Results of student body opinion on how do students feel about the impact the EU Referendum will have on the UK?

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1. Research topic and background

1.1. Introduction

On Thursday 26 June 2016 a referendum was held where all eligible citizens of voting age were invited to vote on whether the UK should leave or remain as a member of the European Union ("Brexit"). There has been controversy over the process of the referendum. The earthquake of Brexit unearthed how divided we are as a nation.

1.2. Overview of topic and motivations

Our aim was to gain insight into how university students were engaged with Brexit, and if their voting choices have changed. Certain factors were taken consideration; such as the region they reside in, political party preference and if they are an international student. This insight would allow us to present clear, reliable data visualisation of student's motivation and feelings in the months leading up to the referendum and their current feelings about Brexit.

1.3. Sample and population

The population that was used for the study was a sample of Goldsmiths Computing students. The sample size was potentially 900 students, but for the purposes of the study there were only 40 respondents. The level of study ranging from Foundation through to Postgraduate. Whilst designing and conducting the survey, there were no identifications of potential bias that would affect the outcome.

1.4. Domain concepts

Concept	Definition
Political party	an alliance of like-minded people who work together to win elections and control of the government.
General election	election of representatives to a legislature (in the UK, to the House of Commons) from constituencies throughout the country.
Campaign material	form of communication (such as leaflets, adverts, posters etc) that is used to promote and influence people's voting choice.

2. Survey Design

The survey was designed to ensure that we were able to answer the research questions that were posed. The survey was designed to address 17 questions in total and was split into five sections, we elected to divide our survey into sections so that Participants could answer the questions that were relevant to their answers. The motivation of the survey was to address and explore whether students were engaged with the voting process for the EU Referendum. Each question had multiple options to engage the best answers from each participant. Each question had multiple options, Participants were able to choose at least one option. Each question aimed to measure the count and percentage of answers.

2.1. Section A:

Basic demographic information, three questions in total.

Formal definition:	**Gender, Age, Nationality.**
Key Variables:	Gender (Nominal variables, 3 categories (Male/Female/prefer not to say).
	Age (Ordinal qualitative variables, 8 categories that were split into age ranges (18-24, 25-34, 34-44, 45-54, 55-64, 65-74, 75-84, 85+))
	Nationality (Nominal variables, 3 categories (UK, ROI, International).

2.2. Section B:

Section B consisted of multiple questions and Likert scales to ensure that there was a wide range of research questions to base our analysis.

Formal Definition:	**Political party preference, Regional residence**
Operational Definitions:	Transparency of elections (Likert (1932), Negotiation of Brexit deal Likert (1932)
Key Variables:	Region (Nominal variables, 10 categories (Greater London, South East, South West, West Midlands, North West, North East, Yorkshire and Humber, East Midlands, East of England, Other).
	Last vote (Nominal variables, 3 categories (Yes, No, Prefer not to say)
	Political party (Nominal variables, 10 categories (Conservatives, Labour, Scottish National Party, Liberal Democrats, Democratic Unionist Party, Plaid Cymru (Party of Wales), UK Independence Party (UKIP), The Green Party of England and Wales (GPEW), None, Other, Prefer not to say)
	Brexit vote (nominal variables, 3 categories (Yes, no, prefer not to say)
	Referendum vote (Nominal variables, 3 categories (Remain, Leave, prefer not to say)
	Future voting: (nominal variables, 4 categories (Yes, no, not sure, Prefer not to say)
	Transparency (Ordinal variables, 5 categories (not very transparent - extremely transparent)
	Explanation (Dichotomous variables, 2 categories (yes, no).
	Negotiation (Ordinal variables, 7 categories (Extremely well, very well, well, neutral, badly, very badly, extremely badly)

2.3. Section C:

Key Variables:	**International Student (Nominal variables, 4 categories (Remain, leave, not sure, prefer not to say).**
	Employment opportunities (Nominal variables, 3 categories (Yes, No, Not sure)

2.4. Section D:

Key Variables:	**Campaign material (Nominal variables, 3 categories (Yes, No, Prefer not to say)**
	Influence of material (Nominal variables, 3 categories (Yes, No, Prefer not to say)

2.5. Section E:

Formal definition:	**Study**
Key Variables:	Year of study (Nominal variables, 5 categories (Foundation, Year One, Year two, Year three, Postgraduate).

3. Analysis

3.1. Basic demographics

The demographics of our respondents were made up of Foundation, Undergraduate and Postgraduate students. In order to gain a basic understanding of the demographics we analysed our statistics as follows:

3.1.1. Age range and gender

26 of the respondents were male

13 of the respondents were female.

1 preferred not to say

age	18-24	25-34	35-44	45-54	All
gender					
Male	22	2	2	0	26
Female	8	4	0	1	13
Prefer not to say	1	0	0	0	1

Figure 1: Age range and gender cross tabulation

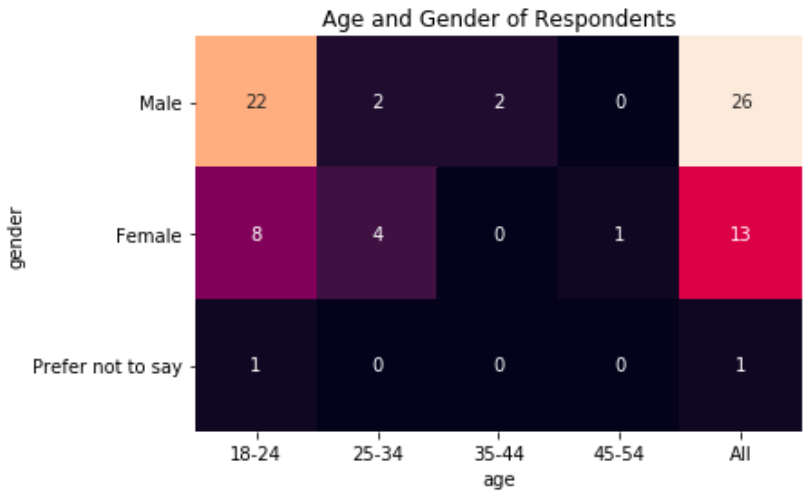

Figure 2: Heatmat demonstrating Age and Gender of Respondents

3.1.2. Regional votes

To better understand the demographic of our respondent's residential location, we presented them with a list of UK regions in which they resided in outside of term time. A univariate variable of region was used in a stacked bar chart to analyse this result. Our statistical analysis found as follows:

Regional location

Region	Percentage
18 respondents lived in Greater London	(69.2%).
4 respondents lived in South East	(15.4%).
3 respondents lived in West Midlands	(11.5%).
1 respondent lived in North West	(3.8%).

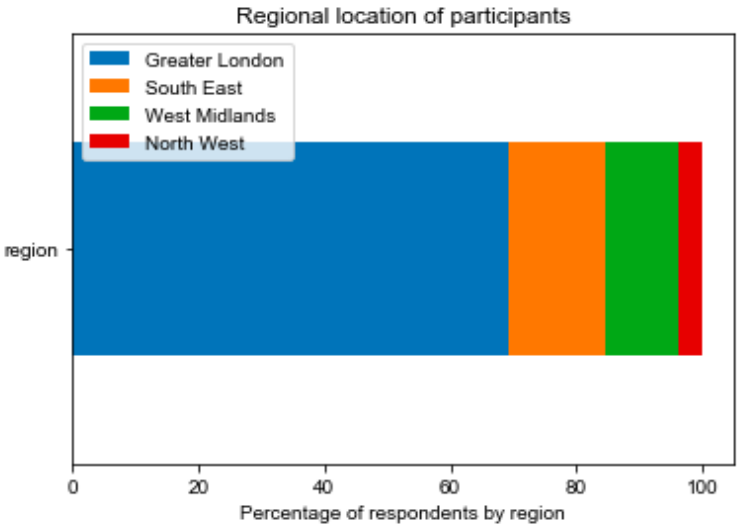

Figure 3: Bar chart illustrating regional location of participants

3.1.3. Party Preferences

Bring into line our main survey concept, we gauged the demographic of our respondent's preference when voting for a political party. A horizontal bar chart (see Figure 4 below), presents categorical data of each UK political party was used to denote this and displayed as follows:

Party preference	Percentage of votes
17 respondents voted for Labour Party	(65.5%).
3 respondents voted for None	(11.5%).
2 respondents voted for Other	(7.7%).
2 respondents voted for Liberal Democrats	(7.7%).
1 respondent voted for UK Independence Party (UKIP)	(3.8%).
1 respondent voted for The Green Party of England and Wales (GPEW)	(3.8%).

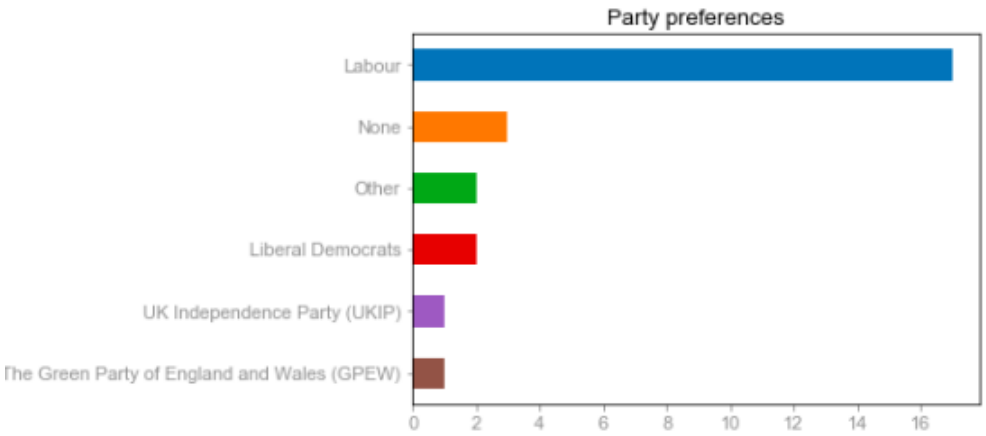

Figure 4: Party Preferences

3.2. Engagement of the Brexit Process

3.2.1. Leave or remain

The objective of the visualisation (

Figure 5 below) was to explore which areas in England voted leave or remain, comprised of two questions: 'Which region in the UK do you reside? (out of term time)' & 'How did you vote?'. The first question was crucial to specify out of term time as the sample of Goldsmiths students, will reside in London during term time and return to home cities in which they reside and place their vote in. If data had been collated based on residence during term time the visualisation would have been skewed. There were 26 respondents.

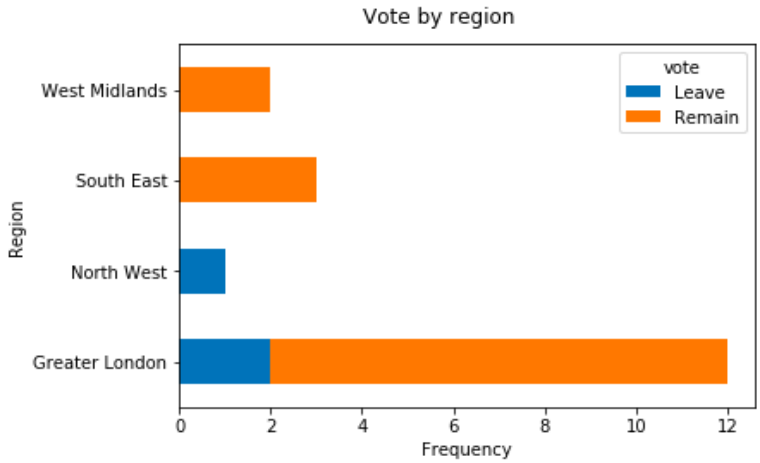

Figure 5: Vote by region

18 people responded to question two: 'How did you vote', this may have been less than the previous question due to it being a follow up question to question 1 above.

The vote by party visualisation (Figure 6 below) comprised two questions: 'Please select your political party preference'' and 'How did you vote?'. 'Please select your political party preference'' and 'How did you vote?'. There was a total of 26 respondents.

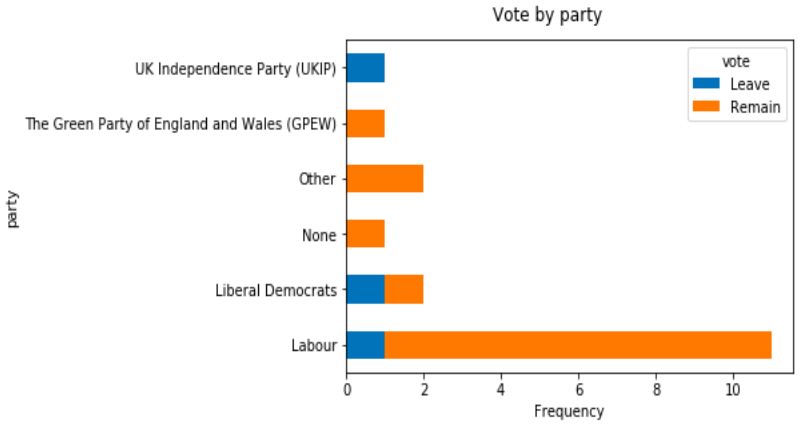

Figure 6: Vote by party

Stacked bar charts were used for both visualisations as there were two categories per region and two per party: leave or remain, giving the visualisation more clarity. The stacked bar charts are intentionally horizontal as some on the names of the regions and parties are long so aligning them along the y axis will leave more room and allow normal left to right reading. To make the visualisation more accessible, campaign relevant colour schemes could have been used: red (representing Leave) and blue representing remain (EU Flag).

3.2.2. Negotiation of Brexit

The aim of Figure 7 below visualises representations of people's opinions of government negotiations on a good deal after the Referendum, categorized by political party.

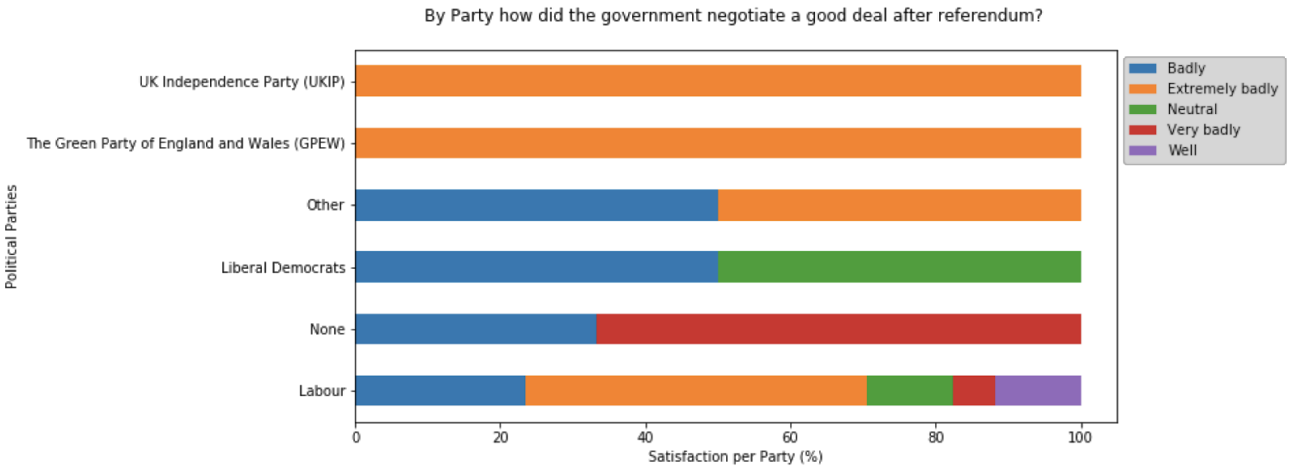

Figure 7: Negotiation of Brexit

Two questions were analysed, firstly, asking participants to select their political party preference. The other asking how well government negotiations have been after the referendum, 26 responses were received. This visualisation's aim to further out understanding of whether political preferences correlated their feelings towards government negotiations. Two main concepts were analysed: Political party, and Satisfaction of negotiations. The first concept: political parties allowed respondents to select from a list of UK's main parties. The second, Satisfaction of negotiation looked at individuals' opinions of government negotiations of Brexit, using a Likert scale, with the lowest being "Extremely Badly", to the highest which was "Well".

Various data types were collated, with Political Parties collecting nominal data, selected from a categorical group. Satisfaction per party measured in percentages collected Ordinal Data, which could be analysed, and used to calculate the percentages for the visualisation. Stacked Bar chart was chosen as it could represent the percentages of opinions towards the negotiations per party, aligning with the aim.

An initial challenge faced was presenting the Satisfaction, as it did not display the desired percentage as it in raw form. As a result, the data was placed in a pivot table, so conversion to percentage was possible, allowing clear presentation on the chart. One limitation of using a stacked chart, is although percentage of opinions are visible, the sample size is unclear. The data may mislead the sample size as demonstrated by UKIP who only had one respondent.

negotiated party	Badly	Extremely badly	Neutral	Very badly	Well	All
Labour	23.529412	47.058824	11.764706	5.882353	11.764706	100.0
None	33.333333	0.000000	0.000000	66.666667	0.000000	100.0
Liberal Democrats	50.000000	0.000000	50.000000	0.000000	0.000000	100.0
Other	50.000000	50.000000	0.000000	0.000000	0.000000	100.0
The Green Party of England and Wales (GPEW)	0.000000	100.000000	0.000000	0.000000	0.000000	100.0
UK Independence Party (UKIP)	0.000000	100.000000	0.000000	0.000000	0.000000	100.0

Figure 8: Pivot table converting raw form data to percentages

Therefore, percentages as opposed to numbers of responses per party was used. This data was placed in a pivot table and converted to percentages.

3.2.3. Voting patterns

The aim of analysing voting patterns was to gauge whether respondents felt campaign material influenced their voting behaviour[1]. The question analysed was "Would campaign material influence your decision to vote?", categorised by 'Yes', 'No' or 'Prefer not to say'.

The visualisation (see Figure 9 below), represent respondents from our survey who had answered 'Yes' to being influenced by campaign material, multivariate questions were used to demonstrate age and gender. This was more challenging to plot but was necessary to demonstrate associated variables to help compare each category effectively. There two visualisations were used: stacked bar chart and a bar chart; nominal and ordinal data was used.

Key concepts: 'Age', 'Gender' and 'Decision of influence'. Age collected ordinal data categorically (age ranges:18-24, 25-34 etc). Gender collected nominal data ('Male', 'Female or 'Prefer not to say'). The Decision of influence variable aligned with the topic it was an indicator of whether respondents were influenced by campaign material, measured using nominal data ('Yes', 'No' or 'Prefer not to say').

The stacked bar chart (see Figure 9 below), visualises respondents influence on campaign material when voting, against age and gender to investigate political influence via campaign material. There were 38 responses with a dominance in the age group of '18-24'. The dominance towards the male 18-24 age group suggests a vulnerability towards influence. Our demographic favoured this group making this representation inconclusive.

[1] By definition, 'campaign material' implies to the form of communication (such as leaflets, adverts, posters etc) that is used to promote and influence people's voting choice.

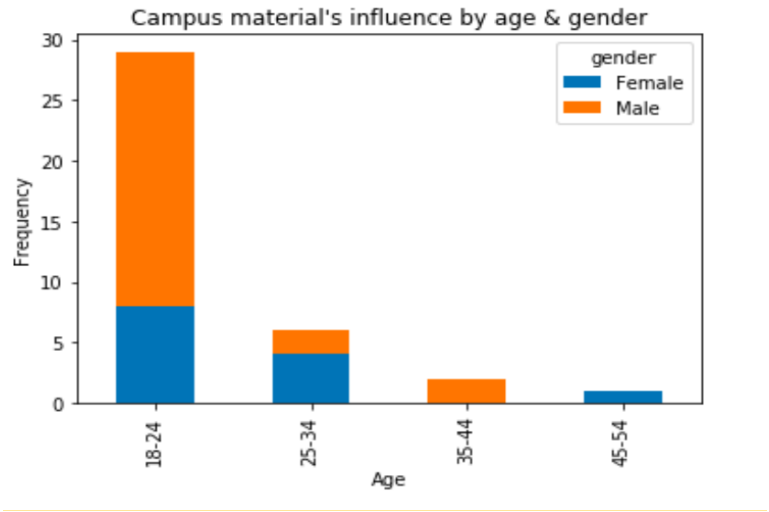

Figure 9: Campus material influence by age and gender

A bar chart (Figure 10 below) illustrated the decision of influence against respondents' gender. This plot was used as it demonstrated a refinement of the stacked bar chart, aligning well with the aim of this topic. 38 responses were received the majority responding 'No' to influence by campaign material. Of respondents: 11 female and 17 males. Respondents to 'Yes' had a male dominance of 8 against 2 females.

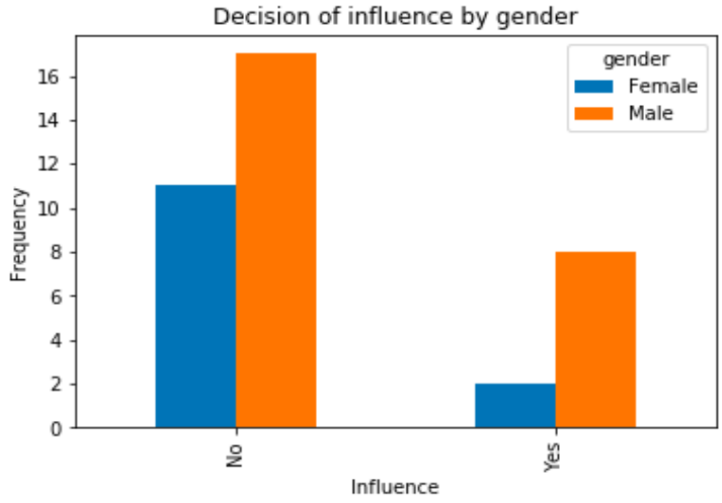

Figure 10: Decision of influence by gender

3.2.4. International Students

The concept aim was to investigate whether international students felt their employment opportunities would be affected after Brexit. Looking to explore the correlation between respondent age and voting preference if they were eligible. 14 response were collected. Categorical options: four variables: Age: (ordinal variable with an age range category); Nationality: nominal variable,

Leave/Remain: nominal variable (yes/no/not sure) and Employment (nominal variable (yes/no/not sure)).

Figure 12 below analyses 'If you are an international student and you were able to vote in the referendum, how would you have voted? The age of the Respondent was also analysed to ascertain whether a correlation between participant age and how they would have voted in the referendum. The majority of 18-24 years olds would have voted remain and the older age ranges would have voted remain only. It was not clear if there was a direct correlation between age and how they would have voted in the referendum.

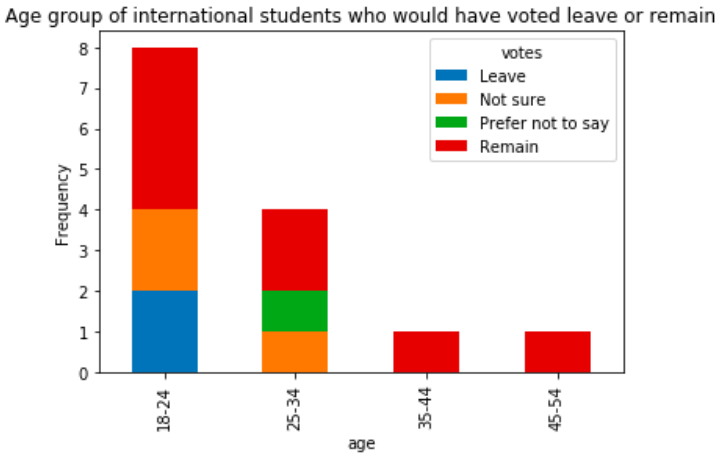

Figure 11: Age group of international students who would have voted leave or remain

Figure 12 below analyses "If the UK successfully exits the EU do you feel this will affect your ability to gain employment in the UK?". 42.9% of participants felt that their ability to gain employment would be affected after Brexit, 35.7% of participants felt their ability to gain employment would not be affected and 21.4% of Respondents were not sure if their employment opportunities would be affected.

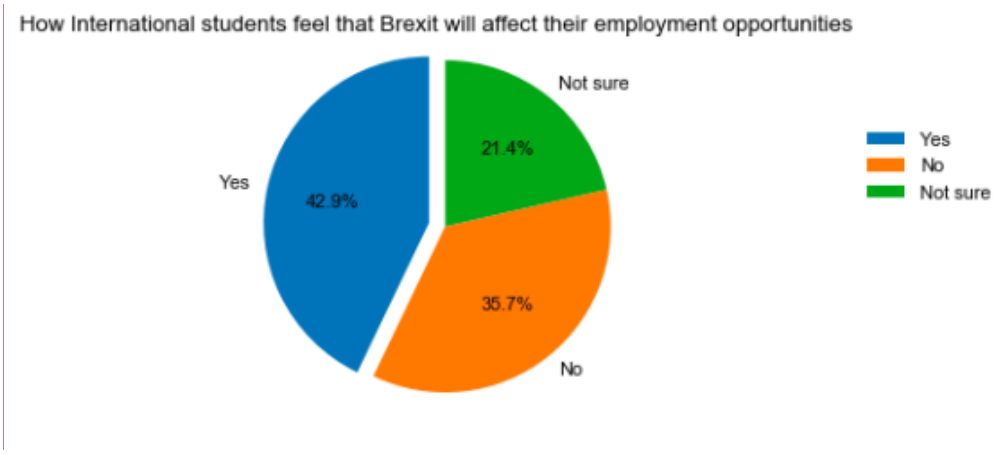

Figure 12: How international students feel that Brexit will affect their employment opportunities

4. Conclusion

The evidence presented in this report, demonstrates university student's engagement with Brexit and voting trends. Overall student engagement was high, of all respondents 26 were domestic and engaged and 14 were international students (4 respondents had not opinions), of the 10 they would have voted in the referendum. Post-election we have also noticed that although the majority said they would not change their vote, 94%, 22 of those that voted said that the negotiations had gone between badly and extremely badly.

A key running theme across all our visualisations was the lack to draw significant conclusions due to a small sample size. We had only 40 respondents in total although some correlations between two variables in visualizations were evident it is difficult to say if the same patterns would occur with a larger sample.

Another key take away point was that in the context of visualising data for Brexit colour schemes did matter. Throughout the campaign blue was associated with remain and red with leave. Our visualisation for Age Group for Internationals Who Would've Voted Leave or Remain had the colour remain as red and the Vote by Party & Region visualisations had leave bars in red.

For visualisations that contained age ranges we were limited by the type of visualisations we could produce. Had we asked the exact number of age and collected ratio data type we would've been able to produce visualisations such as box plots and scatter plots which depict a clearer picture of the range of ages.

(Word count: 2000)

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