Historically Underrepresented Minorities in Honors/AP STEM Courses at Paly

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Introduction

Research shows historically underrepresented (HUR) minorities, specifically African Americans and Latinos, are underrepresented in science, technology, engineering and math (STEM) oriented careers across the country: one third of the college-age population is composed of African American and Latino students, yet these groups comprise a mere 11% of those pursuing STEM careers (Tsui, 2007, p. 555). Even at a high achieving school such as Palo Alto Senior High School (Paly), minorities are heavily underrepresented in Advanced Placement (AP) and honors STEM classes (WASC, 2015).

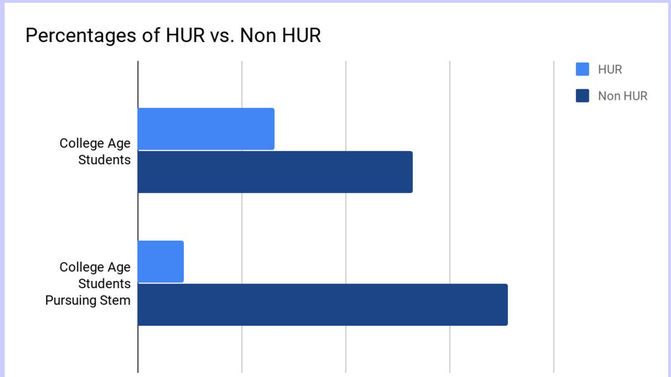


Figure 1. This graphic describes the percentages of HUR vs. Non HUR students within college and STEM majors separately.

Research Methodologies

Janurary - Planning/Preparing for Interviews

Descriptive statistics with quantitative data gathered from Mona Segal were prepared, and interviews were planned.

February - Interviews and Transcription

The participatory approach of action research was implemented by interviewing community members relevant to the issue.

March - Transcription and Coding

Interviews were transcribed and the analytical process of coding was used to pay attention to recurring themes and ideas.

Data and Findings

Math

"I think that we need to do a lot of individual encouragement. Just say 'This is what I see, I have faith in you, please consider it.' Because we do ask students to take control of their choices here, but we want them to be smart about not just the math picture but the overall picture. So, we want to give them counseling and let them decide and see what happens."

Robotics

"What I would like is for the district to get those underrepresented students into the information age. Get them to apply to be on the robotics team. Get them to sign up for whatever class we happen to be offering for the first year of computer science. But not to do things that could prove to be a segregation. Don't create a separate special thing; that potentially has the implicit message that this is for the students who can't handle the real stuff."

Administration

"It's all the messaging. A lot of kids don't think that they're capable of taking those classes when they actually are. They just need to hear that from staff and from the school."

Figure 2. Percentage of HUR Students in AP/H Math at Paly

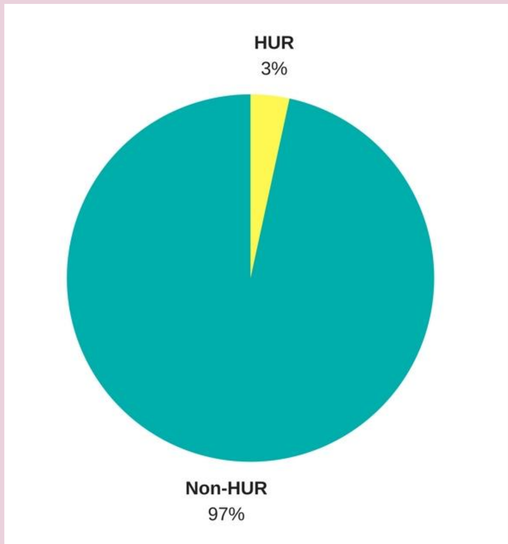
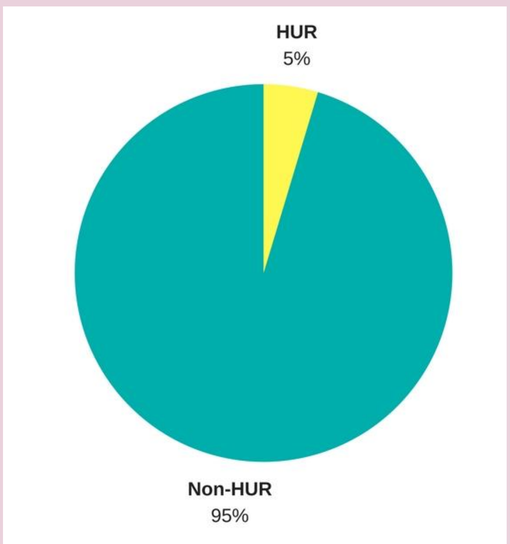


Figure 3. Percentage of HUR Students in AP/H Science at Paly



Discussion, Analysis, and Evaluation

The collected data shows, both qualitatively and quantitatively, the lack of HUR students in Honors and AP STEM courses at Paly. The percentages of HUR students in advanced math and science courses are 3% and 5% respectively (Fig. 1, Fig. 2), while HUR students make up over 13% of Paly's population (WASC, 2015). The teachers and administrators were also aware of the issue, which further reinforces its prevalence. When speaking to these individuals about the topic and their suggestions for solutions, a few themes emerged: encouragement, importance of data, accessibility, and respecting a student's autonomy. Each interviewee believed that HUR students may receive fewer positive messages regarding their performance in school, and should therefore be encouraged by their teachers, on an individual basis, to take more rigorous courses. Another important aspect to inspiring and organizing a solution was data. Not only was data necessary for raising awareness on the issue, but also for allowing activities such as the Robotics team to reach a greater portion of the population through effective advertising. Each interviewee maintained that no matter what the solution is, it should not infringe on the student's ability to make their own decisions, nor should it make them feel alienated or pitied.

Conclusions, Implications, Next Steps

Through the interviews conducted, it became clear that teachers and administrators are aware of the issue, its negative implications, and even its potential solutions, but there seems to be a lack of communication between various departments and the administration. Although I will not be completing additional research on this topic, I would like to recommend future research following this three step process:

1. Continue the interview process with as many faculty members as possible, and continue to analyze the transcriptions through coding.
2. Hold meeting between Instructional Leaders, administrators, and AVID leaders to interpret data and create a newsletter or presentation of some kind that relayed the findings with concrete suggestions on how to progress.
3. Share presentation with the faculty all STEM related departments and activities.

Acknowledgments and References

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