The Financial Barrier and the Effects on Those Underrepresented within Computer Science

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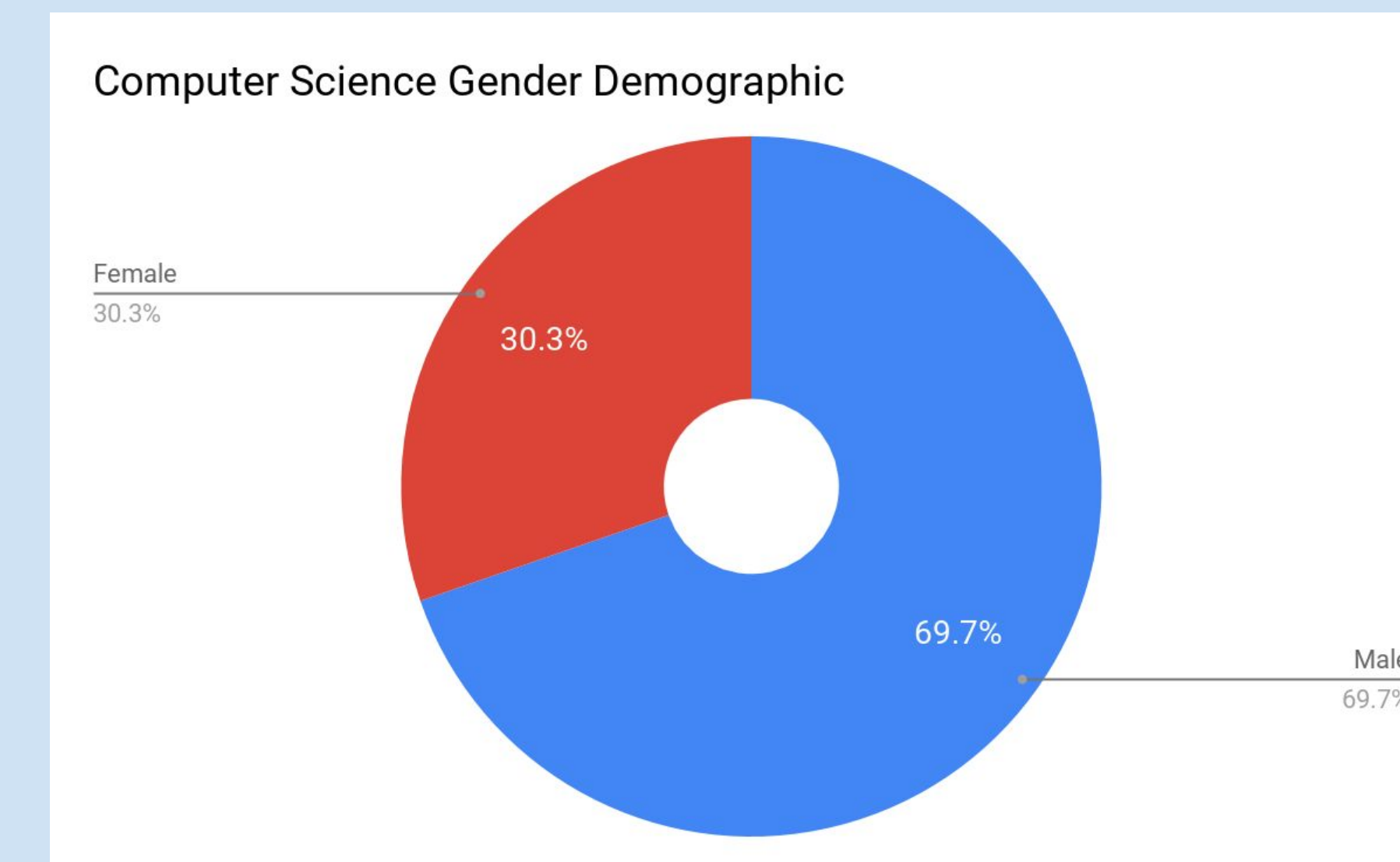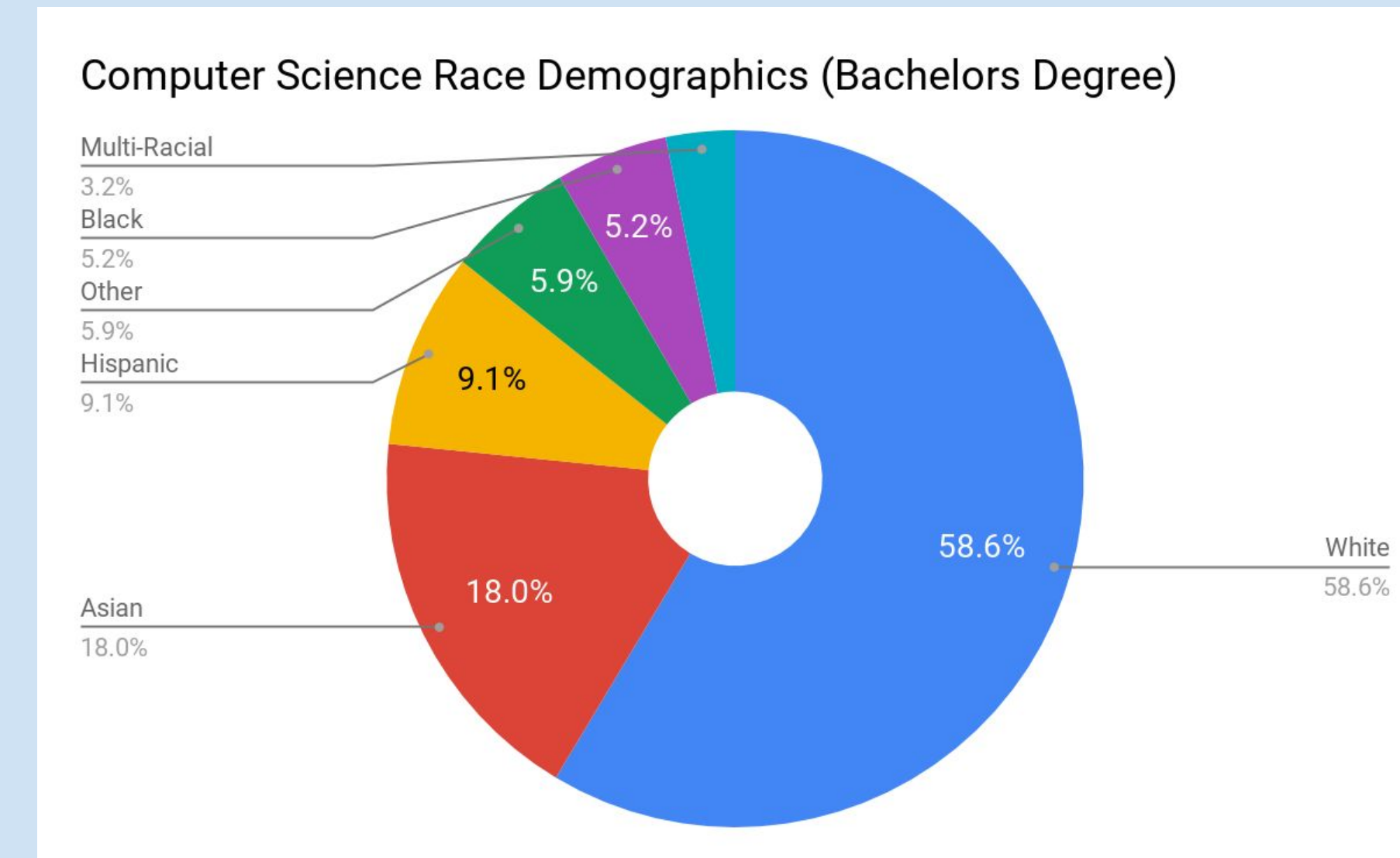[1]Palo Alto High School, [2]PAUSD

INTRODUCTION

With computer science booming in recent years, people are more incentivized to pursue a job in this field. This leads to middle and high schools starting with early exposure to computers and introductory classes being offered as part of their curriculum. The process of offering computer science-related courses in and of itself is difficult to achieve, because not every school in the Bay Area has the proper funding in order to meet the needs of such courses. An obvious divide resides within the Bay Area. Schools closer to technological powerhouse companies are seen with an average of 33% more funding per student than schools with no big tech companies within their county. On average in California, $640 more per student is allocated to affluent students than to students with financial needs. This has led to several legal battles between families and the state to better regulate the allocation of funding and lessen the divide between affluence and financial need. The Bay Area is a growing space in which the computer science powerhouse companies are in need of new engineers and programmers to provide new perspectives to solve issues in their workplaces. That is why it is important to maximize the potential of computer science opportunities for the broader community.

DATA AND FINDINGS

- The demographic reports from all around the United States tell a very similar/recurring story of the computer science field being dominated vastly by White and Asian males, who make up over 55% of the industry.
- Recent studies have found a solution to better balance the diversity. As per US News, implementing computer science in middle schools will allow for more exposure at a young age, leading to a geared interest in the topic.
  - This study was done in the hope of increasing the amount of women in CS by 15% by 2025, leading to a nearly even split in the workforce and allowing for a more equitable representation of the female community.
- Everyone's first impression should be one that leaves a lasting impression on itself. This has also seen a shift in the the approach and incentivizing of how people are brought into computer science.
- A study done by Accenture Research found that people need to be shown computer science curriculum as early as middle school in order to fully gain the attention of those seeking to follow through with that kind of academic/career choice in following years.
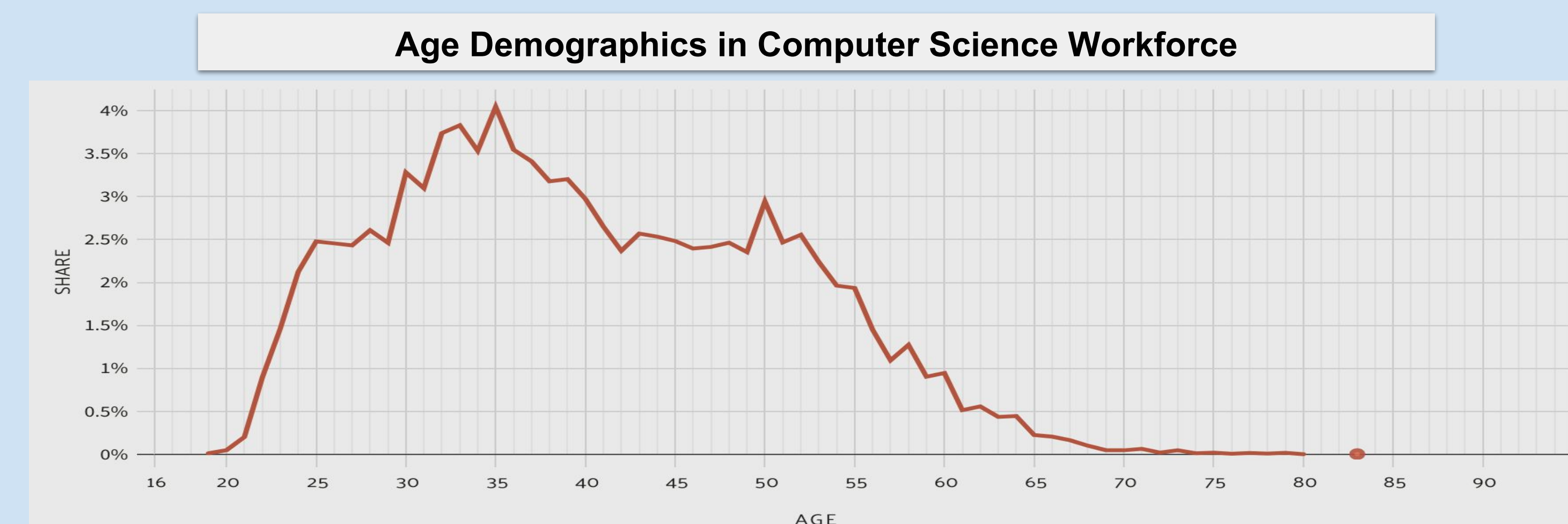
- In recent years, computer science has seen an increase in interest from the young adult community, as well as significant interest from the older community raised in the evolution of the computer science industry.
- This show just how prevalent computer science itself is in the new age of technology and how it will be a significant part of many people's lives in the near future.

CONCLUSIONS, IMPLICATIONS, AND NEXT STEPS

Upon conclusion of the research, it can be determined that computer science itself is an imperative part of our society today as we now strive to break the boundaries of current technology. Whilst we strive for new technological achievements, we must first combat the pre-existing issue of the lack of funding for schools that would prove to be worthy candidates of computer science introductory classes. Alongside this, it would be beneficial to the greater community, allowing for their youth to be exposed to the possibilities of the future and provide them a paved path for their ever-so-close future.

Change is inevitable, and when it does happen, it will allow for people who did not have the original opportunity to show just how gifted they are in computer-related fields, so that the misconception that the minority races aren't thriving because they just "aren't trying hard enough" fades from existence, and so that people can get out of their comfort zone and begin to strive toward their true potential.

The next steps are for people to assist in pushing the local communities and the state governments to provide funding to schools to enable students in their pursuit of a computer science degree, or even just to introduce the topic itself more universally so that an audience can become interested and engage in the computer science path. So that they can feel empowered when they begin working within the computer science workforce.

RESEARCH METHODOLOGIES

Interviews were my main method of approach to be in direct contact with representatives from neighboring computer science, or coding specific courses to get their input and knowledge of the issues that are relevant in today's society and what steps can be taken to improve in the near future. Alongside what can be done in the near future it was important to establish a neutral ground to see just how to properly approach each situation and also gain some valuable information as to how their non-profit organizations used their platforms to help expose each issue, in hopes that change can be made.

DISCUSSION, ANALYSIS, AND EVALUATION

- Upon reviewing all my findings and checking through several sources as clarification, the conclusion can be made that there are several aspects of the computer science field that are currently under control strongly by a certain racial group. Within my findings, there have been several instances that have shown that the vast majority of computer science is controlled predominantly by White and Asian males.
  - These groups make up over 50% of the total undergraduates classes in the United States.
  - This leaves the remaining ~50% for all minority groups and women combined.
- Alongside race and gender, the gap is also noticeable when it comes to age.
  - Most are between 25 and 50 years old.
    - They make up 45% of the workforce, whilst a huge influx of potential workers have just recently graduated with potential to go straight into the workforce with the proper guidance from the currently existing workers.
  - A very small portion (roughly 15%) is 65 to 80 years old.
    - These individuals are usually not involved with the coding aspects of the work; they are higher ranking individuals, or they are very close to retirement.
      - This is why the incoming students are heavily dependent on job opportunities from several organizations.

ACKNOWLEDGEMENTS / REFERENCES

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