to do it." And so, coming alongside them and being like, "No, you do have

it." ...it's just a matter of having a mentor, having a support system. We've seen just wonderful outcomes from that."

First-generation students aiming for health profession careers face unique challenges, such as limited access to mentorship and navigating the complexities of higher education. This emphasizes the importance of the mentorship support provided by pathway programs for first-generation students, and how it contributes to their success.

Mental Health and Creating Community

Interviewees identified mental health as a pathway program resource for underrepresented students. Students from groups that are underrepresented in the health professions can face more stressors aligned with family obligations, home life, finances, work, and more. Therefore, programs make it a priority to make these additional resources known and available to students. Some programs integrate services in their programming, so students are aware of mental health and psychological counseling resources:

"...we have mental health and psychological counseling. The students all meet with them one-on-one at the beginning of the program, and then there's a few group meetings. And then after that point, it's patient-doctor confidentiality. And so, whether they utilize those services or not, is not anything we know of."

Pathway programs aim to create a sense of belonging and community for underrepresented health profession students. Community for these students helps them successfully achieve their goals and establish friendships and support systems.

"One of the things that I really attempt to foster is a sense of community. A sense of community amongst them and having them physically in one place as opposed to geographically spread out makes for a different impact. You know, traversing together class to class, and finding study time and time when they just, you know, chill and do fun things as opposed to study time..."

One interviewee discussed supporting students outside of their academics and facilitating a space for understanding themselves and others through a book club.

"We (also) offer a book club. So, it's not a formalized part of the program. But what we've noticed says that many times students are just focused so much on academics that all they read is the academic stuff. And, and we want to be able to broaden, you know, their experience. And so, we offer young adult fiction books by Native writers, and also books on ethics, and contemporary issues in books by Native physicians. And we started that up, because we noticed that many times students struggle during the multiple mini interview process. And the way we talk to students about that is that you really can't study for this particular process. It culminates in all the experiences that you've had. And it puts on display, you know, how you're able to think critically, how you're able to communicate, how you're able to problem solve. And that's why you have to have all these different experiences, to be able to address, you know, whatever scenario they give to you. And also really thinking about, you know, some of the critical, ethical issues that are happening will most likely be one of the questions. And that's why we offered the book club for students to really just think and read about what others have written about the subject, so they have some understanding."

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Key Theme 4: System-Level Needs

SUMMARY

Sufficient and stable pathway program funding to support underrepresented student success, community-based training opportunities, and sustained program leadership are necessary for continued program success.

Systems-level challenges experienced by pathway programs include supporting students facing high tuition costs, limited program funding, insufficient supply of community-based clinical training opportunities, and variable leadership commitment at the organizational or institutional level. These challenges affect pathway programs' capacity to provide support for students to be successful. Pathway programs are often financially sustained through a combination of public, private, and internal university funding sources. Program funding is a challenge, and has not kept pace with program costs, resulting in curtailed student support and constrained program growth. A limited supply of community-based clinical training sites and preceptors willing to volunteer to train students presents a challenge to pathway programs that focus on community based clinical opportunities. Committed institutional leadership who clearly communicate program goals and share a vision consistent with pathway program aims is critical to program success.

Program Funding

Program funds are used for direct student support and to maintain a program's administrative functioning (e.g., staffing and other resources needed to implement the program). Interviewees reported that most of the pathway program funds are allocated to instructional and financial student support. However, programs also require staff to plan, deliver, and evaluate the program, funding for technology, equipment and other resources needed for program management. Program staff roles focus on carrying out program activities by recruiting students, providing academic advising, and connecting students to services, and more.

Program funding can be limited in its duration, amount, and allowable uses. Given these limitations, programs may limit staffing and make decisions about the type and level of student support they provide. Pathway programs generally seek funding from numerous sources to finance their operations. Funding sources are often external, including public (e.g., federal grants and state appropriations) and private funds (e.g., foundation and personal gifts). Internal university funding is also common and typically comes from public sources. When describing their program's patchwork of funding, one interviewee said:

> *"We do receive a small portion of operating funds from the university. But, I would say the majority of our funding does come from outside donors … We receive a good portion of our budget through the Foundation too…So, we've been very fortunate."*

Public funding opportunities, namely federal and state grants, can be short-term or even single instances of support. One interviewee described the implications of the end of a grant which funded a workforce training program:

> *"Our … grant is actually expiring in May of 2024, as well, and there's not going to be a continuation of funding for*

that grant... hopefully, if we are able to secure additional money from some other funding sources, either state or federal or foundation money, then that's our goal. But otherwise, right now, we have not seen, you know, we don't have any expected other funding sources for that program."

Public funding opportunities also often require annual reapplication and are dependent on system-level state or federal policy decisions. "[Our funding] is a federal HRSA grant that we apply for every fiscal year. So, every fiscal year, you know, we always hope that it'll be maintained in that federal budget as a grant. And we reapply for it."

Many programs secure private funding to bolster or supplant their public or university-sourced funding. Private funding sources mentioned in the interviews include foundations, financial endowments, and one-time or recurrent personal gifts. A few programs discussed by interviewees, though, have also secured internal institutional funding from the universities which house them. While external funding is often temporary, internal funding may offer more stability.

Many programs with stable funding still experience funding challenges. Lean operational budgets result in limited student support and can affect staffing capacity. In budgeting for their program, one interviewee described that they have had to weigh student enrollment against funding for housing assistance for their summer program that brings underrepresented students to campus to increase their interest and awareness of health professional education programs.

"To have the housing line, we needed to decrease the number of students, because of the stipends. So, it's like, do we get more students, or do we get less students but we offer housing? Okay, so we needed to look for cuts in other areas."

To increase enrollment, they needed to cut housing support for students, thereby limiting which students would be able to participate in the program, to only those that had or could fund support for local housing.

Other interviewees noted that student recruitment is challenging when staffing capacity is stretched too thin. While at national conferences, one interviewee noted, "Usually I am the only one tabling or exhibiting for the University of Arizona Health Sciences Center, and, although the overall applicant pool... is large, I think if we're trying to recruit diverse students from underserved populations, that's where we lag behind."

Community Based Clinical Training Opportunities

Community based clinical training is a required component of the health professions education pathway for nurses, physicians, pharmacists and other health professionals. Professional education programs partner with healthcare organization based clinical sites which pair students with clinicians who train them. Some pathway programs aim to increase the opportunities for students have clinical training opportunities in rural and underserved areas to improve the likelihood they will work in these communities after graduation. The clinicians that train students in community settings are called preceptors and the clinical sites and preceptors are critical resources for pathway programs.

Numerous interviewees report challenges in securing clinical

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training placements for their students. One challenge is simply the smaller number of rural facilities with clinical training opportunities needed by students to fulfill program requirements. "We've always had a challenge with rural hospitals; there's just a finite number of rural hospitals. On top of that, there's a finite number of pharmacists who are working in hospital settings in Arizona." For community sites and preceptors who work with the public universities, their clinical training work with students is voluntary and must fit in with their regular clinical duties. Sites and preceptors may see the importance of and be interested in providing clinical training education to students, but face patient demand, time and resource constraints within these health care settings. One interviewee who helped conduct a 2022 workforce survey, described how nurse practitioners feel about providing uncompensated clinical training:

> "The number one thing on the feedback is not that [nurse practitioners] don't want to have a student. It's that, clinically, it's almost impossible for them to have a student. And the number one report was that the office may be supportive of students, but at the same time, their clinical day was not set up for a student. So, they're trying to meet certain expectations of their clinic … They do not feel like they have time to be able to precept a student is what it comes down to."

Arizona's Preceptor Grant Program was mentioned as a resource in maintaining the state's pool of clinical preceptors, wherein clinicians who provide clinical training to students are eligible for a $1,000 grant per year. Also, one interviewee suggested that health professions education programs should further support clinical sites through more intensive partnerships:

> "That partnership with these community sites to see what their needs are, what specialties, and preceptor development and help to support the retention of their preceptors, to develop that workforce, and help mitigate some of our health provider shortages that we have."

Given the shortages of clinical sites and preceptors experienced by pathway programs, programs may compete to secure training opportunities. An interviewee described how siloed inter-institutional agreements between specific education institutions and healthcare organizations impede their programs' ability to establish relationships with some potential clinical training sites:

> "I've mentioned a number of times the jockeying for resources. We're always kind of wrestling with, 'Oh, well, that's Mayo's hospital. That's Creighton's hospital. We can't touch those resources.' And there's people at those hospitals that want to work with pathways and all that but, because of red tape, they're not permitted to."

Interviewees cited another challenge to supporting students in community-based clinical training opportunities, mitigating the financial costs students incur from clinical training opportunities that require travel and short-term stays in rural or underserved communities distant from the University. As discussed in Key Theme 1, students often travel to clinical placements for which they require short-term accommodation. The pathway programs attempt to cover these travel and accommodation costs. However, a few interviewees reported their stipend support is only enough to offset some of these costs, leaving the remainder for students to cover. As one interviewee described "the cost of travel and housing for students is just astronomical. The pandemic really increased the need for a housing budget to pay for students."

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Programs may ask students to front the costs on a reimbursement basis, thus shifting the financial burden to the student. The reimbursement process can be lengthy, as one interviewee described,

> "I mean just the bureaucracy of working for a government institution. I think we all understand that. So, there's a series of paperwork that the student has to fill out. I have to submit a service ticket to the service team who has to process everything. So, the time is hard like to get it done. On the first start date of the clinical experience, I put in all this paperwork, and it takes about ten weeks for the student to get the stipend. So, it's not like they are front loaded with the stipend like at first day.... It's on the back end. So, I think timing and all of the paperwork with it is challenging."

Leadership

Interviewees discussed how leadership's communication and vision play a significant role in pathway program success. In this context, leadership refers to deans and directors of university colleges and departments. Transitions in leadership may affect pathway program institutional support and stability. Regarding a university leader's perception of pathway programs, one interviewee said, "Gosh, how do we pitch this program to the new dean and help them know that this is not a backdoor entrance for students?"

One interviewee reported lack of transparency about funding and support for their office which is tasked with recruiting and supporting students into a health professions program, stating,

> "we're held accountable [for] not meeting goals that were not communicated to us..." They also expressed concern about transparency around funding and support for

entering students, "...there's not ... the conversation [about] resources for if we reach X ... number [of students], what happens at an advising level? Or like if we get that many students in, is there enough faculty to actually support them?"

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Section 5. Recommendations

Arizona faces healthcare workforce challenges including the maldistribution, the over-concentration of healthcare providers in urban compared to rural areas, and the mismatch between the socio-economic, racial, ethnic, linguistic, and cultural diversity of the state population compared to practicing healthcare providers.

The following recommendations are intended to advance the AzHIP network collaboration on the Rural and Urban Underserved area priority strategy to "address health professional shortages by building a diverse healthcare workforce." These recommendations are informed by the key informant interviews and the literature review which identified what is working well, should be built on, and can be strengthened "to reduce financial and other barriers for underserved students in health professions/provider education programs." They are also informed by the AzCRH-AzHIP team's professional experience.

Challenges exist within complex systems; we chose the socio-ecological model (SEM) to frame our recommendations. SEM conceptualizes personal behavior as a product of reciprocal interactions between an individual and their physical, social, and political environment.[14–16] SEM provides a framework to think about the environments that can influence the individual experiences and decisions of underserved students in health professions education and training programs. These recommendations are aligned within the SEM's institutional, community, and public policy levels.

Each recommendation is accompanied by a suggested stakeholder who is well positioned to act. We encourage ADHS and the AzHIP Steering Committee to consider which stakeholders are best positioned to implement relevant recommendations. Health professions education program costs are a major financial barrier to addressing Arizona's health workforce shortages and building a diverse workforce reflective of Arizona's rich and diverse populations and communities. Addressing tuition and other health professions education costs will likely require legislative action in the institutional, local, state, and federal policy arenas.

INSTITUTIONAL LEVEL

▶ **Strengthen Internal University Funding for Health Professions Pathway Programs**

Who should act: ABOR; University and College leadership

Arizona's public universities should explore ways with public and private partners to comprehensively and consistently fund their health professions pathway programs. Pathway programs offer essential support to students in health professions programs and are key to addressing Arizona's unmet and growing health workforce needs as the state's population grows. These programs should be supported and strengthened. Currently, many health professions pathway programs depend on external funding subject to short-term grant cycles. These grants are subject to changes in funding or re-prioritization at the state or federal levels. Because the training pathways are long and costly they require sustained core funding that increases as the demand and population grows. Programs can weave in state, federal, grant, private foundation and other funding to better meet the needs of their students and the population that will depend on their services.

The mission and value statements Arizona's three public universities governed by ABOR (UA, ASU, NAU) commit the institutions to meeting the needs of the state. Moreover, these universities are state land trust beneficiaries; UA is a land-grant institution. Arizona's public universities have special responsibility to serve its diverse populations, including those historically underrepresented in the health professions, the Hispanic/Latino, Native American students from Arizona's tribal nations, African American, rural and others. UA has a Native Scholars Grant program to support undergraduate students. This approach should be extended to the health professions education programs both undergraduate and graduate programs.

► Eliminate Gaps in Financial Aid Support

Who should act: University administration; Pathway program funders; Financial Aid administration

Education programs should ensure that health professions students who depend on financial assistance including the costs of living do not experience critical gaps in support due to financial aid disbursement schedules. Program stakeholders should investigate strategies to close these gaps, particularly summer periods between academic years. We encourage pathway programs to share best practices and successful strategies with other programs. One strategy may be to extend academic enrollment to year-round to maintain continuous aid disbursements.

► Transition Financial Reimbursement Structure to Up-Front Payments

Who should act: Pathway programs; College leadership

Some pathway programs that support students to participate in community-based clinical training provide financial support in the form of reimbursements. A reimbursement structure requires students to pay for expenses up-front. They often must wait weeks or months to receive reimbursements, which presents a barrier to participation. Programs should investigate strategies to diminish or eliminate the reimbursement process. Strategies could include pre-loaded debit cards or up-front stipends. This approach may not be feasible for some programs. In this case, administrators should share successful practices in mitigating cost burdens placed on students and investigate ways to efficiently process reimbursements.

► Review Funding Formulas

Who should act: Pathway programs; College leadership; Arizona Area Health Education Center

Pathway programs that support community-based training or that bring students to campus for short-term programs should be able to fully support students' travel and housing costs. If funding has not kept pace with increased housing and other costs, then students must subsidize their participation, and this represents a barrier to underserved students. Pathway program funders should work with their funded programs to better understand the actual costs of supporting students. Pathway programs should consider that the consequences of setting higher student participation targets without a parallel increase in funding to support housing and other costs is that the program potentially cannot support the students who may most benefit from the program.

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► **Cultivate a Sense of Belonging**

Who should act: University and College leadership; Offices of Diversity and Inclusion; Pathway programs, State of Arizona and Federal funding entities.

Pathway programs and health professions education programs should institute culturally congruent social opportunities for underrepresented students. Social isolation can affect academic confidence, while a well-defined sense of belonging facilitates academic success. We encourage pathway programs to share successful strategies and activities with other programs.

► **Review Current Holistic Admission Practices**

Who should act: College leadership

Health professions education programs should review their admissions processes alignment with the holistic review approach. Traditional metrics such as GPAs and entrance exam scores, must be balanced with admission criteria that consider other factors such as students' personal statements, letters of recommendation, lived experiences, and community engagement. Selection criteria should be consistent with the mission of the education institution, the needs of the Arizona communities and the health professions workforce.

COMMUNITY LEVEL

► **Create a Health Professions Training Network**

Who should act: University, College leadership; Community Colleges; ADHS; Healthcare organizations; Governor's Office, State and Federal Policymakers.

Collaboration and coordination of health professions education, community-based training, and job placement can help address Arizona's health professions workforce shortages. Community colleges, universities, AHECs, and health care facilities should partner to assess workforce needs, coordinate strategy, and assure sufficient budgetary appropriations and distribution of resources. Clinical training opportunities could be coordinated through a consortium model of partnering health professions programs and clinical training sites. This network could share best practices and build on existing models from other states and nations. Silos and competition between entities, particularly regarding clinical training opportunities, should be reduced, and fiscal incentives aligned with desired collaboration and outcomes.

► **Improve Support for Community Training Sites and Preceptors**

Who should act: University, College leadership; Governor's Office; Arizona Legislature, State and Federal Agencies

Community based, experiential clinical training are core components of pathway and health professions education and programs. There are limited sites and preceptors (the clinical professionals that teach students in community settings) available for both health professions training programs and pathway programs. Institutional, local, state and federal policymakers should identify approaches to support clinical sites and preceptors. For example, the legislature could consider extending and expanding the existing Preceptor Grant Fund and reducing or eliminating the administrative barriers that clinical preceptors face in applying for the grants and incentives. Policymakers could look to other state approaches to addressing unmet health needs and health workforce barriers to practicing in underserved areas such as

a preceptor tax credit policy for rural and health professional shortage areas. Clinical training sites should assess and implement organizational strategies that support clinical preceptors, namely those which provide preceptors with greater time to perform instructional and administrative duties associated with preceptorship.

► **Support Collaborations Across the Education Pathway**

Who should act: University, College leadership; Community Colleges; K-12 schools

Health professions workforce stakeholders should help sustain and strengthen relationships between education institutions and underserved communities. The health professions pathway starts in K-12 education and extends through terminal degree program completion. Health professions pathway programs should be established, supported, and expanded to recruit and encourage underserved and underrepresented students to pursue health careers.

PUBLIC POLICY LEVEL

► **Consider Tuition Free Health Professions Education for Native American Students from Arizona Tribal Nation and Hispanic/Latino In-State Residents**

Who should act: University, College leadership; Governor's Office; Arizona Legislature, State and Federal Policymakers

Arizona needs more Native American and Hispanic/Latino health care providers. Even with existing financial support, the cost of health professions training present significant barriers to entering health professional training programs. Institutional, local, state and federal policymakers and universities should explore policy options to provide tuition-free health professions education to Native American and Hispanic/Latino students. There are existing state models and best practices that could be replicated in Arizona.

► **Identify Funding Sources to Directly Support Underserved Health Professions Students**

Who should act: AzHIP Network; ADHS

Underserved students experience significant financial and other barriers to enrolling in and completing health professions education programs. Some of these barriers are due to the restrictions of scholarships or financial aid. Others are due to reimbursement processes and insufficient or inconsistent funding. Diversifying fiscal support through local, state, federal, private foundation, and other could help reduce or eliminate these barriers.

► **Consider Clinical Training Standards for Non-profit Health Care Organizations in Arizona**

Who should act: Governor's Office; Arizona Legislature

Community based clinical training is a core component of pathway programs and health professional education programs. There are limited sites and preceptors (the clinical professionals that teach students in community settings) available for both health professions training programs and pathway programs. The Governor's Office and the Arizona legislature should appoint and convene groups to assess the current participation of Arizona's non-profit health organizations in health professions training and education. The groups could develop minimum standards, incentives and recommendations for participating in health professional education and ensure the robust participation of Arizona's health care community in health professional education.

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Appendix A. Key Informant Interview Questions

PROGRAM OVERVIEW

What is the mission of [program name]?

How long has the [program name] existed at [institution name]?

For how long do students participate in the program? (Note to interviewer: adjust for multiple programs e.g., a program could offer multiple initiative across a semester)

How is the [program name] funded?

   [Probe: Do you receive public, private or other funding?]

Have there been any major changes in leadership, funding, or operations since the program's founding?

   [Probe: How did COVID affect program delivery?]

POPULATION SERVED

Who is eligible for the program?

   [Probe: What professions does the program target?]

   [Probe: How does the program define underserved or underrepresented?]

   [Probe: How do students report their underserved or underrepresented status?]

How do you recruit students to participate in the program?

   [Probe: Are there any recruitment strategies which you find most effective?]

You indicated on the survey that students must provide […] when applying to the program. Can you tell us more about the application process?

   [Probe: Are there any steps in the application process that you think present potential barriers to students?]

PROGRAM SERVICES AND SUPPORT

You said that your program offers […]. Can you further describe what these support services entail?

You indicated that your program offers mentorship and/or shadowing. Can you explain how it's provided?

In the survey, you said that your program offers clinical experience/internships/research. Can you further describe these opportunities?

   [Probe: if clinical rotations are provided, are they community-based?]

It looks like your program offers school admissions services. Can you further describe these services?

You also indicated that there are some potential education and practical services which your program does not include. Given that any one program is unable to do everything, how do you prioritize which support services are provided?

[Probe: According to the survey, [...] are not features of your program. Have you considered including any of them? And, if so, what barriers prevent you from doing so?]

In the survey, you said that your program offers financial support and other social support. Can you further describe these services?

[Probe: According to the survey [...] do not appear to be features of the program. Have you considered providing any of these services? And, if so, what is preventing the program from doing so?]

PROGRAM OUTCOMES

What does program success look like?

How do you measure program effectiveness?

PROGRAM IMPACT

In the survey, you indicated that your program typically serves about [...] students per year. Do you have plans to change your program's capacity?

[Probe: What are limiting factors to your program's growth?]

What changes need to happen in education and training to best build a diverse healthcare workforce in Arizona?

[Probe: What other stakeholders need to be involved and engaged in this effort?]

Do you have anything else you would like to share about the program or your experiences managing/leading it?

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