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The Racial Diversity Lag In Audiology: Improvement of Recruitment and Retention of Black Doctor of Audiology Students

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THE RACIAL DIVERSITY LAG IN AUDIOLOGY: IMPROVEMENT OF RECRUITMENT
AND RETENTION OF BLACK DOCTOR OF AUDIOLOGY STUDENTS

Capstone Document

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Audiology (Au.D.)
in the Graduate School of Illinois State University

By

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July 2022

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ABSTRACT

The racial composition of the Audiology workforce is, by no means, a reflection of the US population. Black and African American audiologists are disproportionately represented in the United States. Diverse audiologists are significantly underrepresented in clinical and academic fields. Inversely, students in the racial majority are overrepresented in Audiology and most medical specialties for that matter. This disparity may limit access to hearing-healthcare for some populations in the country. Several factors that contribute to this condition must be more fully understood before this issue can be corrected. Recruitment and retention must be improved to increase diversity, particularly students of color, within the profession of Audiology. Successful recruitment of students of color in the Communication Sciences and Disorders undergraduate major and other health science majors might be achieved through collaboration with Historically Black Colleges and Universities, establishment of a student mentoring program, targeted marketing campaigns, and the use of social media capabilities. A survey of Audiology programs and Doctor of Audiology students was analyzed and reported in an attempt to increase our understanding of how to properly address this issue.

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VITA

Education

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Anticipated Graduation: May 2023

Bachelor of Science: Speech, Language, & Hearing Sciences - Purdue University December 2018

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- Performed audiologic evaluations on pediatric patients for ENT physicians
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- Performed/interpreted Auditory Brainstem Response [ABR] threshold measurements
- Performed/interpreted Auditory Steady-State Response [ASSR] measurements
- Aided in mapping, programming, and functional testing of cochlear implant devices for Cochlear, MED-EL, and Advanced Bionics
- Aided in amplification consultations and the fitting of amplification devices

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- Performed audiologic evaluations on pediatric patients
- Measured/interpreted transient evoked otoacoustic emissions [TEOAE] on pediatric patients
- Performed/interpreted Auditory Brainstem Response [ABR] threshold measurements
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- Student Academy of Audiology (SAA), Illinois State University Chapter, Member
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CHAPTER 1

INTRODUCTION

Diversification of the Doctor of Audiology (AuD) student population begins with targeted recruitment, fair admission, and a supportive program that fosters retention. Black and African American (BAA) people has been estimated to account for 13.4 percent of the U.S. population. In 1960, the BAA population in the U.S. comprised 11 percent of the country, so, proportionally, there has not been an appreciable change in the BAA community in the past 60 years. Nevertheless, according to the U.S. Census Bureau, by 2044, the United States is projected to become a *majority-minority* country.

Historically, racial diversity in the profession of Audiology has never approximated the demographics reported by the U.S. Census Bureau. For that matter, most of the clinical and science professions have had poor representation of people of color (Urban Universities for Health, 2014; NAESM, 2019). The American Speech Language and Hearing Association (ASHA, 2018) revealed that people of color comprise a small percentage of the practicing audiologists (**Figure 1**). More than 92 percent of practicing audiologists are Caucasian, while roughly two percent identify as BAA (ASHA, 2020). Crudely, this suggests an 11 percent disparity between BAA in the U.S. population and in the profession of Audiology, which, as will be explained later, equates to a deficit of more than 125 students per annum. Hence, it is reasonable to assume that such a disproportion has been driven by a lack of recruitment and retention of BAA AuD students, including allied health students in general.

Allied Health and Diversity

Allied health professions have been challenged with a sustained scarcity of diversity across multiple disciplines (AHRQ, 2014). The situation is similar in medicine (AAMC, 2018);

however, within the allied health sector, BAA individuals comprise one to six percent of practicing professionals (**Figure 2**). Only Social Work (not shown) was above the U.S. BAA population rate (12.0 to 13.4 percent), with 20.6 percent of social workers identifying as BAA. An understanding of how the field of Social Work has become an attractive career pathway for the BAA community would be beneficial. The difference between the U.S. BAA population rate and the number of practicing audiologists may be attributed to a lack of awareness of Audiology as a viable career opportunity. Although recruitment and retention of BAA students has been problematic for allied health, dental, medicine, and nursing programs, the underlying basis for this issue lies in America's history of racism, homophily, and access to health services and education.

History of Black Subjugation

America has a legacy of racially segregated educational institutions and medical facilities that has produced a disparity of BAA health professionals (Grumbach, 2008). More than 400 years of chattel slavery of African populations, followed by over one hundred years of Jim Crow segregation, has resulted in an underrepresentation of Black health care providers in the country. Centuries of subjugation have generated obstacles for BAA families, making it challenging to earn a degree, enter the health care workforce, and advance and obtain wealth. Failure of primary education in the U.S. is one of the highest impediments to diversity in health professions (Grumbach, 2008). Other factors have exacerbated the problem, such as access to the educational pipeline and university admissions practices (Reisfeld and Kaplan, 2020).

Homophily

Homophily may be defined as the tendency for individuals to be attracted to and seek others who are like themselves. Whether that be race, gender, sexual orientation, or religion,

homophily may be observed in the everyday actions of people. In health care, patients demonstrate such tendencies as they may prefer to receive services from clinical professionals who they resemble. Health, health care services, and higher education have not been easily accessible for people of color. This also may be due to an underrepresentation of people of color in the licensed-professional ranks. The trust that is needed to foster a healthy relationship and good communication between a patient and their clinical provider may be severely strained due to homophily.

Access to Health and Education Services

Racial and ethnic disparities have been observed in morbidity and mortality data, showing that people of color are disproportionately disadvantaged. They demonstrate a higher prevalence of cardiovascular disease, diabetes, asthma, and cancer, including other conditions (Betancourt, 2003). More recently, these inequalities were evident in the communities most affected by the COVID-19 pandemic. Termed the social determinants of health, minoritized communities are affected by the substandard surroundings in which they are born, live, learn, and work, that negatively affect their physical, emotional and mental health, and quality-of-life. A history of slavery and present-day social determinants of health generate medical and educational problems for BAA populations, even when they are compared to Caucasian people with lesser financial status. Hence, awareness, recruiting, and retention should be modified for BAA communities if the aim is to eliminate the disparity. It is equally important to ensure that all people are given an opportunity to select a clinical provider that they resemble, with the goal of receiving compassionate, high-quality, culturally sensitive health care.

Cultural Humility in Healthcare

Health care that is culturally sensitive must be delivered through a lens of cultural humility, where clinical providers recognize the power dynamics and inequities and desire to repair those imbalances and empathetically relate to their patients. Cultural humility may be defined as an ability to maintain an interpersonal stance on cultural identity. People from the BAA community may be viewed as exaggerating their medical symptoms, which can lead to compromised health care. Further, cultural humility has been defined as a life-long process of self-reflection and critique; wherein, a person learns about another person's culture, then reflects on their own beliefs and cultural identity (Yeager, 2013). America is a culturally diverse population, so clinicians must be able to exercise appropriate counseling skills with patients. All health care personnel must overcome cultural and communication barriers to avoid substandard treatment of any person who seeks our services (Moxley, 2004). Diversification of the workforce should improve our ability to deliver culturally sensitive health care, but such diversification may only be achieved by recruitment of underrepresented students.

Student Recruitment

Individuals from the BAA community are often first-generation college students. Typically, they lack experience with college administration issues, such as how to properly complete an application, obtain finances, and obtain support (Xu, 2018). For these students, an advocate, advisor, or mentor would improve their chances successfully navigating the college application process. It seems reasonable for college faculty or staff to serve in this role, as advisor. For example, to more adequately represent the Audiology populations being served, Lamar University created a program to increase diversity within the field. Their primary aim was to reduce the disparity between those graduating with degrees in Speech-Language Pathology and AuD and the diverse populations of communities that needed services in the state of Texas

(Bellon-Harn & Weinbaum, 2017). The program was able to meet their objective of recruiting students of color by building community-college partnerships, heightening their presence in the community, and increasing awareness of the careers of Speech-Language Pathology and Audiology. After students are attracted to Audiology, submit an application, and are admitted into an AuD program, they should receive support and guidance to improve their chance of retention, graduation, licensure, and employment.

Student Retention

A strong mentor presence has lasting effects on students, especially BAA students. The effects of mentoring on student retention were reported by Roksa et al. (2017). They described the importance of faculty that possess a commitment to students as role models. Students who are welcomed tend to feel a sense of belonging (Roksa et al., 2017). Furthermore, there is value in the mentoring of BAA students and a high correlation between mentorship, retention, and rates of graduation has been identified Valentine et al. (2016).

Martino et al. (2007) summarized the successful retention of diverse students at Xavier University's Speech-Language Pathology and Audiology program and the graduate program at University of Northern Iowa. To increase the number of BAA people in the professions, they focused on guiding the transition of BAA students in the undergraduate major (at Xavier) directly into the graduate program (at Northern Iowa). These types of coordinated partnerships are beneficial for retention, transition, and success of BAA students.

Clinical Educators and Preceptors

Even when support for retention has been provided, BAA students face challenges such as microaggressions, bias, and racism from faculty, staff, clinical educators, preceptors, and even patients that may interfere with retention, and, ultimately, successful completion of the program.

Health care providers, as well as BAA students, face biases from patients. The effect can be long-lasting. English et al. (2020) identified the effects of biases toward health care workers, providing solutions for cases of bias that specifically target students in clinic. Per English and her colleagues (2020), the bond between clinical educators, preceptors, and their students must be carefully established and includes advanced planning and discussion. Advanced planning, immediate response, and timely debriefing should provide the clinical trainer and trainee with heightened responsiveness to emerging incidences of patient bias. Use of affective labeling and specification of the emotion that is being felt in a situation may help make sense of each other's feelings (English et al., 2020). Immediately addressing biases presented by patients allows boundaries to be set with them promptly and these actions may establish a more welcoming environment for students, preceptors, and patients.

CHAPTER 2

METHODOLOGY

Research Questions

From the literature, our hypothesis is that recruitment and retention are the core factors that contribute to the lack of diversity within Audiology, especially the diversity of BAA audiologists. First, we contacted AuD programs to ask the same three questions in an effort to determine the composition of BAA students and instructors in the country. Then, using a survey tool, the primary aim of this study was to identify the perceptions of BAA AuD students with respect to their programs. Using this information and published reports, a trajectory of the BAA student rate would be generated to estimate annual BAA-student recruitment targets.

Project 1

The Curriculum Registry (Database A) is a compilation of academic and demographic data that includes all Communication Sciences and Disorders programs in the U.S. and its territories. Curriculum Registry (Database A) analyses have been reported elsewhere (Joseph et al., 2019). Abstracting data on the AuDs programs, a different version of the database, the Multicultural Registry (Database B) was developed.

Study Population

Representatives of U.S. AuD programs served as our subjects for the first project. Contact information was obtained from university websites and Database B. All the 75 programs were contacted and briefly interviewed if they agreed to be interviewed.

Instrument

The interview for each representative was brief. A script was provided to the undergraduate lab assistant who attempted to contact and interview each representative. After a

brief introduction, the interviewer explained that the project was focused on increasing diversity in Audiology and that three questions were being presented to each AuD program. The questions were: (1) How many Black faculty does your audiology program have? (2) How many Black students are currently in your audiology program? (3) How many Black graduates have you had in the past 10 years?

Procedures

For those representatives who elected to participate, their responses to our three questions were recorded in the database. Some programs were contacted multiple times by telephone and email but neglected to participate. Four weeks after our initial attempt to recontact the program, no further attempts were made to follow up with program representatives if no reply was received. The response rate was 47 percent with 35 out of 75 possible respondents.

Project 2

Study Population

Subjects in Project 2 were a convenience sample of BAA AuD students enrolled in programs across the country. They were members of a closed messaging application (name withheld to preserve privacy of our participants). About 50 percent less students consent to participate than expected, perhaps because they were over-tasked with homework and clinic. Our sample size was 15 BAA AuD students (n=15).

Instrument

The Black Audiology-Student Survey (BASS; Appendix A) was created in the Hearing Loss Prevention Laboratory (HLPLAB) and distributed using a link to Qualtrics. The survey was developed with the main intent of identifying the perceptions of recruitment and retention of BAA AuD student respondents. First, respondents indicated whether they identify as: Black,

African American, or mixed race and selected their current year in the AuD program (1-4). Then, they were asked the following Yes-No questions: does your program have at least one Black/African American clinical educator, does your program have at least one Black/African American professor, have you experienced a microaggression, bias, or racist gesture from a patient in the presence of your clinical educator/preceptor, do you have at least one university clinical educator who has made a positive impact on your clinical experience, do you have at least one off-campus clinical preceptor who has made a positive impact on your clinical experience, and do you have at least one PhD faculty/professor who has made a positive impact on your clinical experience? Following this, they were presented a series of statements and asked to respond on an 11-point Likert scale using a slider (Agree through Disagree).

The statements included prior to beginning my AuD program, I was affected by recruitment strategies aimed at increasing the number of BAA AuD students; my AuD program has a welcoming environment for BAA students; my AuD program demonstrates a good rate of recruitment of BAA students; my AuD program demonstrates a good rate of retention of BAA students, my AuD program provides good support for BAA students; my campus provides good support for BAA students; I am comfortable communicating biases to university clinical educators that I experience in the clinic environment; I am comfortable communicating biases to off-campus clinical preceptors that I experience in the clinic environment; and I am comfortable communicating biases to PhD faculty/professor that I experience in the classroom. To complete the survey, respondents were asked to describe their experience in the AuD program, to include the good or bad experiences or elaborate on about their responses within the survey questions and statements.

Consent

Participants consented to participate in this research without being compensated for their time. This study was approved by the Illinois State University Institutional Review Board as IRB-2021-291 “An Investigation of Historically Excluded Students in the Profession of Audiology Using the Black Audiology-Student Survey (BASS).” Informed consent included the following statement, “Your participation in this survey is completely voluntary. This information will be used for a capstone project that intends to characterize the Black AuD student experience. Your individual responses will remain completely anonymous.” Students then consented if they wished to willingly provide their responses, understanding that they would not be used beyond the purposes of the study.

CHAPTER 3

RESULTS

Project 1

Using the Curriculum Registry (Joseph et al., 2019) as a platform, diversity data were collected in April 2020. From the 35 programs that agreed to answer our three questions, we estimate that in 2020 there were seven BAA instructors in the U.S., approximately 38 Black AuD students enrolled in AuD programs, and that 71 BAA students had graduated with an AuD over the 10-year period (2009-2019). Given that there were 75 AuD programs in the U.S. at the time we collected this information, we estimate that there is one full-time BAA instructor for every five AuD programs, but this may be one for every 10 programs. The estimated number of BAA AuD students enrolled in programs is shown in **Figure 3**, which identified that 14 (40%) responding AuD programs reported having only one BAA student in training, five (14%) programs reported having two BAA students, two (6%) programs had three BAA students, and two (6%) programs had four BAA students. The other 12 (34%) responding programs reported that there were no BAA AuD students in their program. Overall, Gallaudet University, Pacific University, University of Arkansas for Medical Sciences, and University of Memphis reported the highest number of BAA students in their programs.

Our data suggest that there is approximately one BAA AuD student in every AuD program, but this is more likely one student for every two programs. Lastly, we estimated that about 14 BAA AuD students graduate each year, but this appears to underestimate what has been reported by other sources. For example, Data USA (<https://datausa.io/>) indicated that, from 2012-2019, on average, 25.1 BAA AuD students graduated in the U.S. each year (**Figure 4**), which represents 2.47 percent of all graduating students over this eight-year period, versus 79.1 percent for graduating Caucasian AuD students.

Project 2

The study sample's responses to the BASS items are displayed in **Table 1**. Compared to the Figure 4 data, our sample size (n=15) was larger than half of the average annual number of BAA AuD graduates (mean = 25.1, range 17-30), so we believe it is moderately representative. Analysis of the BASS respondent data showed that 12 (80%) identified as *Black* and three (20%) as *African American*. The sample consisted of 33 percent 4th-year, 33 percent 3rd-year, 20 percent 2nd-year, and 13 percent 1st-year students. Eleven (73%) of the students revealed that they had at least one BAA clinical educator, and nine (60%) reported that they had at least one BAA PhD professor.

More than half of the study respondents (53%) had experienced a microaggression. All (100%) the students reported having at least one clinical educator who had made a positive impact on their clinical experience. Almost all (87%) the students reported having at least one off-campus clinical preceptor, as well as a PhD faculty-professor, who had made a positive impact on their clinical experience.

For questions that called for a response on the sliding Likert scale, a wide range of responses were frequently observed, so the sample will be characterized as positive perception (when sample mean response is above neutral 5.0), or negative perception (when sample mean response is below neutral 5.0). **Table 1** reveals that student perception was positive with respect to the following items: my *AuD program has a welcoming environment* for Black/African American students (7.06, highest mean response), my *campus provides good support* for Black/African American students (6.93), my *AuD program demonstrates a good rate of retention* of Black/African American students (6.87), I am *comfortable communicating biases to PhD*

faculty/professor that I experience in the classroom (6.67), my *AuD program provides good support* for Black/African American students (6.50), I am *comfortable communicating biases to university clinical educators* that I experience in the clinic environment (5.80), and I am *comfortable communicating biases to off-campus clinical preceptors* that I experience in the clinic environment (5.71). Student perception was negative regarding the following items: my *AuD program demonstrates a good rate of recruitment* of Black/African American students (3.60) and prior to beginning my AuD program, I was *affected by recruitment strategies* aimed at increasing the number of Black/African American AuD students (3.33, lowest mean response).

Given the emphasis of this study, distributions of the items that directly asked about recruitment and retention were analyzed closely. The distribution of responses in **Figure 5** for the BASS item *My AuD program demonstrates a good rate of recruitment for Black/African American* (mean = 3.60) were mixed (range 0.0-10.0), although 60 percent of the responses were 4.0 and below and over 25 percent were *Neutral* (5.0), indicating disagreement with the statement. The distribution of responses in **Figure 6** for the BASS item *My AuD program demonstrates a good rate of retention of Black/African American students* (mean = 6.87) were also varied (range 1.0-10.0), with almost 70 percent of the responses above 5.0 and 20 percent receiving a rating of *Neutral* (5.0), indicating agreement with the statement. Hence, recruitment showed very negative perception, but BAA student perception of program retention was very positive.

CHAPTER 4

DISCUSSION

Discussion

This two-part investigation involved collection of survey data from AuD programs and AuD students, Project 1 and 2, respectively. Our data seem to support the hypothesis that the lack of diversity vis-à-vis BAA audiologists is partly due to AuD program recruitment and retention. Using a survey tool created in the lab, we were able to capture BAA AuD student attitudes about recruitment and retention, and the responses from AuD program administrators highlighted several areas for improvement in Audiology.

Outcomes from our analysis have pointed to the underrepresentation of BAA students and instructors in U.S. AuD programs. From the first project, we discovered that BAA AuD students are unlikely to encounter a BAA instructor or fellow BAA student in the U.S. Four programs led the country with multiple BAA AuD students. The reason BAA students are drawn to these programs should be more clearly understood. Most U.S. programs have no BAA AuD students in the program; however, we determined that programs that have a BAA student typically have a single student. Being the only person in a program places a burden on BAA AuD students. Caucasian students are overrepresented in AuD programs and are graduating at a rate of 32:1 when compared to BAA students. The rate of recruitment must be increased significantly.

We developed the Black Audiology Student Survey (BASS) and administered it with a sample of BAA AuD students. A large percentage of the BASS respondents indicated that they had a BAA clinical educator or course professor, so we may have incurred a selection bias or have recognized that BAA AuD students tend to seek out programs with BAA clinicians and

faculty. Respondents were predominantly positive, revealing that they had impactful clinical preceptor support. Their perception was positive about their programs being welcoming with a campus that was supportive as well. Each of these factors are critical for a good retention rate for BAA AuD students. Although microaggressions were reportedly prevalent in the study sample, we should be able to capitalize on the fact that respondents were positive about the support they were receiving from clinical educators and off-campus preceptors.

Unfortunately, the same could not be said about recruitment. Respondents indicated that recruitment strategies were lacking, and this probably speaks to the profession of Audiology, in general, not an AuD program specifically. The most negative level of perception was observed with the BASS item that asked about recruitment. In fact, recruitment was at the negative end of the survey rating scale for the sample and retention was at the positive end of the scale. Hence, recruitment needs far more improvement than retention. Poor recruitment results in fewer BAA AuD students, a smaller pool of BAA PhD candidates, and less BAA mentors and advisors. To address the BAA recruitment shortfall, we calculated a recruitment rate.

Trajectory Data

Prevalence data present reported earlier in the report were used to produce **Figure 7**. To reach a rate of BAA audiologist that matches the percentage of BAA people in the U.S., we estimate that the AuD graduation rate would need to increase from about 25 to 140 per year. Such an increase would improve the proportion of audiologists from 2-3 percent to 12-13 percent- six times greater. At this time, we are unaware of a nation-wide campaign to enhance recruitment of underrepresented AuD students. Nevertheless, **Figure 7** illustrates that, to increase recruiting by a magnitude of 6 by 2050, a substantial amount of immediate work must be done to support and sustain any effort to reverse the disproportionate number of BAA audiologists.

The significant disparity is multifactorial, so, to close the gap, a multi-pronged approach is recommended. Several ideas have been proposed by Joseph and Mandulak (2021) and Mandulak et al. (2021). For example, marketing may focus on undergraduate students in order to raise their awareness of the Audiology career path and provide assistance with the graduate school application process. To strategically address the disparity, several methods should be considered, including (1) establish partnerships between Historically Black Colleges and Universities (HBCU) with Communication Sciences & Disorders (CSD) undergraduate majors and other institutions with AuD programs, (2) create mentoring resources for undergraduate students to connect them with audiologists and AuD students, (3) host focused events about Audiology for students to obtain practical experiences, and (4) create marketing materials about the profession and to be promoted on social media, television, radio, and elsewhere.

Partnerships with Historically Black Colleges and Universities

We found 101 HBCUs in the U.S.; however, data collected in the HLPLAB for the Multicultural Registry revealed that merely 8 percent (8/101) offer a CSD undergraduate major. These programs include Alabama A&M University, Hampton University, Jackson State University, North Carolina A&T State University, Oakwood University, South Carolina State University, South University of Shreveport, and Xavier University of Louisiana. To implement an AuD program at one or more of these CSD programs would take several years and be costly. However, partnerships between existing AuD programs, such as the ones identified with multiple BAA student above, could be done more quickly. A direct pipeline from existing HBCU CSD programs into AuD programs that have already demonstrated favorable recruitment and retention performance would likely contribute significantly to an increase of BAA AuD students. If these partnerships could be funded by a large grant, the partnerships might be even more productive.

Resources for Mentoring

It is stressful to be the only BAA AuD student in a cohort or at a training program, especially considering that more than half of our study sample reported experiencing a microaggression while in training. For all BAA AuD students, resources for mentoring may serve as a critical element for success and health. Mentoring should begin in the undergraduate program with guidance and support provided during the graduate school selection and application process. More senior BAA AuD students could provide mentoring support of undergraduates and new AuD students to distribute the workload. Once mentoring has been established, it may be included in marketing efforts to aid with BAA student recruitment. Mentors can be introduced to BAA students through virtual meetings and hosted in-person activities.

Hosting of Audiology Focused Events

Programs can host activities that allow undergraduate students and other candidates to receive direct exposure to Audiology. Activities that include otoscopic examinations, pure-tone air-screenings, and otoacoustic emissions testing may be offered on campus or in the community. These experiences serve to motivate students and facilitate observation of real clinical work. Community health support and civic engagement can be clinical or educational. Either way, these activities help to immerse students in Audiology and populate their graduate school application with accomplishments at the same time. Research and laboratory activities can be introduced to underrepresented students through hosted events (Joseph and Mandulak, 2021). If BAA audiologists can participate in hosted events, they should be allowed to meet each candidate. Also, when possible, high schools should be offered an opportunity to participate in a hosted event to provide early exposure to Audiology, perhaps during *Career Day*.

Doctor of Audiology programs across the country should begin to expand their recruiting strategies. One such Audiology-focused event is called “AuD Nights,” where prospective students can tour the campus clinic, present questions to AuD students, be introduced to equipment and hearing aids, and learn about the basics of Hearing Science and Audiology. This event could be sponsored by national organizations, student organizations, and corporations. Consideration may be given to an “AuD Nights” tour, where sponsors select activities from a menu, including on-campus faculty presentations, conferencing, and demonstrations (see Appendix B). Social media may be used to garner interest from other financial supporters.

Marketing Through Social Media

Social media is a powerful tool that can be used when marketing to a specific audience. Social media advertisements can target students who are interested in pursuing a college degree. Social media may be used as an educational vehicle as well. National organizations, AuD programs, and patient advocacy groups should enhance their social media presence and include the BAA community in their marketing approach. This way, social media can be used to inform the public about Audiology and hearing health while extending a message to underrepresented groups about the viability of Audiology as a career. As suggested with hosted events, BAA AuD candidates could be connected to audiologists to meet them and discuss opportunities to participate in hosted activities.

Conclusion

The racial composition of the Audiology workforce is, by no means, a reflection of the US population. Black and African American audiologists are disproportionately represented in the United States. Diverse audiologists are significantly underrepresented in clinical and academic fields. Inversely, students in the racial majority are overrepresented in Audiology and

most medical specialties for that matter. This disparity may limit access to hearing-healthcare for some populations in the country. Several factors that contribute to this condition must be more fully understood before this issue can be corrected.

Our data demonstrate that there is a disparity not only in our profession, but several other allied health professions. If possible, a collaborative approach might be used wherein several health science disciplines form a coalition to find solutions to this problem. A shortage of BAA AuD recruits contributes to less BAA clinicians, professors, clinical educators, preceptors, and mentors, so poor recruitment is problematic and must be managed. Recruitment and, to a lesser degree, retention must be improved to increase diversity within the profession of Audiology, particularly students of color.

Our analysis indicated that BAA AuD students have a positive attitude towards the retention efforts being administered by their AuD programs. Where these programs appear to fall short is around recruiting. Our trajectory suggests that recruiting must be improved significantly, from 25 BAA AuD graduates per year to about 140 per year. We suggested some ways this may be done, such as forming partnerships with those HBCUs with CSD programs, establishing a mentoring program, and hosting “AuD Nights.”

Systemic racism in America has historic roots and will forever be an obstacle for BAA AuD student recruitment, and retention. From this context, it will be challenging to reverse the disparity and improve access to BAA audiologists for the BAA community, but we believe that is if the problem is addressed immediately and in multiple ways, change is possible.

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TABLES AND FIGURES

Figure 1. An ethnic/racial representation of certified audiologists in America. These data were adapted from a survey conducted by ASHA in 2020.

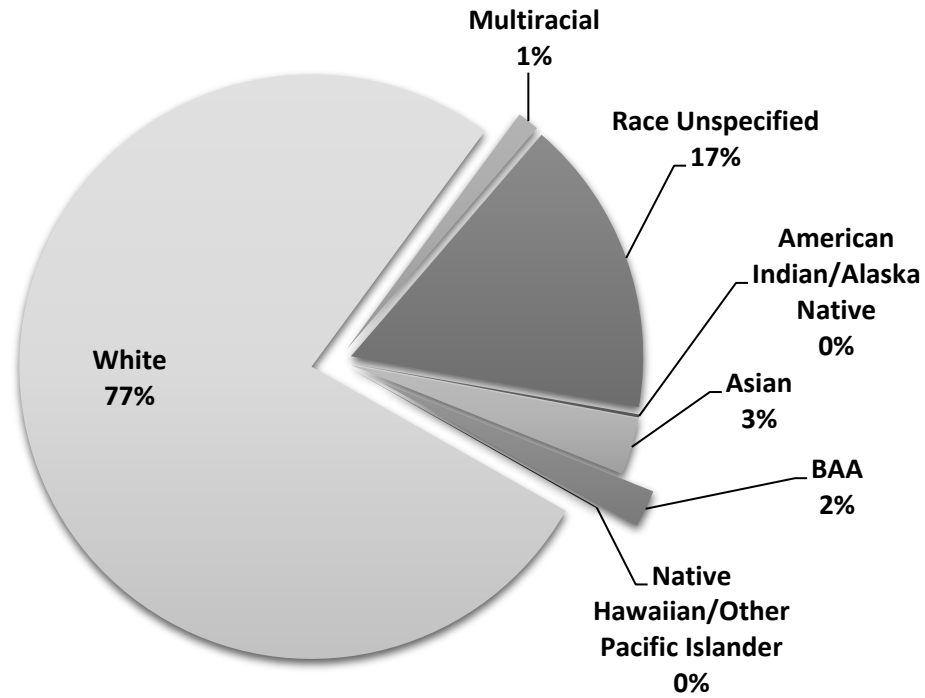


Figure 2. The estimated number of doctoral health professionals for comparison with the estimated number of BAA professionals.

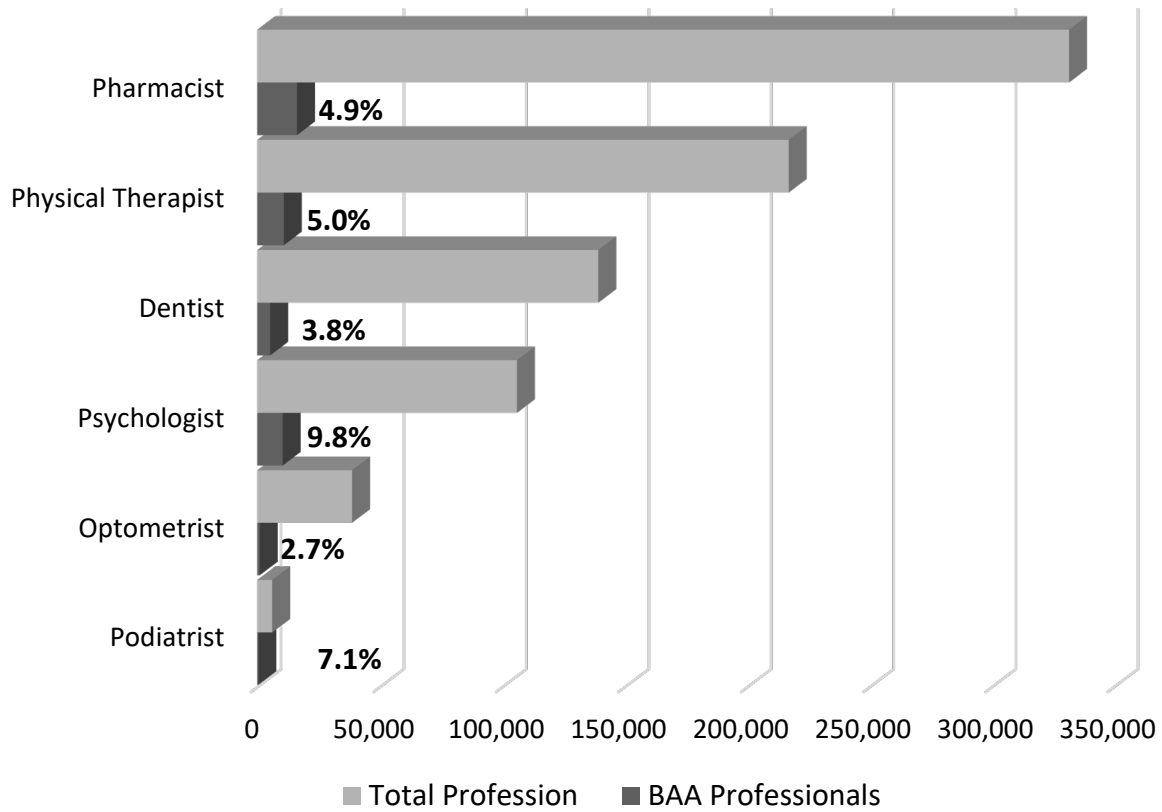


Figure 3. The reported number of Black or African American (BAA) Doctor of Audiology (AuD) students enrolled in programs for a survey conducted in 2020. Programs reporting none (zero) BAA students are not shown. A total of 75 universities were contacted; non-respondents contributed no data and are not shown.

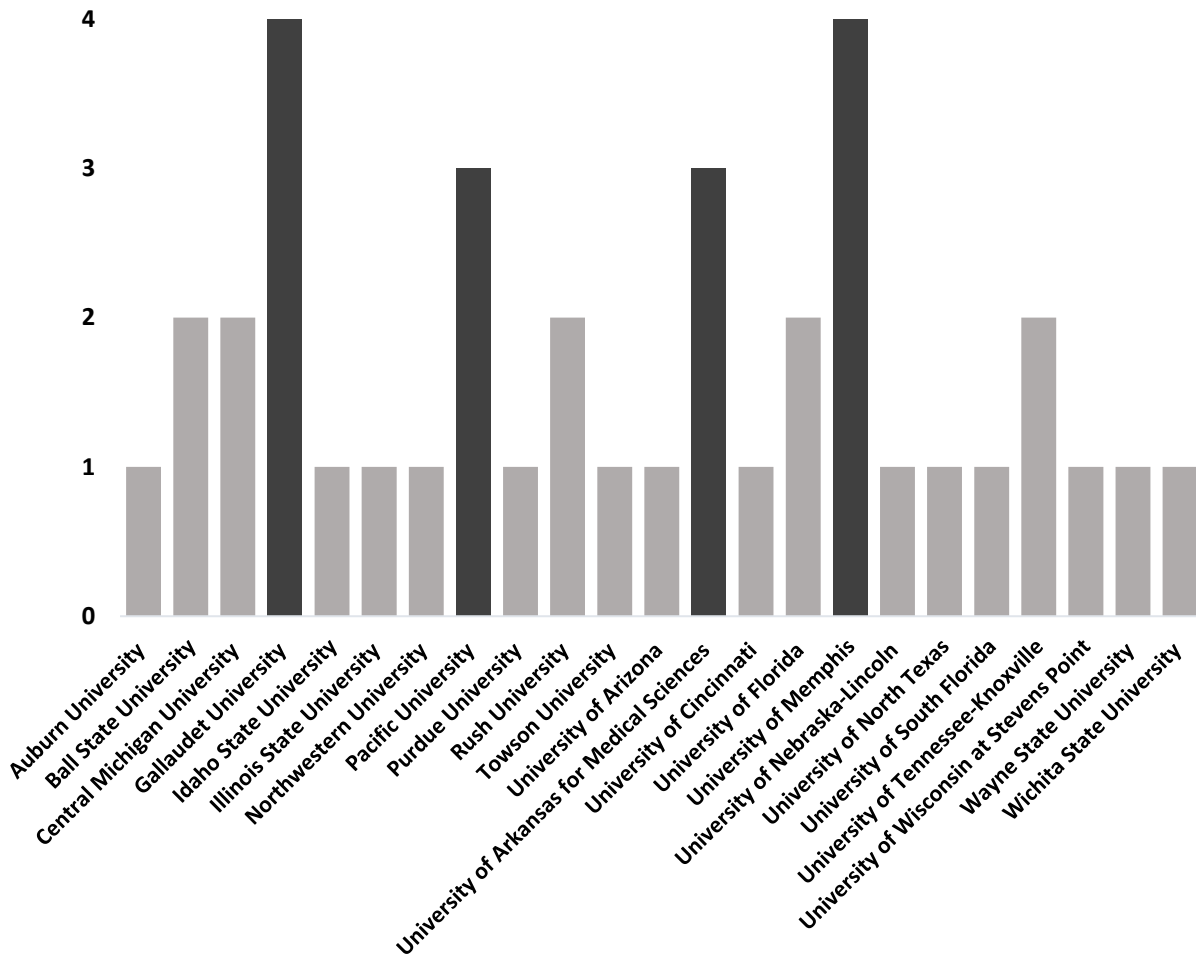


Figure 4. Comparisons of AuDs granted to both White and Black/AA students from 2012 to 2019 (source <https://datausa.io/>).

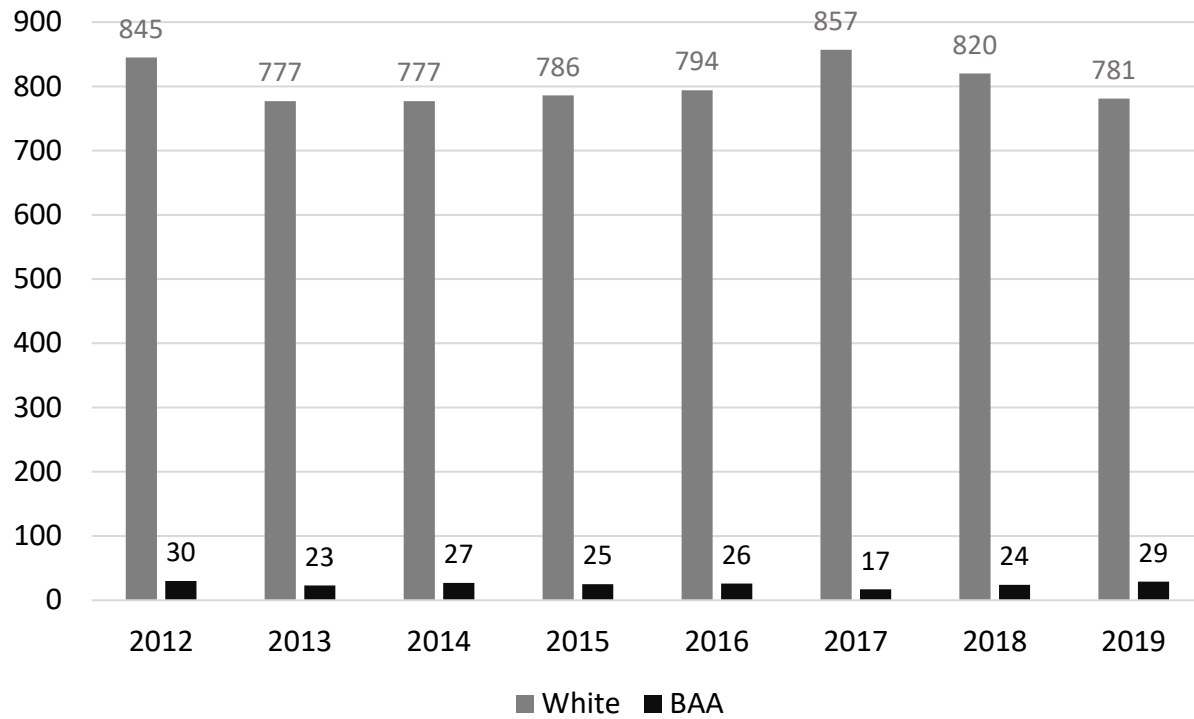


Table 1. Black Audiology Student Survey (BASS) items 1-15, including the percentage of student respondents who answered “Yes” to items 1-6 and mean (n=16) scores for responses to items 7-15.

No.	Item	%Yes	Mean
^a Responses for Q1-Q6 were Yes or No			
Q1	Does your program have at least one Black/African American clinical educator?	31%	
Q2	Does your program have at least one Black/African American professor?	44%	
Q3	Have you experienced a microaggression, bias, or racist gesture from a patient in the presence of your clinical educator/preceptor?	50%	
Q4	Do you have at least one university clinical educator who has made a positive impact on your clinical experience?	100%	
Q5	Do you have at least one off-campus clinical preceptor who has made a positive impact on your clinical experience?	87%	
Q6	Do you have at least one PhD faculty/professor who has made a positive impact on your clinical experience?	87%	
^b Responses for Q7-Q15 were on an 0-10-point scale			
Q7	Prior to beginning my AuD program, I was affected by recruitment strategies aimed at increasing the number of Black/African American AuD students		3.33
Q8	My AuD program has a welcoming environment for Black/African American students		7.06
Q9	My AuD program demonstrates a good rate of recruitment of Black/African American students		3.60
Q10	My AuD program demonstrates a good rate of retention of Black/African American students		6.87
Q11	My AuD program provides good support for Black/African American students		6.50
Q12	My campus provides good support for Black/African American students		6.93
Q13	I am comfortable communicating biases to university clinical educators that I experience in the clinic environment		5.80
Q14	I am comfortable communicating biases to off-campus clinical preceptors that I experience in the clinic environment		5.71
Q15	I am comfortable communicating biases to PhD faculty/professor that I experience in the classroom		6.67

For questions 1 (Q1) through question 6 (Q6), responses were *Yes* or *No*.^a For questions 7 (Q7) through question 15 (Q15), a digital slider was used to capture ratings within an 11-point scale *Disagree* (0) through *Agree* (10).^b Five (5) points on the rating scale, was classified as *Neutral*.

Figure 5. Distribution of responses to the BASS item- *My AuD program demonstrates a good rate of recruitment for Black/African American students.* The perception of retention of BAA AuD students is dispersed but mainly positive.

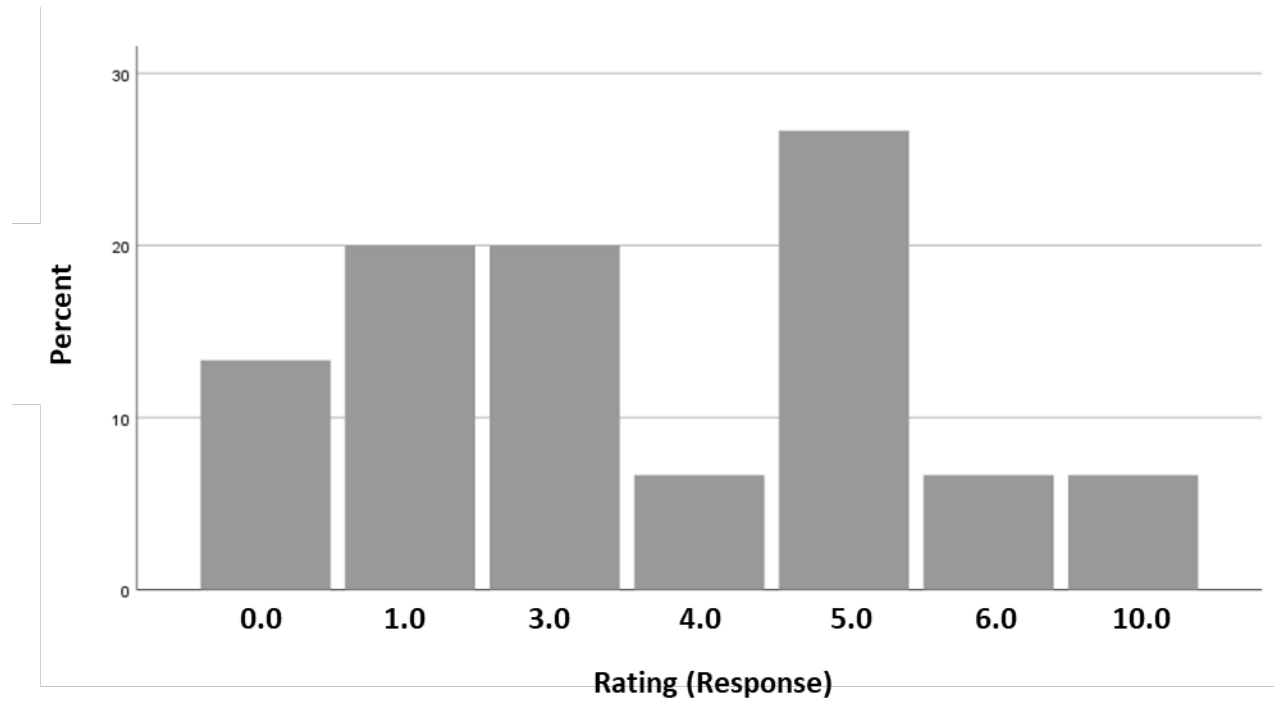


Figure 6. Distribution of responses to the BASS item- *My AuD program demonstrates a good rate of retention for Black/African American students.* The perception of retention of BAA AuD students is dispersed but mainly positive.

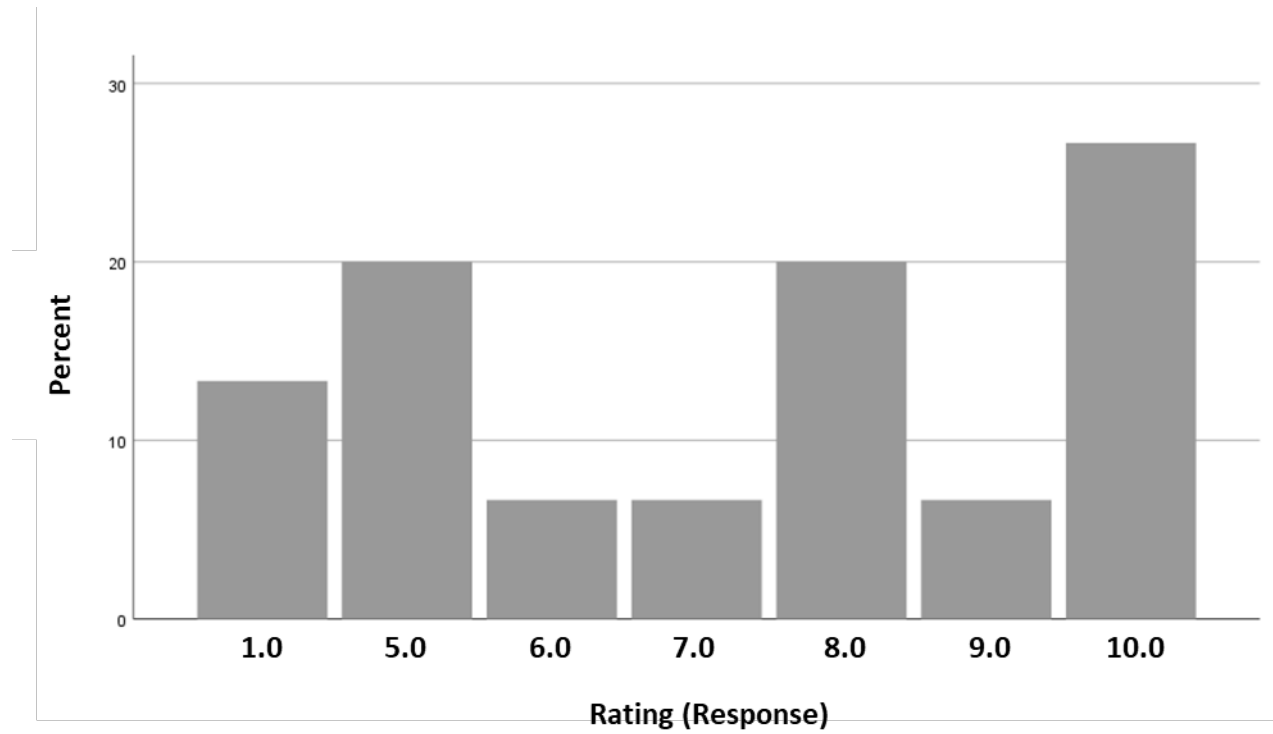
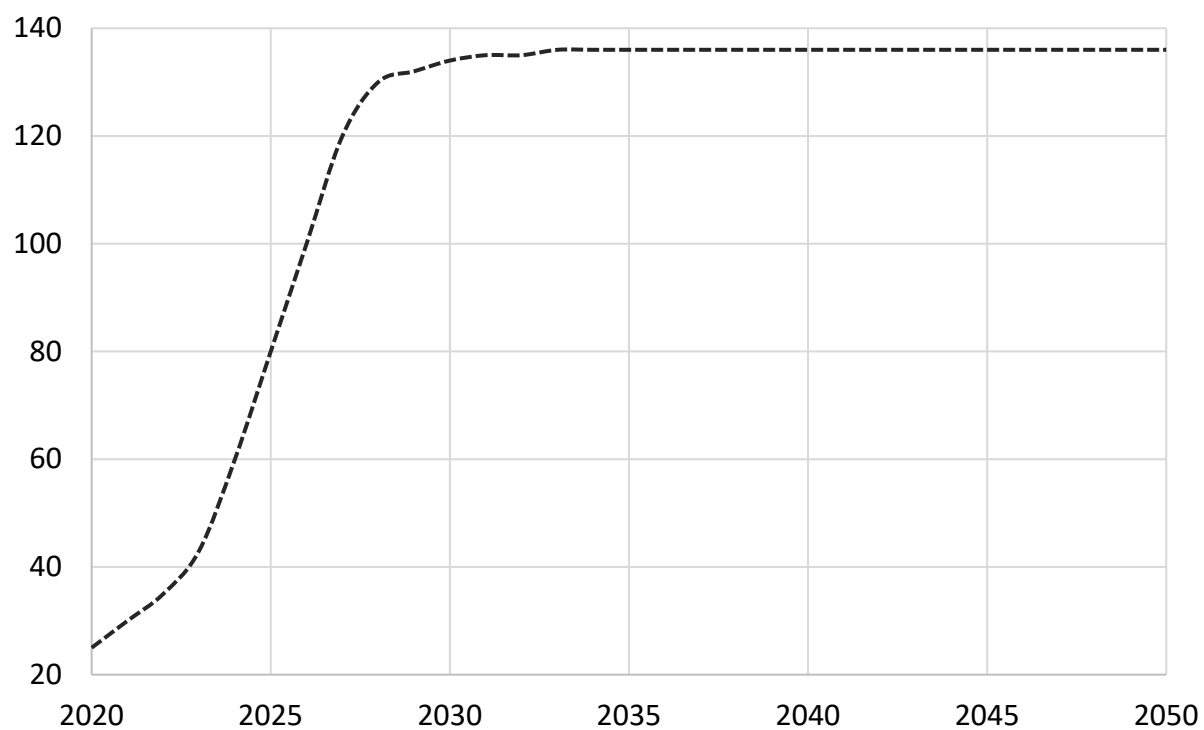


Figure 7. An estimated preliminary trajectory of AuDs to be granted to Black-students in order to reach the target rate of audiologists in the U.S. by 2050.



APPENDIX A

BLACK AUDIOLOGY STUDENT SURVEY (BASS)

Jouett & Joseph (2021)**Informed Consent:**

Your participation in this survey is completely voluntary. This information will be used for a capstone project that intends to characterize the Black AuD student experience. Your individual responses will remain completely anonymous.

I understand that my participation in this survey is voluntary. I willingly provide my responses, understanding that they will not be used beyond the purposes of this study. Yes No

I identify as: Black African American Mixed race

My current year of training is: 1st 2nd 3rd 4th

Does your program have at least one Black/African American clinical educator: Yes No

Does your program have at least one Black/African American professor: Yes No

Have you experienced a microaggression, bias, or racist gesture from a patient in the presence of your clinical educator/preceptor? Yes No

Do you have at least one university clinical educator who has made a positive impact on your clinical experience? Yes No

Do you have at least one off-campus clinical preceptor who has made a positive impact on your clinical experience? Yes No

Do you have at least one PhD faculty/professor who has made a positive impact on your clinical experience? Yes No

Likert scale 11-point slider (Agree through Disagree)

Use the slider to indicate the level to which you Agree or Disagree with the following comments:

Prior to beginning my AuD program, I was affected by recruitment strategies aimed at increasing the number of Black/African American AuD students

My AuD program has a welcoming environment for Black/African American students

My AuD program demonstrates a good rate of recruitment of Black/African American students

My AuD program demonstrates a good rate of retention of Black/African American students

My AuD program provides good support for Black/African American students

My campus provides good support for Black/African American students

I am comfortable communicating biases to university clinical educators that I experience in the clinic environment

I am comfortable communicating biases to off-campus clinical preceptors that I experience in the clinic environment

I am comfortable communicating biases to PhD faculty/professor that I experience in the classroom

Text box (1000 chars):

Please describe your experience in the AuD program. Feel free to include the good or bad experiences or elaborate on about your responses in the previous questions and statements.

Thank you for participating in our survey!

APPENDIX B

“A-U-D NIGHT” OUTLINE

Students may attend an “A-U-D Night” where they will be able to tour the clinic, ask questions of current Audiology students, receive hands-experience with equipment, and some of the basics of Audiology. National organizations can create a “AuD night” tour where they pick various programs to host these nights each year (similar to conferences) and a planning committee is formed to ensure the host school is prepared.

The planning will include the following:

- National organization partnership (i.e., AAA, NBASLH, ASHA, ADA, EAA)
- Host school sign-up
- An email campaign which is created and sent to HBCU CSD programs and other undergraduate programs
- Official registration website with registration fees, agenda, event location.
- Travel accommodations
- Scholarships for students to apply for (sponsors – industry, national organizations, donations)
- For host school
 - Volunteers
 - Equipment verification
 - Space for general assembly/welcome meeting
- Information fair
 - Schools with AuD programs invited to represent at these events
 - Financial aid
- Panel discussion
 - Optional panel questions:
 1. How did you become interested in Audiology? (or Why did you choose audiology as a career path?)
 2. How would you describe what you do?
 3. What does a typical work week look like for you?
 4. Where have you worked?
 5. What different populations have you worked with?
 6. What is most rewarding about audiology?
 7. What is most challenging about audiology?
 8. What advice would you offer someone considering becoming an audiologist?
 9. What is one thing people don’t know about audiology/being an audiologist?
 10. What are some skills/characteristics an audiologist should have?