

CASE STUDIES

Effectiveness of a National Virtual Premedical Conference to Support Underrepresented Minorities with a Focus on Hispanic/Latinx Attendees

Abby L. Chen, BS¹, Lisandra Veliz Dominguez, BS¹, Felipe D. Perez, MD^{2,3}, Mark Gutierrez, MA², Reena Thomas, MD, PhD^{2,4}

¹ Stanford University School of Medicine, ² Office of Diversity in Medical Education, Stanford University School of Medicine, ³ Department of Anesthesiology, Stanford University School of Medicine, ⁴ Department of Neurology, Stanford University School of Medicine

Keywords: premedical education, diversity, minority populations, national conference, mentorship

<https://doi.org/10.59867/001c.145186>

Journal of the National Hispanic Medical Association

Vol. 3, Issue 2, 2025

ABSTRACT

Background

Ensuring a physician workforce that reflects the growing diversity of the United States has important public health implications. Despite increased recruitment efforts, the proportion of medical students and faculty from minority backgrounds, including Hispanic and Latinx, remains low.

Objective

To evaluate the effectiveness of a virtual national pre-medical conference in reaching a diverse population and increasing attendees' interest, confidence, and knowledge in a career in medicine with a focus on Hispanic/Latinx attendees.

Methods

A pre-medical conference was held in 2022, aimed at combating barriers faced by underrepresented minorities applying to medical school. Quantitative feedback was collected through an online survey distributed through email to registrants pre-conference and through a QR code and email to attendees post-conference.

Results

A total of 1,040 students across the nation registered for the conference. 648 (62.3%) of registered students completed the pre-conference survey and 211 attendees completed the post-conference survey. Most registered students self-identified as disadvantaged and female. Registrants were overrepresented in Black and Hispanic groups compared to 2021-2022 medical school applicants. 37% of registrants identified as being of Hispanic or Latinx origin. The conference increased attendees' interest, confidence, and knowledge in a career

^a Correspondence should be addressed to Abby L. Chen, Stanford University School of Medicine, 1265 Welch Road Suite 100, Stanford, CA 94305-5411; email: achen95@stanford.edu

^b The authors have informed the Journal that both Abby L. Chen and Lisandra Veliz Dominguez completed the intellectual and other work typical associated with the first author.

in medicine. Attendees self-identifying as Hispanic or Latinx had similar results to the whole group of attendees but reported lower confidence in their own ability to complete premedical requirements, fewer advisors and peers to provide support, and higher interest in serving medically underserved areas and becoming primary care physicians.

Conclusions

Pre-medical conferences can combat significant barriers felt by minority populations applying to medical school. Providing a virtual space for mentorship and community through conferences could help diversify the physician workforce. The SUMMA conference demonstrates that creating a virtual community, sharing solutions to barriers, and providing mentorship and education to underrepresented groups, such as Hispanic and Latinx premedical students, can increase a sense of belonging in medicine and increase diversity in medical education.

Introduction

The United States Census Bureau projects that the country will become a majority-minority nation for the first time in 2043, with the percentage of Americans who identify as non-Hispanic white dropping to 44.3% by 2060. Americans who identify as two or more races will be the fastest growing racial and ethnic group, followed by Asians and Hispanics.¹ Yet, despite rapidly growing Latinx populations, studies show that the shortage of Latinx physicians has only worsened.² As the country becomes more diverse, ensuring a physician workforce that reflects the diversity of the population will have important public health implications.

The Association of American Medical Colleges (AAMC) defines “underrepresented in medicine” as “racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population.”³ Studies show that physicians from underrepresented minorities are more likely to become primary care providers and serve minority and socioeconomically disadvantaged populations, often coming from these communities themselves.⁴⁻⁶ For example, Latinx physicians are far more likely to practice in largely Latinx areas than their non-Hispanic white counterparts.^{7,8} Additionally, physician-patient dyads that are racially concordant are more likely to report higher patient satisfaction,⁹ receive preventive care,⁹ and communicate effectively¹⁰ than racially discordant dyads. A physician’s implicit bias has also been shown to contribute to racial health disparities through decreased referral of Black patients to thrombolysis treatment and Black female patients for cardiac catheterization.¹¹ Latinx and African American patients are also more likely to report receiving care from Latinx and African American physicians respectively,¹² suggesting that factors like language, perceived shared experiences, and race/ethnicity play a role in

how minority patients select physicians.¹³ Therefore, recruiting and retaining medical students from minority backgrounds is key to the future health of minority populations.

Despite the need for diverse medical providers, most medical schools continue to fall short of matriculating students reflective of increasing diversity in the United States.¹⁴ In 2024, only 8.8% of matriculated students identified as Black, a number that represented a -11.6% change from 2023 to 2024.¹⁵ Similarly, the number of American Indian/Alaska Native, Hispanic/Latinx, and Native Hawaiian students showed similar decreases of -22.1%, -10.8%, and -4.3% respectively.¹⁵ The number of these minority medical students remains underrepresented with respect to the general population. When it comes to medical school faculty, these numbers are even lower, with only 3.9% identifying as Black or African American; 3.6% identifying as having Hispanic, Latinx, or Spanish origin; and 0.2% identifying as Alaskan Native/American Indian in 2024.¹⁶ As faculty members often then go on to comprise medical school admission committees, this lack of diversity at the faculty level could further perpetuate unconscious racial and ethnic bias in the admissions process. Even further, the low levels of representation in academic medicine results in the absence of role models and experiences that could enrich the medical school educational experience.⁶ With increasing diversity in the United States, more work must be done to ensure a similarly diverse physician workforce to minimize health disparities.

Notably, the lack of ethnic minority medical students and physicians is not due to lack of interest. In 2024, black applicants to medical school rose by 2.8% and Hispanic/Latinx applicants rose by 2.2% compared to 2023.¹⁵ Still, members of underrepresented minorities encounter significant barriers entering the medical profession, including differences in parental education level and resources, education costs, poor academic preparation, lack of exposure to health care and knowledge on the path to becoming a medical professional, poor advising, lack of training for standardized examinations, access to extracurricular opportunities valued in the medical school application process, and other structural inequities and system-level biases.^{6, 14,17,18} For those of Latinx origin, these barriers significantly contributed to disparities in applying to medical school, leading to 39% lower odds of application.¹⁸ Despite a number of initiatives throughout the country that have attempted to address some of these barriers, quantitative data that describes the effectiveness of these initiatives are scarce in the literature.

We organized a national virtual premedical conference aimed at providing support, knowledge, and community to minority premedical students. We aimed to evaluate the effectiveness of a virtual national pre-medical conference in reaching a diverse population and increasing attendees' interest, confidence, and knowledge in a career in medicine with a focus on Hispanic/Latinx attendees.

Methods

Overview

The Stanford University Minority Medical Alliance (SUMMA) is a coalition of minority medical students, including representatives from Asian Pacific American Medical Student Association (APAMSA), First-Generation and/or Low-income at Stanford Medical School (FLI@SMS), Latinx-Medical Student Association (LMSA), LGBTQ-Meds, Medical Students with Disability and Chronic Illness (MSDCI), Middle Eastern and North African Students in Medicine (MENAMeds), Stanford American Indigenous Medical Students (SAIMS), Stanford Muslim Medical Association (SMMA), and Student National Medical Association (SNMA). The goal of SUMMA is to increase diversity in the health professions to better care for underserved communities.

The SUMMA Conference, one of the oldest on the West Coast, is held annually. Prior to the COVID-19 pandemic, attendees traveled to the Stanford University main campus for the in-person conference, with most attendees coming from within Northern California. Starting in 2021, the ongoing pandemic necessitated a switch to a virtual platform, Pathable. Thus, the authors, representing student leaders from SUMMA and faculty members from the Office of Diversity in Medical Education (ODME), organized the 31st Annual Stanford University Minority Medical Alliance (SUMMA) Conference for premedical students nationwide, held on Feb. 5, 2022, on Pathable, which allowed attendees from all over the country to attend. This was the second year the SUMMA conference was conducted virtually, but the first that pre- and post-conference surveys were collected and analyzed to measure the effectiveness of the conference.

Conference Details

The conference was promoted to premedical students across the United States using a variety of methods. First, emails were sent to more than 30,000 students who had shown interest in pursuing a career in health care from a list provided by the AAMC, a sponsor of our conference. The AAMC assists in promoting the conference and the use of the list is restricted to use for conference promotion only. Emails included announcements about save the date, registration opening and closing, early bird deadlines, and agenda releases. The emails also included a link for interested learners to register and find out more about the event. In addition, paid digital advertisements were posted on the National Association of Advisors for the Health Professions (NAAHP) website, and the AAMC sent emails cross-promoting the event. Finally, the event was promoted on social media, including Twitter, Instagram, and Facebook. The fee to attend the conference was \$20, though many students were able to work with their home institutions to be reimbursed for this fee.

The theme of the 2022 SUMMA conference was “Belonging: The Future of Medicine Needs You,” since creating a culture in medicine in which members of underrepresented communities feel like they truly belong is key to committing to diverse representation in the physician workforce and combatting the health disparities highlighted by the COVID-19 pandemic.¹⁹ The goal of the conference was to create a virtual community to help address barriers to medical school for underrepresented minorities with the goal of increasing diversity in the health professions.

With this objective in mind, the conference began with a morning plenary session, highlighted by a keynote speaker and members of the community sharing their respective triumphs and obstacles during their journeys to medicine as members of underrepresented minorities. Following the morning plenary, there were two sessions of one-hour long workshops on a variety of topics (**List 1**). Attendees could register freely for as many or as few workshops as they wanted. The afternoon plenary session, led by Stanford Medicine faculty, emphasized the importance of grappling with fears and failures. Following the afternoon plenary, there were two more one-hour long workshops.

Workshop topics were selected based on feedback collected from prior conferences regarding which workshops were valuable and what other topics would be helpful to include. The workshops varied in format from more formal lecture-based sessions to Q&A sessions. Each workshop moderator was encouraged to have specific learning objectives and to organize their workshop to be interactive in nature. Most workshops had no limit in the number of participants who could register, except for the “Mock MMI,” which had a limit of 70 students due to limitations in the mock interview format and prioritized participants applying to medical school within the next 1-2 years. The day ended with the conference co-chairs sharing reflections on the conference.

Data Analysis

Participants were invited to complete pre- and post-conference surveys. Survey elements were adapted based on previous studies²⁰ and had been refined using feedback on previous attempts to collect similar data during previous SUMMA conferences. The pre-conference survey focused on baseline demographic information and a series of questions that asked respondents to rate their interest in, confidence in, and knowledge of pursuing a medical career on a Likert scale (e.g., on a scale of 1-5, with 1 = “Not very interested” and 5 = “Very interested” or on a scale of 1-9, with 1 = “Strongly disagree” and 9 = “Strongly Agree”). The post-conference survey was provided to participants at the end of the conference via a QR code, and it was sent via email within a month after the conference. Three reminders were also sent encouraging conference attendees to complete the survey.

The post-conference survey included the same demographic information and battery of questions regarding interest in, confidence in, and knowledge of pursuing a medical degree as the pre-conference survey.

The outcomes of interest were an increase in 1) interest, 2) confidence, and 3) knowledge of pursuing a medical career defined by statistically significant increases in mean scores of survey questions post-conference compared to pre-conference. To analyze and compare these surveys, an independent two-tailed T-test assuming equal variances was performed for the entire group of attendees. A separate independent two-tailed T-test assuming equal variances was performed only for those attendees who self-identified as Latinx (Hispanic and/or from Latinx origin). Statistical analysis was conducted using IBM SPSS Statistics (Version 28.0.1.1). Statistical significance was defined as a two-sided p-value < 0.05. The data collection for this project was deemed not human subjects research by the IRB (Protocol 68971).

Results

Demographics

A total of 1,040 students across the nation registered for the conference. All students registered for the conference were invited to fill out a pre-conference survey, of which 648 (62.3%) students completed the survey. Most registrants identified as female (69.1%) and non-Hispanic (61.3%), with Black or African American (23.6%) and white (23.5%) being the most self-reported racial groups. 37% of registrants identified as being of Hispanic or Latinx origin. Notably, 68.7% of registrants self-identified as economically and/or educationally disadvantaged and 51.4% as first-generation. Undergraduates (43.3%) comprised the largest group, and most were from public 4-year colleges or universities (51.7%) outside of California (56.2%) ([Table 1](#)).

All attendees

Following the conference, all registered students were invited to complete a post-conference survey, of which 211 (20.3%) students did. Compared to the pre-survey results, students increased their confidence in applying to and gaining acceptance into a medical school ([Table 2](#)). Similarly, their knowledge of medical school admission processes, financial aid programs, and the number of peers and advisors they could talk to about applying to medical school increased ([Table 2](#)). While the conference did not increase the students' interest in becoming a primary health care provider, serving in a medically underserved area, or interest in a career in medicine, these numbers were already high with pre-conference means of 3.88 out of 5, 4.53 out of 5, and 8.15 out of 9, respectively ([Table 2](#)).

Table 1. Baseline Stanford University Medical Minority Alliance (SUMMA) 2022 Pre-Conference (N^a = 648) Attendees Demographics

	Pre-Conference (N ^a = 648)
Gender, n ^b (%)	
Female	448 (69.1)
Male	185 (28.5)
Non-binary	8 (1.2)
Other	7 (1.1)
Ethnicity, n (%)	
Non-Hispanic	397(61.3)
Hispanic, Latinx, or Spanish origin	240 (37.0)
No answer	11 (1.7)
Race, n (%)	
Black or African American	153 (23.6)
White	152 (23.5)
Asian	93 (14.4)
Mixed race	86 (13.3)
Alaskan Native/American Indian	16 (2.5)
Native Hawaiian or Pacific Islander	3 (0.5)
Other	84 (13.0)
No answer	61 (9.4)
Sexual Orientation, n (%)	
Heterosexual	260 (40.1)
Bisexual	44 (6.8)
Homosexual	29 (4.5)
Pansexual	6 (0.9)
Other	37 (5.7)
No answer	272 (42.0)
Disadvantage Status, n (%)	
Both educationally and economically disadvantaged	304 (46.9)
Economically disadvantaged	85 (13.1)
Educationally disadvantaged	56 (8.6)
Not disadvantaged	203 (31.3)
First Generation Status, n (%)	
First generation	333 (51.4)
Not first generation	311 (48.0)
No answer	4 (0.6)
School Type, n (%)	
Public College/University	335 (51.7)
Private College/University	199 (30.7)
Community College	62 (9.6)
Other	41 (6.3)
No answer	11 (1.7)
School Location, n (%)	
Other States	364 (56.2)
California	273 (42.1)
No answer	11 (1.7)
Year in School, n (%)	
Undergraduate	281 (43.3)
College Graduate/Post-Baccalaureate	270 (41.7)
Graduate Program	44 (6.8)
Other	53 (8.2)

^a Population size^b Sample size

Table 2. Stanford University Medical Minority Alliance (SUMMA) 2022 Pre- (N^a = 648) and Post-Conference (N^a = 211) Survey Results: Attendees Interests, Confidence, and Knowledge About Medical School

	All Attendees			Latinx Attendees		
	Pre- Conference (n = 648)	Post- Conference (n= 211)	p-value	Pre- Conference (n = 240)	Post- Conference (n = 86)	p-value
	Mean (SD)			Mean (SD)		
Interest						
1. Interest in becoming a primary health care provider.	3.88 (1.18)	4.04 (1.09)	0.086	4.04 (1.11)	4.21 (1.02)	0.219
2. Interest in becoming a mental/behavioral health provider.	3.02 (1.32)	3.40 (1.29)	< 0.001**	2.96 (1.35)	3.39 (1.35)	0.017*
3. Interest in serving in a medically underserved area.	4.53 (0.76)	4.47 (0.82)	0.30	4.63 (0.71)	4.71 (0.57)	0.37
4. I am interested in a career in medicine.	8.33 (1.24)	8.45 (1.07)	0.38	8.47 (0.85)	8.54 (0.94)	0.63
5. I would enjoy being a physician or pursuing a health professional career.	8.15 (1.45)	8.35 (1.24)	0.21	8.39 (1.04)	8.54 (0.84)	0.35
Confidence						
1. I can imagine myself as a doctor.	7.22 (1.82)	8.15 (1.21)	< 0.001**	7.24 (1.68)	8.20 (1.26)	< 0.001**
2. I will get into medical school.	6.53 (1.96)	7.57 (1.65)	< 0.001**	6.53 (1.86)	7.59 (1.78)	< 0.001**
3. I will receive a high score on the MCAT.	6.06 (2.09)	6.87 (1.98)	< 0.001**	5.93 (2.05)	6.89 (2.00)	0.007*
4. I will maintain a competitive science GPA.	6.58 (2.16)	7.13 (1.76)	0.017*	6.41 (2.16)	7.00 (1.88)	0.09
5. Someone like me has a good chance of making it into medical school.	6.36 (2.01)	7.78 (1.55)	< 0.001**	6.35 (1.90)	7.95 (1.46)	< 0.001**
6. There will be people like me in medical school.	6.10 (2.22)	7.70 (1.70)	< 0.001**	6.12 (2.18)	7.95 (1.48)	< 0.001**
7. The challenges that I have faced in my life will be helpful to me in pursuing a career in medicine.	7.18 (1.88)	8.31 (1.17)	< 0.001**	7.26 (1.85)	8.33 (1.37)	< 0.001**
8. How confident are you in your ability to complete the application process for entry into college or a health career technical school?	6.64 (2.01)	7.92 (1.36)	< 0.001**	6.58 (1.92)	7.92 (1.32)	< 0.001**
9. How confident are you in developing a realistic timeline for medical school application?	6.57 (1.93)	7.61 (1.62)	< 0.001**	6.43 (1.88)	7.60 (1.64)	< 0.001**
10. How confident are you in improving nonacademic areas, such as leadership skills and community engagement?	6.89 (1.92)	7.81 (1.52)	< 0.001**	6.88 (1.95)	7.90 (1.49)	0.001*
11. How confident are you in understanding of the medical school admission process?	6.56 (2.14)	7.70 (1.44)	< 0.001**	6.46 (2.09)	7.81 (1.44)	< 0.001**
12. How confident are you in understanding of health disparities?	7.01 (1.93)	7.86 (1.42)	< 0.001**	7.15 (1.86)	8.05 (1.38)	0.002*
Knowledge						
1. Awareness about the financial aid programs available to Californians interested in mental/behavioral health and other primary care careers in medically underserved areas.	1.63 (0.96)	2.40 (1.27)	< 0.001**	1.59 (0.89)	2.68 (1.35)	< 0.001**
2. I know people from the same background as me who are medical students.	5.61 (2.67)	7.08 (2.22)	< 0.001**	5.81 (2.70)	7.33 (2.00)	< 0.001**
3. I have advisors (e.g., people who are not friends) that I can talk to about how to prepare for medical school.	5.81 (2.52)	6.78 (2.15)	< 0.001**	5.79 (2.63)	6.86 (2.17)	0.011*
4. I have peers (e.g., friends or classmates) that I can talk to about how to prepare for medical school.	5.91 (2.52)	6.81 (2.18)	0.001*	5.73 (2.71)	6.91 (2.33)	0.008*
5. I have advisors (e.g., people who are not friends) who encourage me when I am unsure if I can make it academically.	6.01 (2.52)	6.83 (2.13)	0.003*	5.97 (2.59)	6.94 (2.11)	0.020*
6. I have peers (e.g., friends or classmates) who encourage me when I am unsure if I can make it academically.	6.46 (2.36)	7.22 (1.98)	0.003*	6.30 (2.50)	7.28 (2.06)	0.015*

** Statistically significant p < 0.001

* Statistically significant p < 0.05

Hispanic/Latinx attendees

Those self-identifying as Hispanic or Latinx had similar results to the entire group of attendees with several key differences ([Table 2](#)). Hispanic/Latinx attendees' pre-conference confidence ratings were lower regarding perceived ability to complete application processes for entry into college or a health career technical school, develop a timeline for medical school application, understand the admission process, receive a high MCAT score, and maintain a competitive science GPA compared to the larger group ([Table 2](#)). They also reported having fewer advisors and peers who could assist in preparing them for medical school and support them academically ([Table 2](#)). However, this subgroup had a higher pre-conference interest in medicine, in becoming a physician or pursuing a health professional career, and were more confident about understanding health disparities ([Table 2](#)). Their interest in becoming a primary care provider and serving in medically underserved areas was consistently higher than the whole group of attendees both pre- and post-conference ([Table 2](#)).

Discussion

Most conference attendees at the 31st annual SUMMA Conference identified as disadvantaged and first-generation, and were overrepresented in terms of female gender, African-American race, and Hispanic ethnicity, when compared to medical school applicants in the 2024-2025 period.¹⁵ Importantly, almost a third of the attendees identified as being of Hispanic or Latinx origin. Due to the virtual nature of the 2022 conference compared to previous SUMMA conferences, almost half of all attendees were from schools outside of California, which was not the case when conferences were in-person. Additionally, this conference significantly increased the attendees' interest, confidence, and knowledge on a variety of topics related to pursuing a career in medicine.

Nearly two decades ago, the Institute of Medicine endorsed racial and ethnic diversity in the medical workforce as key to improving the overall health of Americans.²¹ Since then, a number of programs and initiatives have been implemented at the faculty, residency, medical school, and pre-medical level with this goal in mind. At the pre-medical level, post-baccalaureate programs are an essential part of promoting diversity. In 2014, 36% of national post-baccalaureate premedical programs identified themselves as focusing on groups underrepresented in medicine or those who identified as economically or educationally disadvantaged.²² Other initiatives at this level include summer programs, shadowing programs, or near peer mentorship, which support underrepresented students as they apply to medical school.^{23,24} For Hispanic and Latinx students, in particular, focus groups have been conducted to more completely understand barriers encountered by these students on their way to medical school.²⁵ Once in medical school, student-

run organizations like the Latinx Medical Student Association (LMSA) are associated with positive individual support and career outcomes for Hispanic/Latinx medical students.²⁶

Our conference falls in line with these other initiatives and is unique in its ability to incorporate attendees from all over the United States. To our knowledge, this is the first virtual national pre-medical conference to collect and analyze data regarding the effectiveness of such conferences on reaching a diverse target population and combat barriers faced by minority populations on their journey to medicine. Commonly cited barriers to applying to medical school include lacking knowledge and preparation of the path to becoming a medical professional and inadequate social support.^{17,25} Due to the inclusion of workshops that describe different parts of the medical school admissions process (e.g., MCAT, financial aid, MMI) and with the vast majority of our speakers being current or previous medical students and/or currently involved in the medical school admissions process, our conference led to increases in attendees' knowledge of medical school admission processes, knowledge of financial aid programs, and the number of peers and advisors attendees could talk to about applying to medical school, which directly addresses those cited barriers. Further studies are needed to determine whether this conference directly led to increases in underrepresented minorities applying to and entering medical schools. Additionally, it should be noted that such events require substantial logistical planning and buy-in from many groups (e.g., our institution, current medical students, exhibitors, etc.). However, the success of our conference in supporting underrepresented premedical students applying to medical school could serve as an example of one way to leverage the power of communities and shared knowledge to promote diversity.

Our results looking specifically at attendees of Hispanic or Latinx origin show high interest in becoming primary care providers and serving medically underserved areas, which is consistent with previous studies showing that physicians from underrepresented minorities are more likely to serve these populations.^{4,5} In our study, this subgroup also reported lower confidence in their ability to complete the medical school applications process or obtain a competitive GPA/MCAT score, while also having fewer mentors or peers that could provide support, consistent with barriers reported by other studies.^{6, 14,18} This may reflect the idea of “academic redlining” which is used to describe “systematic exclusion of qualified applicants from underrepresented racial and economic backgrounds” due to an overemphasis on academic metrics, such as the MCAT and GPA.⁶ The increase in these metrics for this subgroup of attendees following the conference demonstrates that initiatives such as this conference can help mitigate barriers encountered by premedical Hispanic or Latinx students, which could improve the worsening Latinx physician shortage.²

Increasing diversity in medicine has been shown to be an important step toward helping create change and improving health care for our communities.²⁷⁻²⁹ The ongoing mission of SUMMA is to increase the diversity in the physician workforce in order to better serve and care for underserved populations. We have continued offering the SUMMA conference annually and have adapted the workshops offered to address topics of interest for the premedical community. In addition, we hope to continue to expand the reach of the SUMMA conference to allied health professions, such as physician assistant programs.

There are several key limitations to this study. First, our data was limited by the number of respondents, with only 62.3% of attendees filling out the pre-conference survey and 20.3% filling out the post-conference survey. Selection bias could play a role in the results of our post-conference responses in that those who had a favorable view of the conference were more likely to complete the survey. The length of the post-conference survey, as well as the timing with which it was sent may have contributed to the low response rate. In the future, shortening the time needed to respond to the survey and/or sending out the survey within the first 24 hours after the event while the event is still fresh in the attendees' minds may increase participation. Furthermore, the nature of our survey did not allow us to ensure that the subgroup who completed the post-survey data was the same subgroup who completed the pre-conference data. Additionally, due to logistics of hosting multiple workshops at once on a virtual platform with different hosts, we were unable to track the exact number of attendees, nor were we able to collect their demographic information. As a result, we are unable to closely compare demographic information between attendees and registrants. Nonetheless, we believe that the success of the conference in combating significant barriers felt by minority populations is evident.

Additionally, the way that we have chosen to capture race and ethnicity leaves out notably underrepresented subgroups from our analysis. For example, Asian-American subgroups, such as Vietnamese, Cambodian, Hmong, and Laotian physicians, are underrepresented in the Asian-American physician workforce.¹⁷ In our survey, these respondents were classified under the umbrella group "Asian," which further contributes to the incorrect view of minority populations as monoliths. Similarly, the term "Alaskan Native/American Indian" represents a heterogeneous population encompassing 574 federally recognized Indian Nations, each with its own history, culture, and traditions.³⁰ We have begun collecting more granular race data at our subsequent events to better understand which underrepresented groups are being reached by our conference. We have also started collecting admissions data regarding the number of Stanford medical students who attended the SUMMA conference in the past and intend to expand our longitudinal data collection to better understand how many of conference attendees apply to medical schools at some point in the future.

Improving support, guidance, and knowledge to minority premedical students will increase their confidence and desire in pursuing a medical career, thus increasing the diversity of the physician workforce and improving the health of marginalized communities. The annual SUMMA conference can serve as one example of how creating a virtual community to share solutions to encountered barriers, cultivating mentorship opportunities, and providing education to underrepresented groups can increase their feeling of belonging.

.....

Acknowledgements

The authors would like to thank the Office of Diversity in Medical Education (ODME), Stanford Center for Continuing Medical Education (CME), Stanford MD Admissions, Stanford Medical Student Association, and conference co-chairs, Lizette Grajales and Christopher Lopez, for their generous support of the annual SUMMA Conference.

Funding

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

Competing Interests

The authors have no relevant financial or nonfinancial interests to disclose.

Author Contributions

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by ALC and LVD. The first draft of the manuscript was written by ALC and LVD and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Institutional Review Board of Stanford University and the data collection for this project was deemed not human subjects research (Protocol 68971).

Consent to participate

Data collection for this project was deemed not human subjects research.

Consent to publish

Data collection for this project was deemed not human subjects research.

Data availability statement

The data that support the findings of this study are available from the corresponding author, ALC, upon reasonable request.

Published: November 03, 2025 EDT.



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-NC-ND-4.0). View this license's legal deed at <https://creativecommons.org/licenses/by-nc-nd/4.0> and legal code at <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode> for more information.

REFERENCES

1. Vespa J, Medina L, Armstrong DM. *Population Estimates and Projections*. U.S. Census Bureau; 2020:15.
2. Sánchez G, Nevarez T, Schink W, Hayes-Bautista DE. Latino Physicians in the United States, 1980–2010: A Thirty-Year Overview From the Censuses. *Acad Med*. 2015;90(7):906. doi:[10.1097/ACM.0000000000000619](https://doi.org/10.1097/ACM.0000000000000619)
3. Unique Populations. AAMC. 2021. Accessed March 19, 2024. <https://www.aamc.org/professional-development/affinity-groups/gfa/unique-populations>
4. Cantor JC, Miles EL, Baker LC, Barker DC. Physician service to the underserved: implications for affirmative action in medical education. *Inq J Med Care Organ Provis Financ*. 1996;33(2):167-180.
5. Rabinowitz HK, Diamond JJ, Veloski JJ, Gayle JA. The impact of multiple predictors on generalist physicians' care of underserved populations. *Am J Public Health*. 2000;90(8):1225. doi:[10.2105/ajph.90.8.1225](https://doi.org/10.2105/ajph.90.8.1225)
6. Tello C, Goode CA. Factors and barriers that influence the matriculation of underrepresented students in medicine. *Front Psychol*. 2023;14. doi:[10.3389/fpsyg.2023.1141045](https://doi.org/10.3389/fpsyg.2023.1141045)
7. Komaromy M, Grumbach K, Drake M, et al. The role of black and Hispanic physicians in providing health care for underserved populations. *N Engl J Med*. 1996;334(20):1305-1310. doi:[10.1056/NEJM199605163342006](https://doi.org/10.1056/NEJM199605163342006)
8. Fryer GE, Green LA, Vojir CP, et al. Hispanic versus white, non-Hispanic physician medical practices in Colorado. *J Health Care Poor Underserved*. 2001;12(3):342-351. doi:[10.1353/hpu.2010.0811](https://doi.org/10.1353/hpu.2010.0811)
9. Saha S, Komaromy M, Koepsell TD, Bindman AB. Patient-Physician Racial Concordance and the Perceived Quality and Use of Health Care. *Arch Intern Med*. 1999;159(9):997-1004. doi:[10.1001/archinte.159.9.997](https://doi.org/10.1001/archinte.159.9.997)
10. Shen MJ, Peterson EB, Costas-Muñiz R, et al. The Effects of Race and Racial Concordance on Patient-Physician Communication: A Systematic Review of the Literature. *J Racial Ethn Health Disparities*. 2018;5(1):117-140. doi:[10.1007/s40615-017-0350-4](https://doi.org/10.1007/s40615-017-0350-4)
11. Green AR, Carney DR, Pallin DJ, et al. Implicit Bias among Physicians and its Prediction of Thrombolysis Decisions for Black and White Patients. *J Gen Intern Med*. 2007;22(9):1231-1238. doi:[10.1007/s11606-007-0258-5](https://doi.org/10.1007/s11606-007-0258-5)
12. Gray B, Stoddard JJ. Patient-physician pairing: does racial and ethnic congruity influence selection of a regular physician? *J Community Health*. 1997;22(4):247-259. doi:[10.1023/a:1025148302636](https://doi.org/10.1023/a:1025148302636)
13. Saha S, Taggart SH, Komaromy M, Bindman AB. Do Patients Choose Physicians Of Their Own Race? Published online December 13, 2018. doi:[10.1377/hlthaff.19.4.76](https://doi.org/10.1377/hlthaff.19.4.76)
14. Corsino L, China FM, Yee L, Fuller AT. Increasing Latinx representation in the US medical schools: A top-ranked medical school's experience. *Front Public Health*. 2022;10:907573. doi:[10.3389/fpubh.2022.907573](https://doi.org/10.3389/fpubh.2022.907573)
15. Association of American Medical Colleges. 2024 Fall Applicant, Matriculant, and Enrollment Data Tables. 2024. <https://www.aamc.org/media/80781/download?attachment>
16. 2024 Faculty Roster: U.S. Medical School Faculty. AAMC. Accessed April 10, 2025. <https://www.aamc.org/data-reports/faculty-institutions/report/faculty-roster-us-medical-school-faculty>

17. Joseph J, Dao D, Hwang SM, et al. Perceptions of Barriers and Facilitators to Becoming a Medical Professional Among Underrepresented Undergraduate and Postbaccalaureate Learners. *Mayo Clin Proc Innov Qual Outcomes*. 2021;5(2):347-358. doi:[10.1016/j.mayocpiqo.2021.01.003](https://doi.org/10.1016/j.mayocpiqo.2021.01.003)
18. Faiz J, Essien UR, Washington DL, Ly DP. Racial and Ethnic Differences in Barriers Faced by Medical College Admission Test Examinees and Their Association With Medical School Application and Matriculation. *JAMA Health Forum*. 2023;4(4):e230498. doi:[10.1001/jamahealthforum.2023.0498](https://doi.org/10.1001/jamahealthforum.2023.0498)
19. Roberts LW. Belonging, Respectful Inclusion, and Diversity in Medical Education. *Acad Med*. 2020;95(5):661-664. doi:[10.1097/ACM.00000000000003215](https://doi.org/10.1097/ACM.00000000000003215)
20. Childress AM. National Pre-Health Conference: Inspiring the next Generation of Healthcare Professionals. 2021. https://static1.squarespace.com/static/6440a13922b1bf12b7858a4b/t/646d6e500d94c947102e2b84/1684893264465/Childress_Thesis_NPHC_only+text.pdf
21. *In the Nation's Compelling Interest: Ensuring Diversity in the Health-Care Workforce*. National Academies Press; 2004. doi:[10.17226/10885](https://doi.org/10.17226/10885)
22. Andriole DA, McDougle L, Bardo HR, Lipscomb WD, Metz AM, Jeffe DB. Postbaccalaureate premedical programs to promote physician-workforce diversity. *J Best Pract Health Prof Divers Res Educ Policy*. 2015;8(1):1036-1048.
23. Brodt E, Empey A, Mayinger P, et al. Shifting the Tide: Innovative Strategies to Develop an American Indian/Alaska Native Physician Workforce. *Hawaii J Health Soc Welf*. 2019;78(12 Suppl 3):21-25.
24. Palmero P, Bauckman KA. Pre-med Buddies: Increasing diversity of medical school applicants through near-peer mentorship. *Cureus J Med Sci*. Accessed June 9, 2024. <https://www.cureus.com/posters/1868-pre-med-buddies-increasing-diversity-of-medical-school-applicants-through-near-peer-mentorship>
25. Talamantes E, Gonzalez K, Mangione CM, et al. Strengthening the Community College Pathway to Medical School: A Study of Latino Students in California. *Fam Med*. 2016;48(9):703-710.
26. Nakae S, Martinez S, Juarez JJ, Beltran Sanchez C. The Impacts of Engagement in the Latino Medical Student Association. *Health Equity*. 2023;7(1):109-115. doi:[10.1089/heq.2022.0099](https://doi.org/10.1089/heq.2022.0099)
27. Dreachslin JL, Hunt PL, Sprainer E. Workforce diversity: implications for the effectiveness of health care delivery teams. *Soc Sci Med*. 2000;50(10):1403-1414. doi:[10.1016/S0277-9536\(99\)00396-2](https://doi.org/10.1016/S0277-9536(99)00396-2)
28. Stanford FC. The Importance of Diversity and Inclusion in the Healthcare Workforce. *J Natl Med Assoc*. 2020;112(3):247-249. doi:[10.1016/j.jnma.2020.03.014](https://doi.org/10.1016/j.jnma.2020.03.014)
29. Mensah MO, Sommers BD. The Policy Argument for Healthcare Workforce Diversity. *J Gen Intern Med*. 2016;31(11):1369-1372. doi:[10.1007/s11606-016-3784-1](https://doi.org/10.1007/s11606-016-3784-1)
30. Jabbari B, Saadabadi A. Diversity Goals for Evaluation and Treatment of American Indians and Alaska Natives. In: *StatPearls*. StatPearls Publishing; 2024. Accessed March 20, 2024. <http://www.ncbi.nlm.nih.gov/books/NBK570573/>

List 1. Stanford University Medical Minority Alliance (SUMMA) 2022 Conference Morning Schedule

Morning Plenary Session (8:00 AM – 9:45 AM)

An Introduction to SUMMA
Faces of the Community
Keynote Speech

Session A Workshops (10:00 AM – 11:00 AM)

Becoming a Health Professional: Advice from the California Coalition of Hispanic/Latinx Centers of Excellence
Community College to Medical School
Creating your Undergrad Path
Developing a Successful Medical School Application
Finding Your Authentic Health Career
Getting into Global Health: Where Do I Start?
Navigating Medicine as a DACA Student
Maintaining your Mental Health
Q&A with Keynote Speaker
Subspecialties Workshop
Med/PA Student Lounge

Session B Workshops (11:15 AM – 12:15 PM)

Sharing our Stories: Leadership Journeys from Stanford Medicine Leaders and Alumni
The Medical School Interview
Imposter Syndrome
Is Public Health a Part of Your Career and Graduate Education Path?
Pathway of a Pre-Med (MCAT + AMCAS)
Physician Assistant Career Paths
Powerful Personal Statements for Medical School Applications
Creating Your Undergrad Path
The Perfect Fit - What to Look for in a Medical School
Physician-Scientist Training: Insights and Experiences from American Indian and Alaskan Native Trainees
Community College to Medical School
Unplugged: An Honest Conversation with Underrepresented Women in Medicine
Subspecialties Workshop
Med/PA Student Lounge
Developing a Successful Medical School Application

Afternoon Plenary (12:45 PM – 1:30 PM)

Successfully Grappling with Fears and Failures

Exhibitor Fair (1:30 PM – 3:00 PM)

Session C Workshops (3:15 PM – 4:15 PM)

Community College: Creating Your Path

Sharing Insights for Financing a Medical Education - A Financial Aid Panel

Physician Assistant Career Paths

Live Storytelling: How to Tell Your Story

Stanford Leadership in Health Disparities Program (LHDP)

Strength of Taking Time Off

Thriving as First-Generation College Students

Transforming into a Physician Leader through PRIME

MSTP Boost

Navigating Disability and Chronic Illness in Medicine: How to Advocate for Yourself and Others

Mock Multiple Mini-Interviews (MMI)

Subspecialties Workshop

Med/PA Student Lounge

Session D Workshops (4:30 PM – 5:30 PM)

Military in Medicine

Pathway of a Pre-Med (MCAT + AMCAS)

Life in Medical School

Post Baccalaureate Programs – Who, What, When, Where?

Subspecialties Workshop

“To be or not to be (out)”: Perspectives of LGBTQ Students on Admissions Process

Med/PA Student Lounge

Physician Scientist Perspective

Conference Conclusions (5:30 PM – 5:45PM)
