

NATIONAL PRE-HEALTH CONFERENCE: INSPIRING THE NEXT GENERATION OF HEALTHCARE PROFESSIONALS

By

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INTRODUCTION

In Spring of 2020, I was working in a research lab abroad in Switzerland. When the COVID-19 pandemic was declared on March 11th, 2020, I found my goals of presenting my work and becoming an author on multiple scientific papers vanishing before my eyes. Less than a week later, I packed up all of my belongings and returned to the United States. My research was cut short by six months, leading to the cancellation of networking and event opportunities that would have changed the path of my academic career.

College students all over the U.S. were feeling despair and anxiety from the COVID-19 pandemic. A recent study surveying a diverse population of college students at City University of New York highlights the mental health impact of the COVID-19 lockdown. They found that disruptions in their home, work, and social lives resulted in high levels of anxiety, stress, and depression (1). Similarly, another study surveying U.S. young adults found high levels of loneliness and worrying about COVID-19 specifically, as well as difficulty tolerating distress (2). For me, I was anxious to find a clinical or research opportunity to further my pre-medical career. I thought I had found that opportunity, but it was cancelled. Ultimately, I felt hopeless in finding opportunities online.

My life-long friend Alejandra Bahena reached out to me with a vision to unite and empower pre-health students during these difficult times. Alejandra experienced a variety of obstacles during the COVID-19 pandemic and had similar feelings of anxiety. She believed that the cancellation of in-person programs and classes prevented college students from finding important resources and saw the need for an event that would provide easy access to these opportunities. I was thrilled to hear from Alejandra and learn about her vision. Reflecting on my work experience planning community service events for over 3000 students at Barrett, the

Honors College, I was thrilled to use my skills in event planning once again. My skills combined with Alejandra's vision gave rise to the National Pre-Health Conference.

The National Pre-Health Conference (NPHC) is a free, 3-day event co-founded on June 19th, 2021. While Alejandra and I are both pre-medical students, we believed it was important to open this event to students in all facets of healthcare. The mission of NPHC is “to inspire self-confidence into the next generation of healthcare professionals by providing educational resources and access to a supportive network of students and healthcare professionals”.

Additionally, the NPHC vision is “a world in which America's healthcare system is composed of professionals from all backgrounds” with values such as “knowledge, unity, and empowerment”. Specifically, knowledge enables pre-health students to be confident in choosing a career in healthcare, unity demonstrates easy access to a pre-health network, and empowerment allows pre-health students to be motivated and excited for a future career in healthcare.

We created NPHC with these ideas in mind and worked diligently to create our inaugural conference within two months. We set the date for August of 2020, which would be an established time to hold the conference for years to come. The information pre-health students receive from NPHC would be fresh in their minds before starting classes. Moreover, a higher attendance could be expected compared to other times during the year as August is at the end of the summer when students are eager to return to academic life. After setting the date, we went straight to work in building our platform. Google Sites was an attractive website platform as it was free and easy to use. I had skills in designing posters and graphics to market my events and used these skills to design the website. Alejandra reached out to a colleague at the University of Pennsylvania to design the face of our organization: the NPHC logo. It was exhilarating to see our idea become a (virtual) reality.

Up next was crafting the schedule and theme of the conference. Since Alejandra and I were both pre-medical students, we decided to largely focus on a career in medicine while also hosting events available to all audiences. Thus, the 2020 conference was named “National Pre-Health Conference: A Future in Medicine”. Each day had an opening statement, 7-10 guest speaker sessions, a 1-hour lunch break, and a closing statement. The opening statement and the closing statement on the first and last day, respectively, were longer. The guest speaker sessions were designed to be 35–40-minute presentations by the speaker with 10–15-minute Q/As, leaving 10 minutes of preparation in between each session. During the first year, we invited guest speakers to present on their careers and/or discuss resources and opportunities relating to our theme and the pandemic. We teamed up with other pre-health students and cold-called/emailed physicians, nurses, scientists, and pre-health educational experts all over the United States. As a result, the inaugural NPHC presented topics such as “Ins and Outs of the MD-PhD Career Path”, “From Bench to Bedside: The Road to Nursing”, and “Study Strategies to Ace Your STEM Classes”. The full schedule with guest speaker biographies can be seen on pages 9 - 28 of the NPHC 2020 program guide [Appendix A].

As the schedule filled up, we had to decide which virtual platform to hold the conference. We agreed upon Zoom Webinar given that Zoom Video Communications was well-known by students at the time. The platform provided a setting where attendees could ask questions, interact in the chat, and answer polls safely from the comfort of their own home. To save on costs, we only purchased Zoom Webinar for the month of August using a kind donation from the Program for Diversity and Inclusion at the University of Pennsylvania. For registration, we used Google Forms.

Alejandra and I achieved a high registration by reaching out to media sponsors. A media sponsor advertises an event through their list-servs, website, and social media platforms. We reached out to national and local organizations that catered to pre-health individuals. The NPHC 2020 media sponsors included the Student National Medical Association, the American Medical Women's Association, the American Physician Students Association, ConsenSys Health, Free the MCAT, Student Health Outreach for Wellness, and General Intelligences. Moreover, we searched for online forms at universities around the country to advertise NPHC. Through all our efforts, greater than 1000 pre-health students registered from schools all over the world, which can be seen on pages 31 - 34 of the NPHC 2020 program guide [Appendix A].

When the inaugural National Pre-Health Conference ended, 200 - 400 registrants attended each day, with the most viewership of 400 attendees on Day 1. We sent out a survey to gain feedback from our audience and had 64 responses. Of these 64 attendees, 87.5% were pre-medical students with 15.6% pre-physician assistant, pre-public health, and/or pre-doctoral. 100% and 98.4% of these attendees placed a 4 on a scale of 1-5 for level of satisfaction and whether they would recommend this event to a friend, respectively. 95.3% said they would attend the conference again in the future. When asked what topics they wanted to see at future conferences, attendees requested more medical specialties, including trauma surgery and pediatric oncology. Others requested topics like pharmacy and physician assistant as well as post-baccalaureate, gap year, volunteering, and research opportunities. Overall, attendees were grateful to attend NPHC, stating "the webinar was amazing" and "thank you for putting this together". One attendee wrote "with so many things canceled this year this was a great opportunity to network and connect...that's something that would have happened without [NPHC]".

Alejandra and I were proud of what we accomplished and knew we had to start planning next year's conference. We immediately established the dates of the second-annual NPHC to be August 3rd - 6th, 2021. Our goal is to provide a more diverse array of healthcare professionals speaking and more special events. Slightly different from 2020, we provided more structure to the planning process by creating a timeline, crafting a budget, and constructing leadership committees. I employed pre-event and post-event surveys to assess the confidence level of attendees in pre-health success categories including healthcare experience, research experience, standardized testing, community service, academics, essay writing, and completing graduate/professional school applications before and after attending the 2021 National Pre-Health Conference (NPHC 2021). We hypothesized that sessions from NPHC 2021 will increase the confidence level of pre-health students in all pre-health success categories. Overall, understanding how the National Pre-Health Conference benefits pre-health attendees will help the NPHC team improve for future conferences.

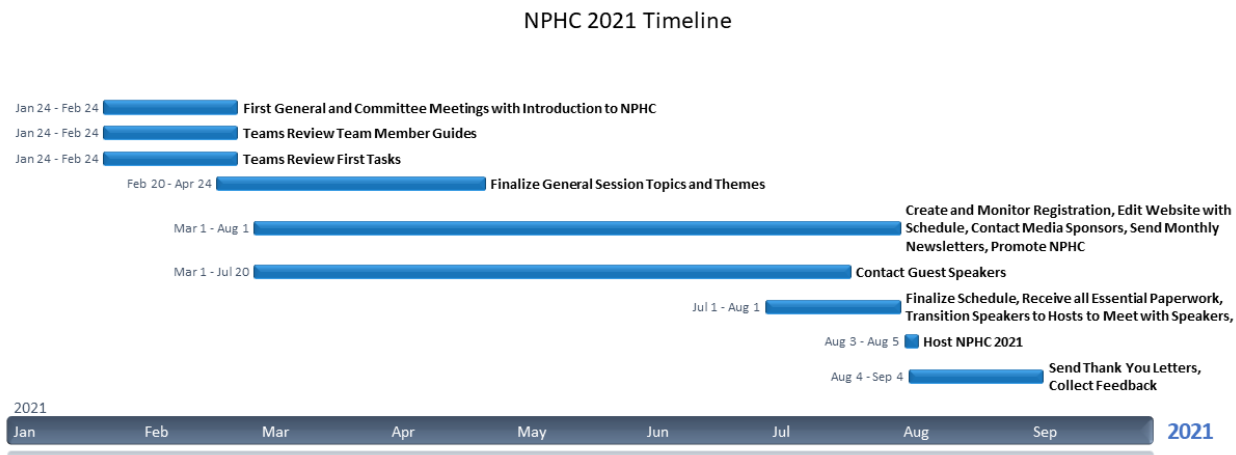
METHODS

Constructing leadership committees. We decided to have a more structured approach to planning the conference by developing leadership committees in the following categories: Presidential, Digital Design, Professional Development, Marketing, Recruitment, Host, and Business Development. All committees were volunteer based. Business Development was created closer to the conference date. Table 1 outlines the roles of these committees.

Table 1: Descriptions of roles and responsibilities for NPHC committees

Committee	Purpose
Presidential	Oversee all other committees through committee directors. Develop short-term and long-term goals for the organization.
Digital Design	Design website, flyers, program guide, and other marketing materials. Create promotional videos for the conference and add recordings of conference sessions to our YouTube channel.
Professional Development	Research resources such as scholarships, conferences/events, internships, research and community service opportunities, and graduate/professional school resources to include in monthly newsletters and on our website with free access.
Recruitment	Brainstorm topics, find possible guest speakers related to topics, and cold call/email these speakers. Maintain contact with speakers until transitioning speakers to Host committee. Send and receive guest speaker release forms.
Host	Brainstorm and implement ideas to boost conference engagement. Organize research exposition and interactive events. Inform speakers about event logistics. Host sessions of the conference.
Marketing	Generate a list of potential media sponsors and online forms from universities and other organizations. Cold call/email potential media sponsors. Maintain partnership and communicate any opportunities they would like NPHC to share. Additionally, post and boost engagement on Facebook, Instagram, Twitter, and LinkedIn.
Business Development	Brainstorm ideas to further develop the organization. Create pitch decks, form and analyze surveys, and reach out to potential partnerships.

Creating a timeline. In contrast to NPHC 2020, we had more time to brainstorm the timeline for planning NPHC 2021. We came up with the timeline as seen in the Gantt chart in Figure 1.

Figure 1: Timeline of the NPHC 2021 event planning process

Brainstorming Potential Session Topics. We agreed upon the theme Unity in Healthcare for NPHC 2021. As future medical professionals, it is important to understand the variety of fields available, and how they can potentially interact. We provided an organized approach to establishing sessions by creating a specialized theme for each day. Day 1 was healthcare specialties with healthcare professionals providing insights into their careers. Day 2 was application and resume building. Day 3 was about special topics. The recruitment team with input from the rest of the team put together a list of potential topics for each day relative to the central theme and specialized theme for each day. See Table 2 for the complete list of potential topics.

Table 2: Potential topics for sessions of NPHC 2021 that align with the theme of each day

Day 1: Healthcare Specialties			
Collaboration between Occupational and Physical Therapists	Life as a Physician Assistant	Psychology vs Psychiatry	The difference between an MD and DO
Hierarchy of Nursing	Specialties within Dentistry	Working on a trauma or OR team	Inside look on midwives, OBGYN, and Dualla
A look into the Health Administration	Optometry vs Ophthalmology	Nutrition and Heart Health	
Day 2: Application and Resume Building			
Panel discussion on application advice from current MD/PA/nursing/dentistry etc. students	Finding Pre-Health Opportunities	How to Ace an Interview	Advice on Studying and Time-management
	Improving your Personal Statement	Advice on MCAT, GRE, DAT, and/or NCLEX prep	
Day 3: Special Topics			
Global Health and the Pandemic	Medical Ethics Discussion	The Future of Healthcare Post-pandemic	Minorities in Medicine and Bridging the Gap
History of Racism and Racial Injustice in Healthcare	Physician Suicide Awareness	Women's Health and Infertility in Medicine	Healthcare Around the World
	Healthcare Insurance in the U.S.	Wellness and Soul Care (Include Meditation Workshop)	

Creating the Schedule. Day 1 was healthcare specialties with healthcare professionals providing insights into their careers. Some sessions included more than one healthcare professional, such as “Integrative Rehab: Innovative & Collaborative Approaches in Occupational Therapy (OT) & Physical Therapy (PT)”. Day 2 was application and resume building with sessions such as “Making the Most of Your Interview”, “An Inside Look on Medical Scribing”, and “Crafting your Personal Statement Accomplishment Story”. Day 3 was special topics with sessions from organizations like MercyShips and the Minnesota Ovarian Cancer Alliance (MOCA). This day also included special topics from experts in their field, including “Emergency Medicine in Rural Hospitals” and “Scientific Communication in Research and Medicine”. For the entire schedule, see pages 28-31 of the NPHC 2021 Program Guide [Appendix B].

Finding Guest Speakers. From March 1st, 2021 to August 1st, 2021 as indicated by the timeline in Figure 1, the recruitment team continuously cold called/emailed healthcare professionals to speak on potential topics listed in Table 2. They asked the potential speaker if they could present for 35 minutes and participate in a 15-minute Q/A with our attendees. The speaker was invited to speak on the potential topic given specific experiences that the recruiter researched in advance, either by watching past presentations or reading their websites or articles. Our team also gave the opportunity to speak on another topic of their choosing that was relevant to the conference, especially related to our theme Unity in Healthcare.

Pre-Event and Post-Event Surveys. I designed 5–10-minute pre-event and post-event surveys for conference attendees to complete before and after the conference, respectively. This study was approved by the Institutional Review Board (IRB) and was conducted anonymously. All

data used for the purpose of this study was collected and stored in an Arizona State University database. Both surveys asked attendees to rate their confidence level by selecting “Not Confident”, “Somewhat Confident”, “Confident”, or “Does Not Apply” in the following categories: Healthcare Experience, Research Experience, Standardized Testing, Community Service, Academics, Essay Writing, and Completing Graduate/Professional School Application.

A successful application to graduate or professional school in a healthcare related field often requires candidates to have acquired knowledge and experience in these categories. Some pre-health students such as those seeking to apply to PhD or master’s level programs may not have any relevance to healthcare experience, hence the reason for selecting “Does Not Apply”.

In the post-event survey, a few additional questions were added. If attendees' confidence level changed in one or more of the categories stated, they were given a list of sessions and asked to select which sessions impacted their confidence level in each category. Moreover, attendees were given the opportunity to provide any comments or ask any questions. Only students that completed the pre-event survey were invited to complete the post-event survey if they attended the conference.

RESULTS

There were 414 recorded responses in the pre-event survey and 108 recorded responses in the post-event survey.

Figure 1: Pre-health interests selected by attendees in the pre-event survey

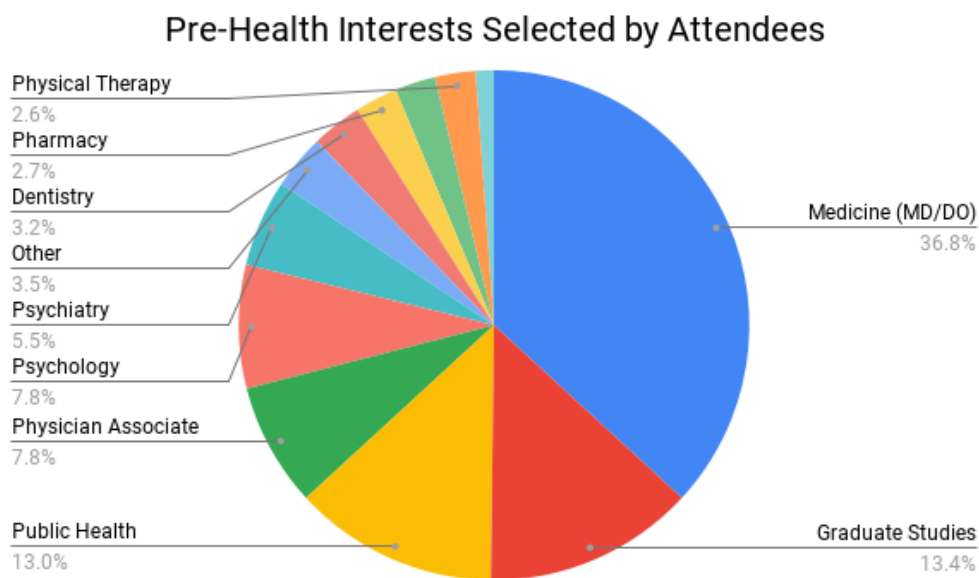


Figure 2: Current educational level of pre-health attendees in the pre-event survey

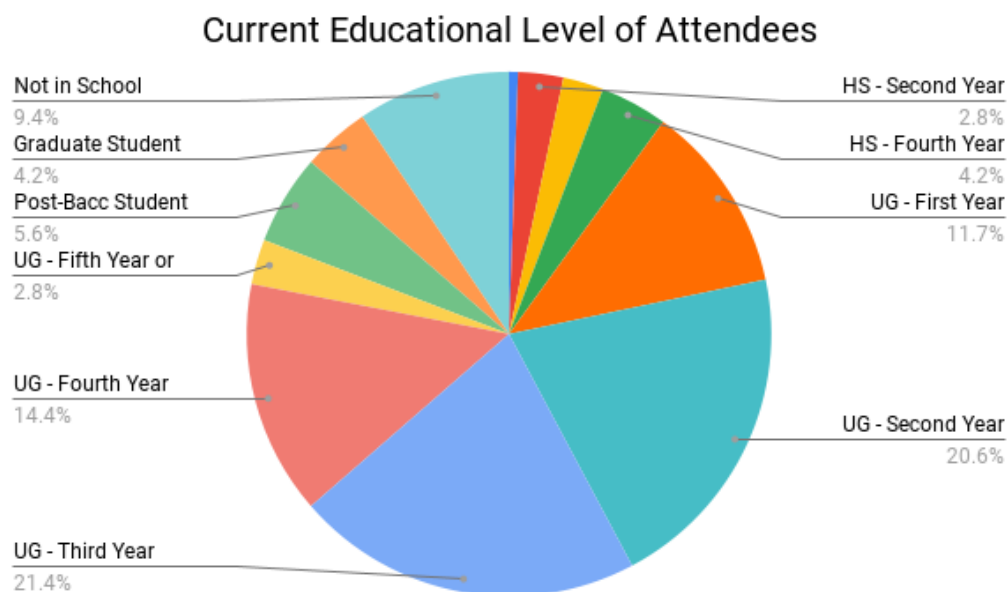


Figure 3: Pre-health interests selected by attendees in the post-event survey

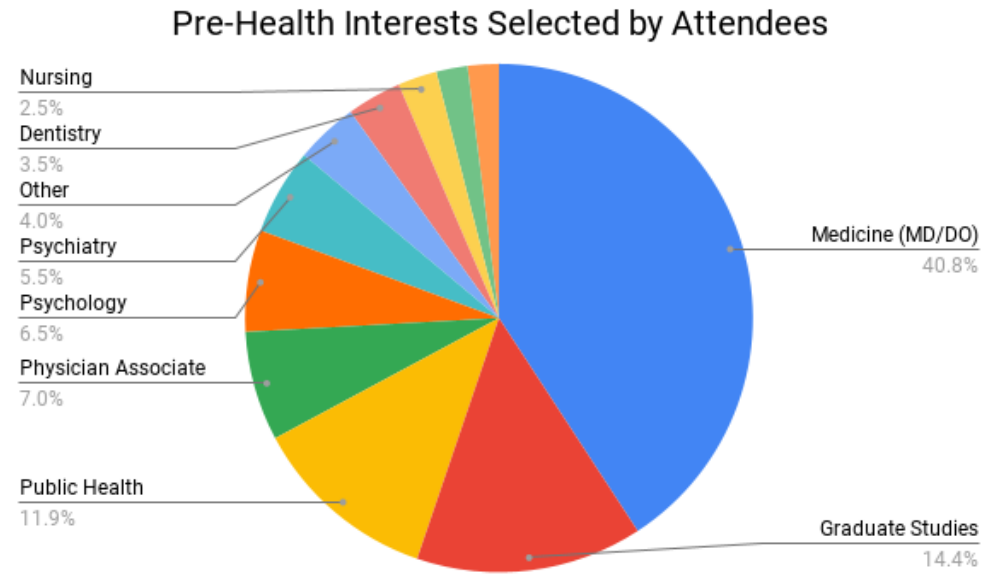


Figure 4: Current educational level of attendees in the post-event survey

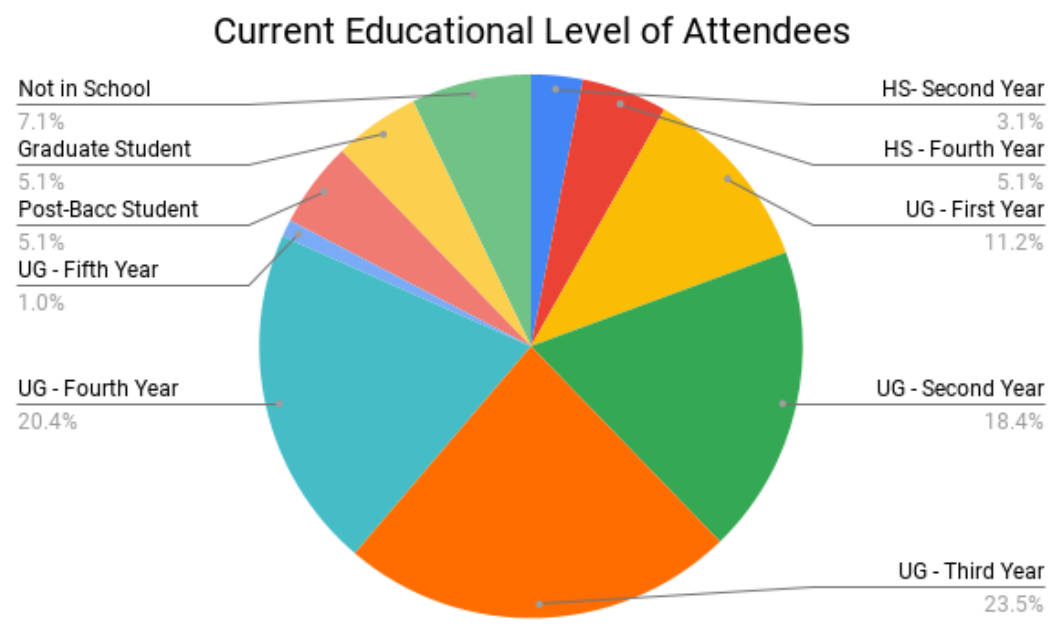


Figure 5: Confidence level of attendees in healthcare experience before and after attending NPHC 2021

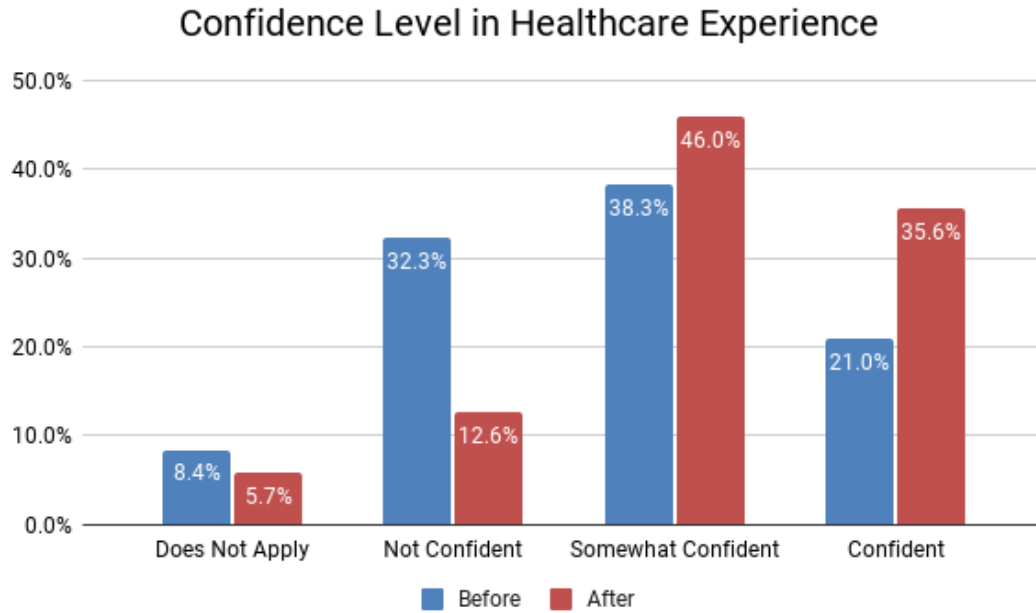


Figure 6: Confidence level of attendees in research experience before and after attending NPHC 2021

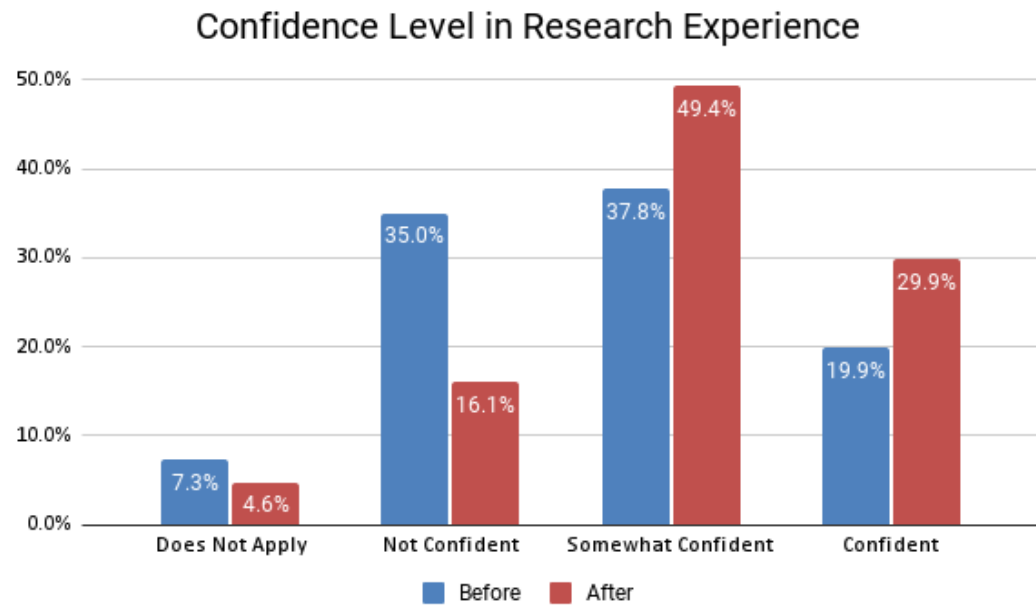


Figure 7: Confidence level of attendees in standardized testing before and after attending NPHC 2021

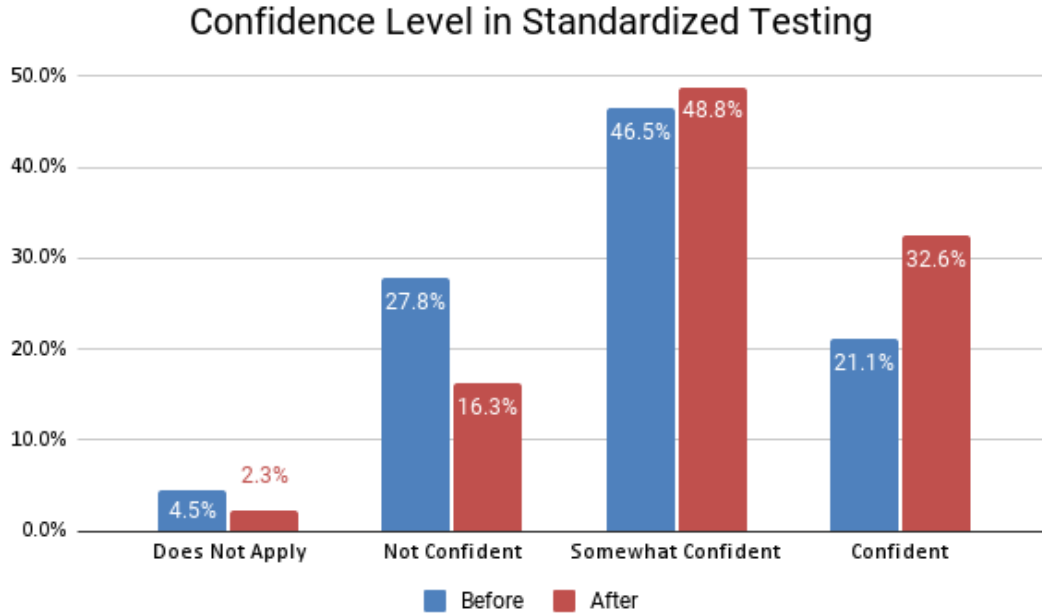


Figure 8: Confidence level of attendees in community service before and after attending NPHC 2021

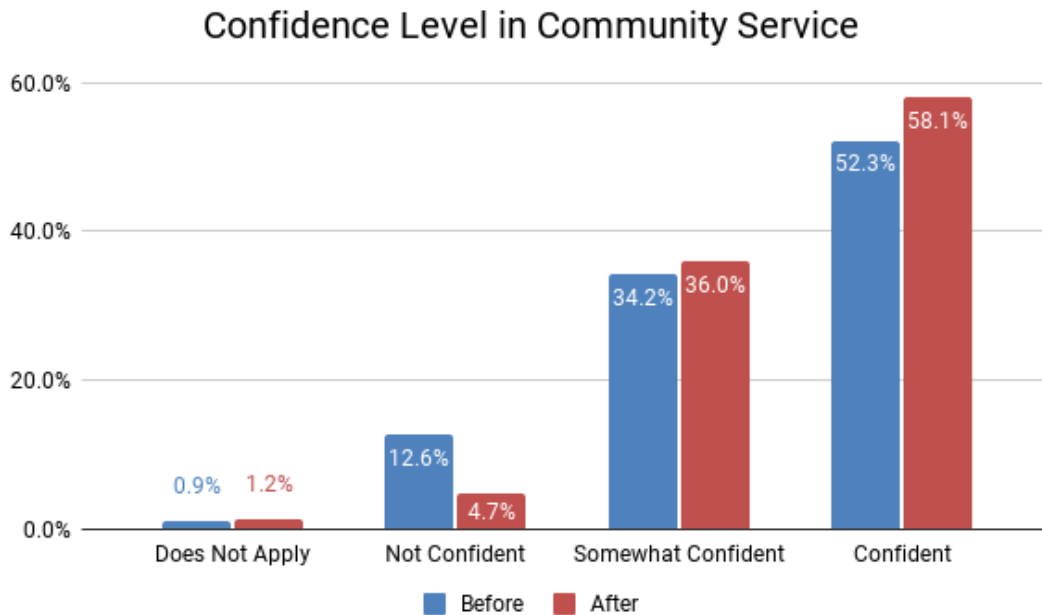


Figure 9: Confidence level of attendees in academics before and after attending NPHC 2021

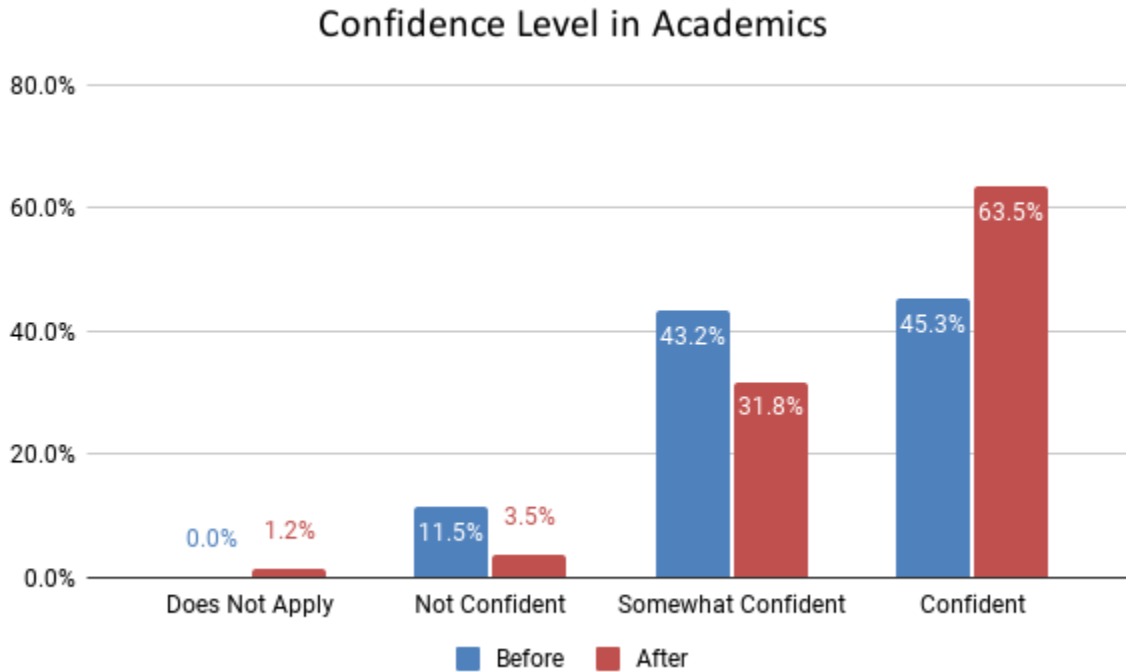


Figure 10: Confidence level of attendees in essay writing before and after attending NPHC 2021

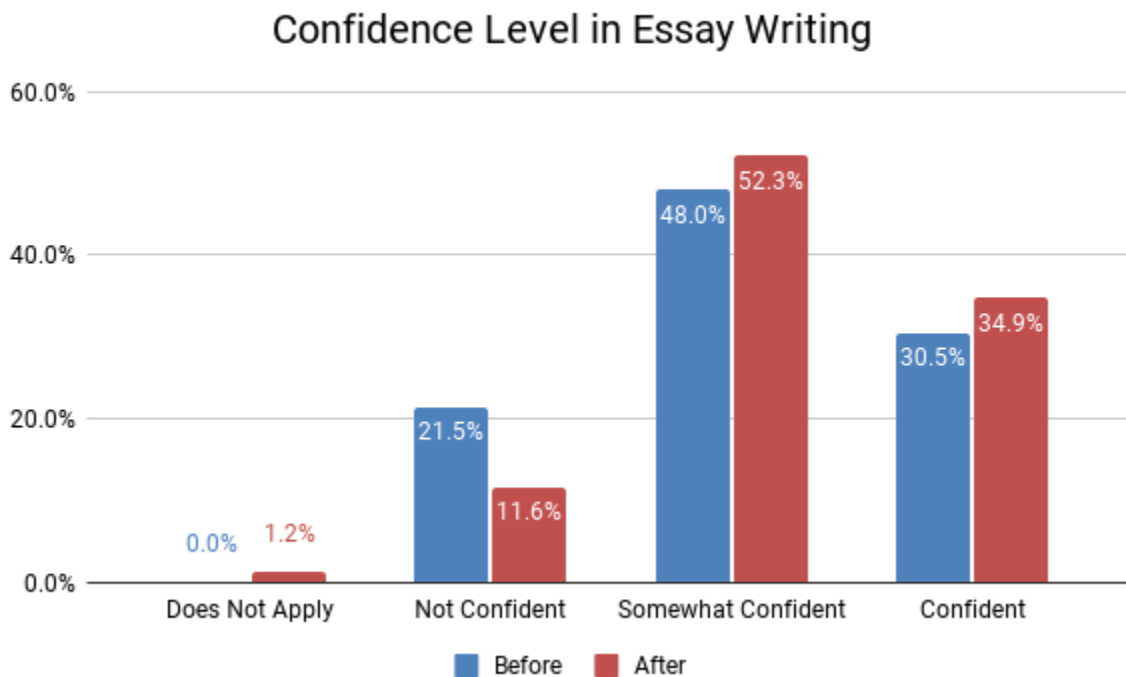


Figure 11: Confidence level of attendees in completing graduate/healthcare professional school application before and after attending NPHC 2021

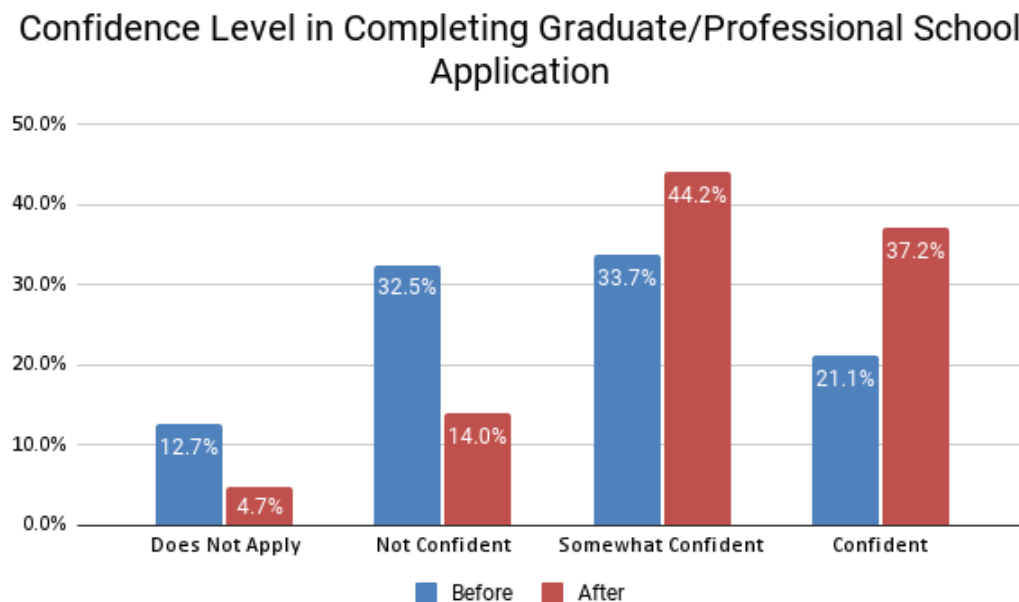


Figure 12: Top 5 sessions that increased confidence level of attendees in healthcare experience

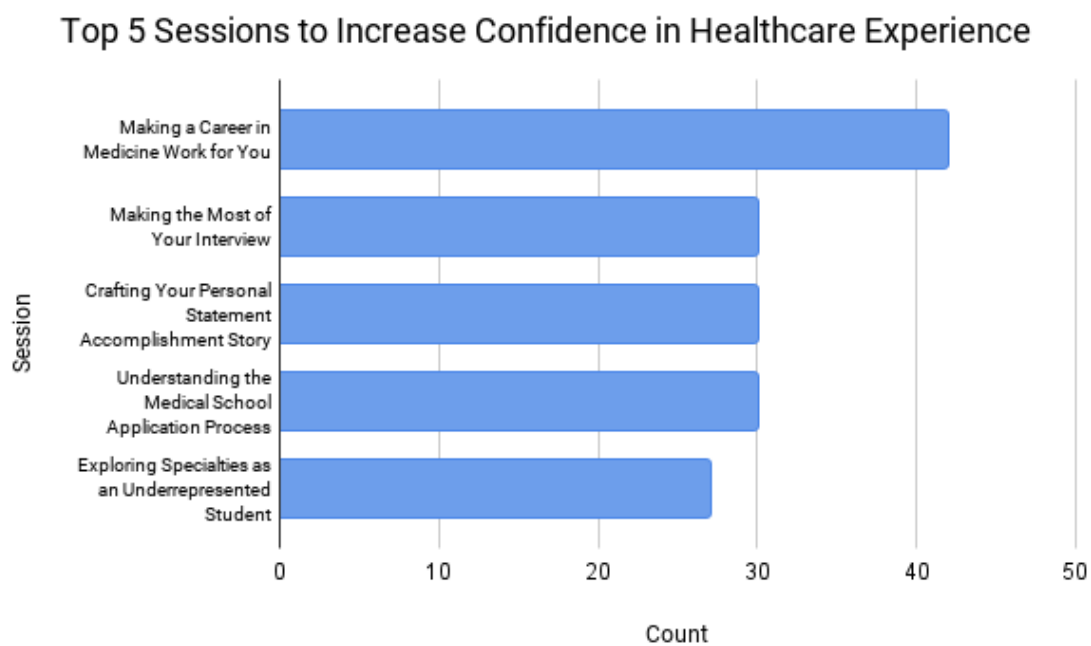


Figure 13: Top 5 sessions that increased confidence level of attendees in research experience

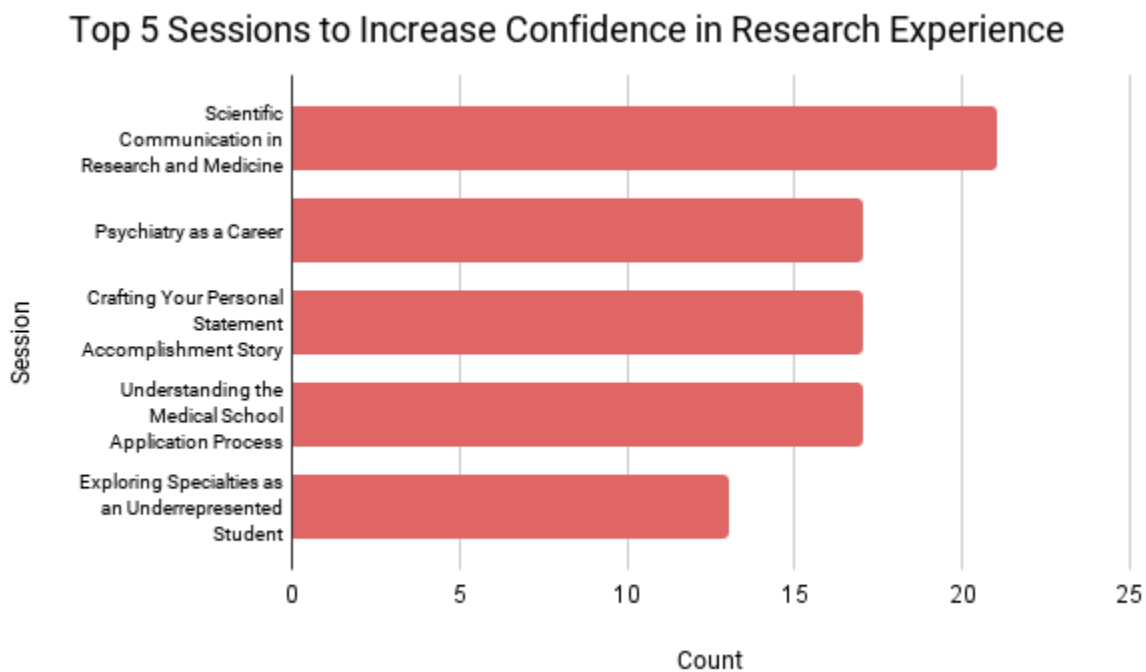


Figure 14: Top 5 sessions that increased confidence level of attendees in standardized testing

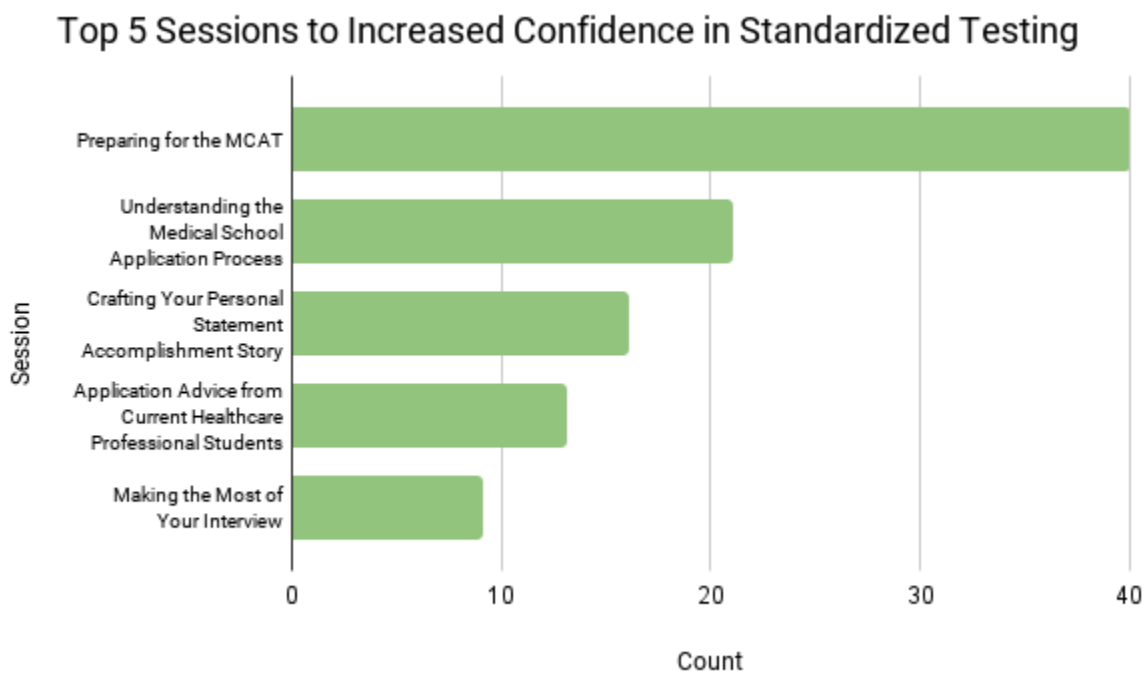


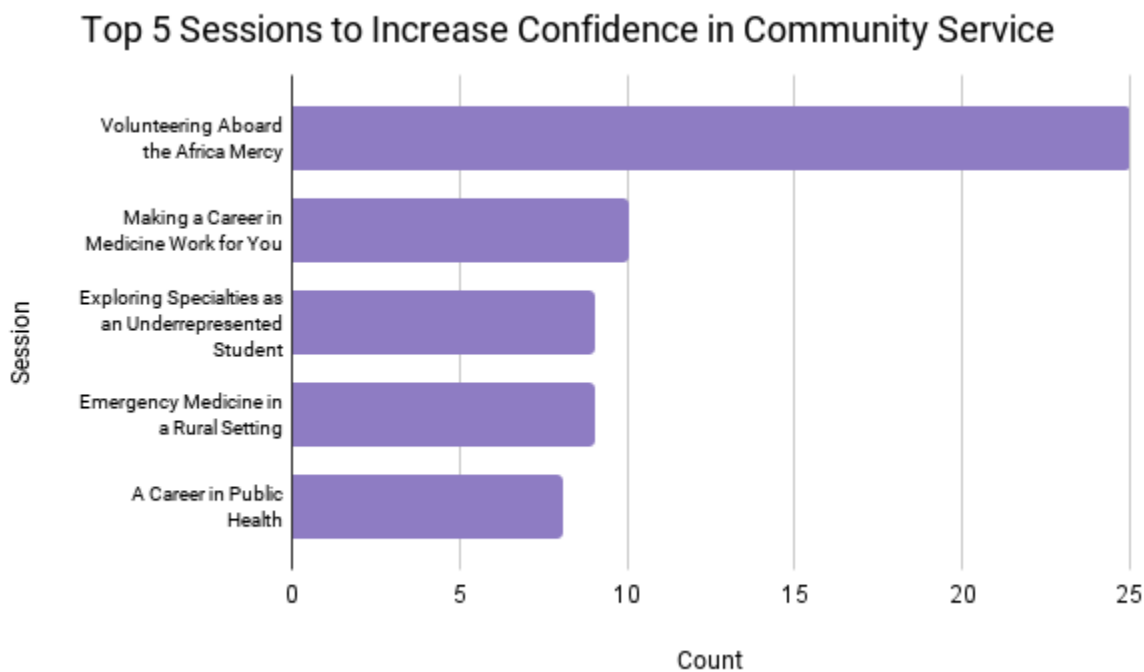
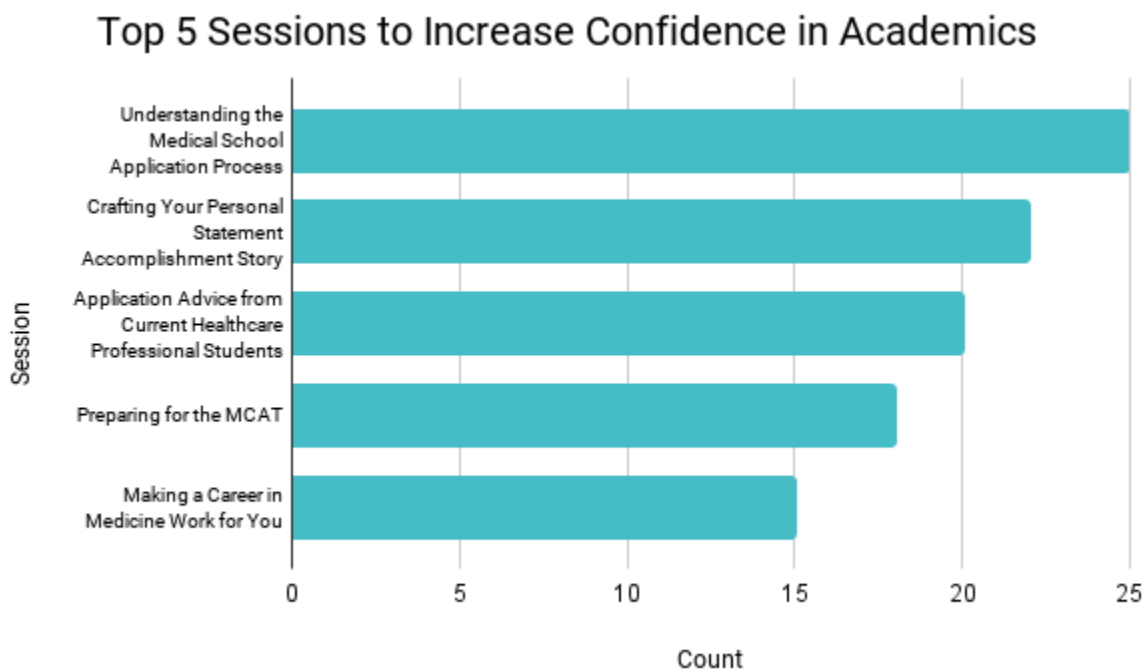
Figure 15: Top 5 sessions that increased confidence level of attendees in community service**Figure 16:** Top 5 sessions that increased confidence level of attendees in academics

Figure 17: Top 5 sessions that increased confidence level of attendees in essay writing

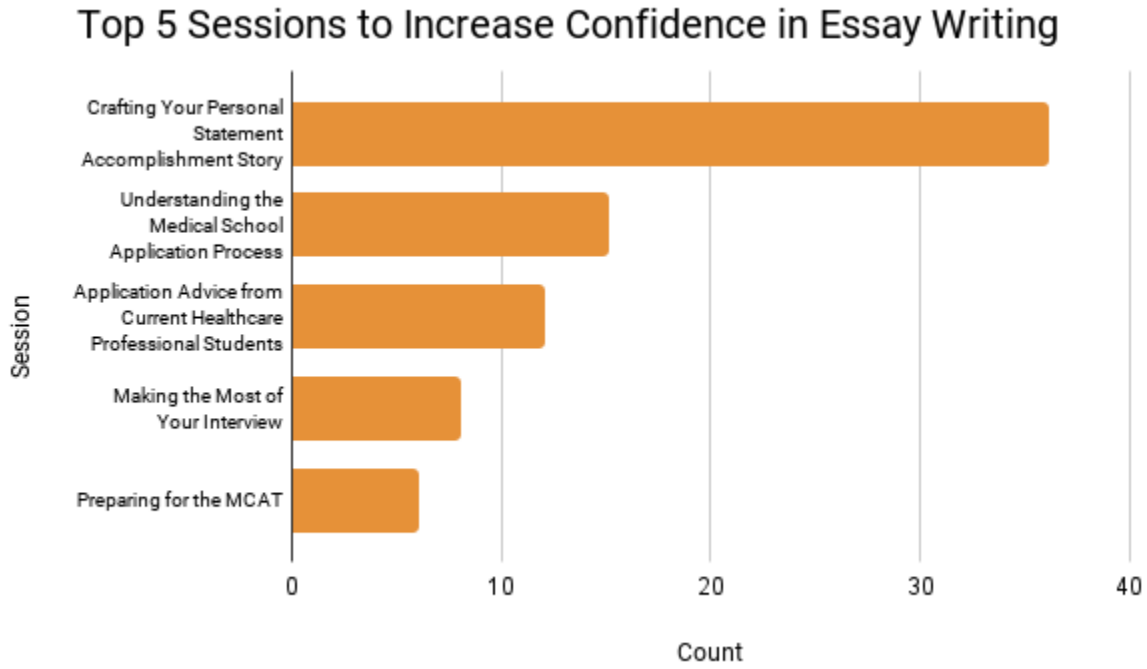
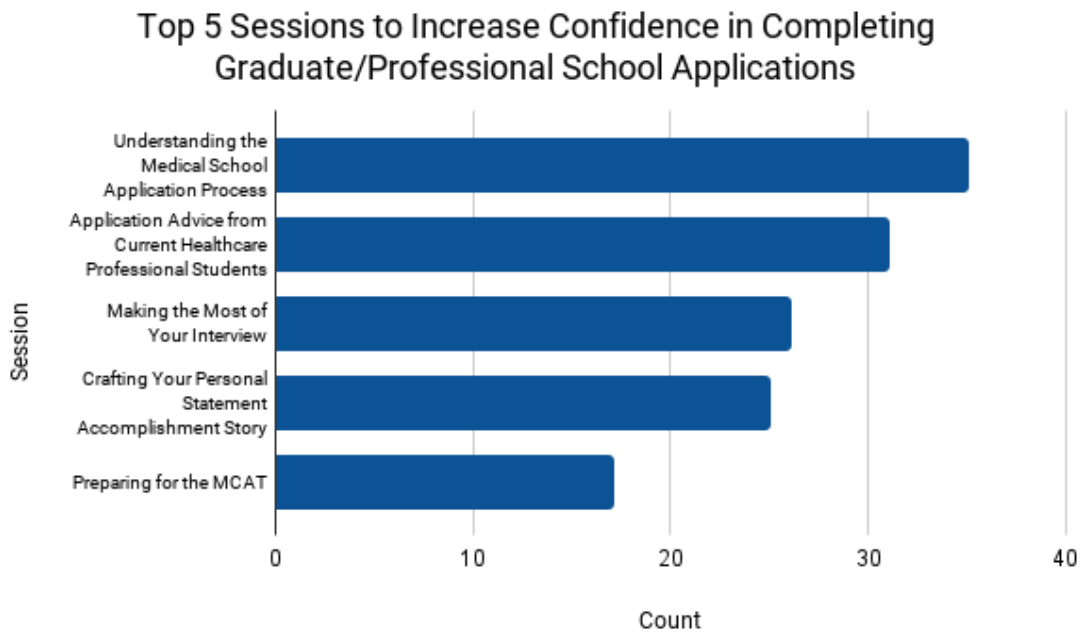


Figure 18: Top 5 sessions that increased confidence level of attendees in completing graduate/professional school applications



DISCUSSION

The second-annual National Pre-Health Conference came to a close on Friday, August 6th, 2021. With over 1000 registrants, 200-400 attendees were present each day and engaged in 7-10 sessions throughout the day. To see statistics for all attendees who attended NPHC 2021, see page 5 of the 2020-2021 annual report [Appendix C]. In contrast to the year prior, there were often two guest speakers in sessions. We also had more interactive activities including virtual community service, Q/A on opportunities by our media sponsors, a research exposition, and a special, pre-registered session held by University of Arizona College of Medicine students surrounding case studies on cardiology, which attendees stated in a prior survey they were most interested in. In order to learn more about our audience and improve for future conferences, we inquired about the confidence level of pre-health attendees in healthcare experience, research experience, standardized testing, community service, academics, essay writing, and completing graduate/professional school applications before and after attending NPHC 2021. We also asked attendees to choose which sessions of the conference increased their confidence level in each category. As discussed previously, we hypothesized that sessions of NPHC 2021 would increase the confidence level of attendees before and after attending the conference.

Interestingly, a majority of attendees before and after attending NPHC 2021 noted they were somewhat confident in all categories except community service and academics, where a majority said they were confident. However, the confidence level of pre-health attendees after the conference increased in all categories. For example, attendees that were somewhat confident in healthcare experience and research experience increased significantly from 38.3% and 37.8% to 46% and 49.4%, respectively, after the conference. Similarly, attendees that were confident in community service and academics increased from 52.3% and 45.3% to 58.1% and 63.5%,

respectively. Attendees that were somewhat confident in standardized testing, essay writing, and completing graduate/professional school applications also increased from 46.5%, 48%, and 33.7% to 48.8%, 52.3%, and 44.2%, respectively. Therefore, our hypothesis was supported.

Moreover, up to 42 of respondents in the post-event survey selected sessions that increased their confidence level in healthcare experience, research experience, standardized testing, community service, academics, essay writing, and completing graduate/professional school applications. Curiously, there were a few sessions that increased the confidence level of attendees in several categories. For example, Making a Career in Medicine Work for You by Dr. Jennifer Lincoln, Making the Most of your Interview by Dr. Robin Michaels, Preparing for the MCAT by Kaplan, and Application Advice from Current Healthcare Professional Students were in the top five sessions of at least three categories. Crafting Your Personal Statement Accomplishment Story as well as Understanding the Medical School Application Process by Dr. Neha Vapiwala were also in the top five for all categories except community service. It is intriguing to see how a handful of sessions increase the confidence level of attendees in many categories, especially since each of these sessions heavily focused on one specific topic, such as preparing for an interview or to take the MCAT. On the other hand, it is reasonable to understand how learning about the MCAT process and MCAT study strategies would increase confidence in completing graduate/professional school applications and academics in addition to standardized testing, which were some of the categories for which “Preparing for the MCAT” was selected.

Understanding which sessions increased the confidence level of these categories can help NPHC improve for future conferences. A worthwhile future task for the NPHC team would be to rewatch the sessions most selected for all categories and pinpoint which pieces of information and advice would be most helpful. Additionally, finding guest speakers similar to the speakers of

these sessions, or asking past speakers of these sessions to connect us with their colleagues would help our team find similar sessions for next year. It is important to note that sessions that improve the confidence level of many categories are more valuable to our attendees than sessions that improve confidence in one or none of the categories.

Attendees that filled out the post-event survey were also given the opportunity to add any comments about NPHC 2021 or suggestions for future conferences. Some attendees requested an “agenda” in advance for sessions as well as more specific resources for volunteer, research, and clinical experiences. To provide an agenda, we would request a short list of key points that our presenters would discuss in their presentation and provide this list to our attendees. Having an agenda for future conferences can give attendees an idea of which sessions they would most benefit from and is an idea we will most certainly bring up to our team. Also, we have a monthly newsletter that sends out specific resources regarding scholarships, clinical opportunities, research opportunities, community service, internships, graduate school advice, and more. We also have a page on our website that includes past newsletters with these resources as well as a link to our discord that often has resources sent out. However, it would be beneficial to advertise some resources in particular during our event announcements. Many attendees also wrote that they were thankful to have a free, informative event that was easily accessible to them, and to have access to the recordings on our YouTube Channel. One attendee in particular wished that the conference could be held bi-annually.

One possible source of error for these surveys is nonresponse error, which occurs when respondents of the population sample do not participate in the survey, or do not participate in certain questions within the survey. The lower number of respondents that respond to each question in comparison to the total number of responses may decrease the significance of the

data. Another possible source of error is coverage errors, which occurs when there are differences between the sample population and the actual sample. For example, our team reached out to students from all over the country, but a majority of attendees were from California, New York, and Florida. Moreover, a majority of our attendees were interested in the medical field compared to other fields as seen on pages 6 and 7 of the 2020-2021 annual report [Appendix C]. The actual sample size is a relatively equal distribution of students in pre-health areas from all 50 states. There were a few states that we did not have any attendees from, and the students with educational backgrounds from these states may have impacted the survey data.

Overall, the second-annual National Pre-Health Conference was a big success. Our sessions were able to improve the confidence level of pre-health attendees in all pre-health successful categories. When NPHC was created in June of 2020, there was a great need for more virtual opportunities to keep the pre-health community engaged. Now, even with more people vaccinated against COVID-19 and our communities returning to in-person activities, virtual meetings and activities are still very much kept alive. For me, I have been able to work with my teammate, Alejandra, without even seeing her in-person in almost two years. Virtual events like the National Pre-Health Conference provide accessible resources and guidance to students, entirely free of charge. For future conferences, we are very interested in expanding our organization by providing more opportunities, such as virtual mentorship programs, mini events, and potentially a hybrid conference. A virtual mentorship program may include pairing medical and other healthcare professional students with pre-health students around the country through monthly zoom meetings. This would allow our students to learn more about medical schools outside of their area as well as hear advice from successful students. Mini events may include partnering with our media sponsors to host 2–3-hour speaker sessions and panels on a specific

topic, such as medical specialties or application advice. Hosting a hybrid conference would allow attendees to attend sessions either online or in-person. Having the opportunity to attend in-person enables our attendees to network with other pre-health students, which is a key component that virtual conferences can struggle with.

Additionally, we are interested in hosting medical specialty conferences. These conferences would have a similar structure to our pre-health conferences but would be focused on different medical specialties from orthopedic surgery to palliative care. Every medical specialty is different, with some having no patient interaction and others consisting of entirely patient interaction. There are also major differences in work-life balance. As Alejandra and I are entering medical school soon, we would like to expand our organization to support other medical students. Gaining exposure to different medical specialties can allow medical students to be more confident in which path to take and give them the necessary information to become competitive for specific residency programs. The future of NPHC is exciting, and we are proud to have recently incorporated and renamed our organization as the National Pre-Health Community, LLC. We value community engagement at NPHC and cannot wait to see what is in store for NPHC 2022.

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APPENDIX

Appendix A: NPHC 2020 Program Guide

Appendix B: NPHC 2021 Program Guide

Appendix C: NPHC 2020-2021 Annual Report