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 career, 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.

Using datasets found from various sources, which have then been read into, explored, and visualized using a machine learning model, and further cleaned and further data predicted using a predictive model demonstrates that students who study in an area with less of a 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 often for many students a huge personal and financial decision. With only a select few over the country, a student may often have to relocate to a new location to attend, and with that as well as course fees, it can come at a huge cost. Some students can often find this a struggle and end up with major worries about finances over the course of their degree. While there is the student loans company and as well as other government assistance, concerns can still arise with the huge costs not only for attending, but for living and thriving in the nearby area to the campus. While these costs are increased for the nearly 700,000 internation students[2] (data accurate as of 2022), it still provides problems for home students, which will be the aim of this report.

## Problem Statement

It is estimated that nearly 1 million students in the UK obtain some form of undergraduate degree each year, 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 considers that a huge contribution to these stats is due to 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

The aim of this report is to research, investigate, and understand data and statistics on UK university graduates and the socio-economic standing of each university institution’s geographical location. One will attempt to understand if these standings indeed have an affect on graduation rates and the performance of student’s post-graduation.

The report will test this hypothesis but 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 into a suitable format.

## Contribution Statement

### Jack Morgan

### Kieron Ransley

## Report Outline

# Literatre review

## Talking Point One

## Talking Point Two

## Talking Point Three

## Talking Point Four

## Talking Point Five

## Summary

# Methodology

# Results

# Further Discussion

# Conclusions

# References

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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).