Historically Black Colleges and Universities Collaboration Initiative Final Report VIP Getting to Know U, Fall 2022

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Abstract

Historically Black Colleges and Universities (HBCUs) have consistently produced leaders in their communities across the nations. The disparity in educational funding and resources, however, have constrained HBCUs to provide equal opportunities for its students and communities. Georgia Tech was recently awarded a $995,550 grant from the National Science Foundation (NSF) to enable network and research enhancements for nearby HBCUs (Hill, 2022). The HBCU Collaboration Initiative project within the Getting to Know U team was created to make interactive dashboards that would help members of the Georgia Tech Research board determine which HBCUs Georgia Tech could establish partnerships with.

Introduction

HBCUs are institutions of higher education in the United States that were established before 1964 with the intention of serving the African American community. There are 101 HBCUs identified by the US Department of Education as of 2020. These institutions were founded to provide higher education to Black students and have contributed substantially to the progress Black Americans made in improving their status (National Center for Education Statistics, 2017). Georgia Tech Research Institute is strongly dedicated to facilitating research partnerships and interactions with HBCUs (Georgia Tech Research Institute, 2022) and the HBCU Collab Team within the Getting to Know U lab has worked hard towards helping Georgia Tech achieve its goals in serving communities nearby through its resources.

Activity of the Team

This new initiative started in Fall 2022 with Dr. Troy Shaw as the mentor, Dr. Lew Lefton as the advisor, and Alex Kim as the Team Lead. The HBCU Collab team attended all general meetings every Wednesday from 14:00 - 14:50 EST to provide progress updates to Dr. Lefton, who would in return give feedback on the direction of the project. There were weekly subteam meetings

usually on Friday mornings from 10:00 - 11:00 with Dr. Shaw to discuss dashboard designs, ways to effectively tell a story with dashboards, and sub-goals for each week that would lead to a presentable final product.

Progress

The project was proposed by Dr. Shaw, who had created a dataset of HBCUs with its characteristics, research activity, funding sources, and funding agencies. The first few weeks of the semester, the team learned how to use Tableau and familiarized themselves with the dataset. There were frequent sub-team meetings to discuss the objectives of the project and the general guidelines to create a successful presentation.

There were 7 questions that the project was aiming to answer.

1. Cluster A of HBCU that can collaborate with in STEM
2. Cluster B of HBCU that GT can collaborate with in non-STEM
3. Who funds university R&D?
4. Which federal agencies fund R&D at higher education institutions?
5. Where has there been the most growth in R&D?
6. Which R&D fields have the highest expenditures?
7. How much did minority-serving institutions spend on R&D?

From the end of September, the team had a strong understanding of the purpose and the steps that were needed to succeed in the project. The team began to create sheets, playing around with the dimensions and measures to try getting the best table that would answer each question. By the end of October, there were four sheets completed that showed the HBCUs and its fundings. The team transitioned into learning how to use dashboards and external tools within Tableau that could be implemented to make better visualizations. Within the next two weeks, the dashboards were created.

There was still time before the final presentation, so Dr. Shaw suggested reading more reports and trying to get a better breadth on institutional research and educational equality. He suggested reading reports from the National Science Foundation (NSF), National Center for Education Statistics (NCES), Web of Science, and Center for 21st Century Universities (C21U). The team read reports that interested them, and were able to find new ideas of dashboards that could be added in addition to the four sheets.

For the remaining time, the team created three more sheets that showed the agency fundings and the field of studies each agency funded for each HBCU. From the table of subtotals and tree maps, it was intuitive to work around the dashboards and get the information needed through the filters.

Challenges

There was a big learning curve at the beginning of the semester because there were skills required to produce the dashboards and a good understanding of the dataset and project to create the wanted tables. It was difficult to stay motivated especially because there was little to no progress at the beginning of the semester. Going through Tableau tutorials for weeks and experimenting with the dataset sometimes made it difficult to see the end goal. The data was also incompatible with Tableau browser and there were moments of panic trying to frantically figure out why the data worked in Tableau during the meeting with Dr. Shaw, but not when the team was working on it independently. Little did the team know, these rudimentary steps were necessary to create the big picture. In hindsight, the initial time investment in the first few weeks of simply *learning* and not focusing on *producing* paid off as the project became straightforward and minimized technical obstacles.

Successes

The team was able to successfully produce seven interactive dashboards that each told a short story to the larger scale HBCU collaboration initiative. The team worked hard to create meaningful and well-designed dashboards that would make it easy for users to understand what the sheet was trying to show. The final product can be viewed on the Georgia Tech Tableau server here (for digital users) and the final presentation slides can be viewed here (again for digital users). The team is proficient in Tableau and has gained significant knowledge in HBCUs, educational research, and educational equality. This past semester has been an amazing learning experience with phenomenal faculty that helped the team succeed. The HBCU Collab team would like to especially thank Dr. Shaw for his time and effort to mentor and guide the team. His mentorship has really shown through this project as the team started off with near-zero knowledge of HBCUs and working with data.

Next Steps

The project currently has successfully accomplished its goals in answering the seven questions mentioned in the Progress section. The HBCU Collab team believes there are two paths this project can move towards to analyze the compatibility of HBCUs that Georgia Tech can potentially collaborate with.

1. Expand the dataset by adding additional dimensions of publications and HBCU research interests to find similarities between Georgia Tech's research interests.
2. Create a new dataset that includes Minority Serving Institutions (MSI), create similar dashboards to the current project and run a similar analysis

It is highly recommended that the future team that will work on this project read through the presentation and work with the dashboards to get a better understanding.

A few additional resources that would be helpful are:

- Research and Development Expenditures Dashboard
- Web of Science: CAQDAS
- NCES: Condition of Education
- Georgia Tech's Academic Effectiveness
- GTRI Outreach Initiative
- GTRI HBCU/MSI Outreach Initiative
- Georgia Tech's Grant for HBCU

References

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