Big Data Analytics of Socio-Economic Impact on UK University Graduates

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*Abstract*—The following report details how the socio-economic status of major UK towns and cities affects its universities and the students who are graduating from them. University is the biggest challenge that students will face in their academic careers, and for some, it is also a major financial decision. Students coming from more difficult backgrounds, or a lower financial standing may struggle with the challenges they face in this academic environment.

Utilizing datasets from various sources, which were subsequently read, explored, and visualized using a machine learning model, and then further cleaned and analyzed using a predictive model, demonstrates that students who study in an area with lower socio-economic standing tend to perform at a lower level. This argues that not enough support is given to students or the University institutions themselves by local councils due to insufficient funding requirements or substandard facilities surrounding campuses. Further concerns need to be raised with local councils or the wider government to ensure more awareness and support is raised.

Keywords— socio-economic status, graduating, financial standing, academic environment, machine learning model, predictive model, awareness and support.

# Introduction

## Opening

A big step in any academic career is attending a university. As of 2023, there are currently 166 registered Universities in the United Kingdom, with 11 of which occupying a space on the Times Higher Education[1] top 100 University rankings. University is frequently a significant personal and financial decision for many students. Given that only a select few institutions exist across the country, students often find themselves having to relocate to attend. This relocation, coupled with course fees, can result in a substantial cost. Some students can often find this a struggle and end up with concerns about finances throughout their degree. While there are options such as the Student Loans Company and other government assistance, concerns can still arise due to the substantial costs associated not only with attending university but also with living and thriving in the nearby campus area. While these costs are increased for the nearly 700,000 international students[2] (data accurate as of 2022), It continues to pose challenges for domestic students, which will be the focus of this report.

## Problem Statement

Approximately one million students in the UK earn some form of an undergraduate degree annually. With a further 400,000 more obtaining a postgraduate degree. However, almost 1 in 10 students who attend University drop out, with one-third of those being first-generation students leaving in the very first year[3]. One might attribute a significant contribution to these statistics to the financial struggles faced by university students. In January 2023, a report stated that 41% of students were considering dropping out of university due to surmounting financial worries[4]. University life is stressful as is, with assignments, deadlines, and working towards a career. Adding financial stress on top of that can set students on the edge and prove to be disruptive to their academia. However, how much do these financial issues disrupt students, and are the issues self-inflicted, or is it a product of the environment and institution?

## Aims and Objectives

This report aims to research, investigate, and comprehend data and statistics related to UK university graduates, as well as the socio-economic status of each university institution’s geographical location. One will attempt to understand if these standings indeed have an effect on graduation rates and the performance of students post-graduation.

The report will test this hypothesis by acquiring appropriate datasets from various sources and importing said data into a deep-learning model. The model will then be manipulated to clean the data, and potentially predict any missing data from the datasets. Conclusions will be provided by visualizing the cleaned data in a suitable format.

## Contribution Statement

### Jack Morgan

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## Report Outline

# Literature review

## Student Performance in Response to Stress and Other Factors

## Financial Impact and Funding Within University Institutions

## Graduation and Degrees Affecting Employability

## University Acceptance and Performance in Relation to Socio-Economic Standing

## Post-Study Impact in Response to Socio-Economic Standing

## Summary

# Methodology

# Results

# Further Discussion

# Conclusions

# References

1. World University Rankings (2023) Times Higher Education (THE). Available at: https://www.timeshighereducation.com/world-university-rankings/2024/world-ranking (Accessed: 26th February 2024).
2. Gent (2023) International Student Statistics in the UK 2023, Study in UK. Available at: https://www.studying-in-uk.org/international-student-statistics-in-uk/#:~:text=Statistics%20show%20that%20the%20total,outside%20of%20the%20European%20Union. (Accessed: 26th February 2024).
3. Tagliaferro, L. (2023) *Graduation statistics and Fun Facts in 2024*, *Future Fit*. Available at: https://www.futurefit.co.uk/blog/graduation-statistics-and-facts/#:~:text=Key%20Uni%20graduation%20statistics%20in%20the%20UK&text=22.6%25%20of%20British%20adults%20attained,University%20within%20the%20first%20year. (Accessed: 04 March 2024).
4. *41% of students consider dropping out due to money worries as new term starts* (2023) *FE News*. Available at: https://www.fenews.co.uk/education/students-consider-dropping-out-due-to-money-worries-as-new-term-starts/ (Accessed: 04 March 2024).