



**A statistical analysis regarding the difference in Financial
Career opportunities available for North-Eastern University
graduates versus graduates from London Universities**

By Lauren Ormonde

180047907

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Queen Mary, University of London

School of Mathematics

Supervised by Dr Wolfram Just

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Abstract

Through a statistical approach, this dissertation aims to examine any inequalities in the student's awareness of the financial career sector for graduates in London universities against those who attended North East universities. This study will be conducted through a nine questioned survey, available to graduates aged between 20-28 from universities within the target regions, questioning their understanding of the opportunities in the financial graduate market and their universities' help in providing information. It is often suggested that the financial industry is open to all candidates and it is vital to discuss whether this is true for candidates across the UK, or whether certain regions are more likely to succeed. By exploratory data analysis (EDA), one can compare the survey results and conclude that London graduates are more likely to be made aware of the opportunities present in the finance sector. This begs the question, are candidates from North Eastern universities less likely secure a career in the finance sector due to their university not providing them with crucial information to prepare them for this career path?

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Key Terms

North East Universities	Any university situated in the North East including Newcastle, Durham, Northumbria, Sunderland, Teesside.
London Universities	Any university situated in Greater London according to 'The Complete Guide to University' (Unknown, 2021)
Financial Institution	The general definition is as follows: “The financial sector is a section of the economy made up of firms and institutions that provide financial services to commercial and retail customers. This sector comprises a broad range of industries including banks, investment companies, insurance companies, and real estate firms (Kenton, 2020).
Spring / Summer Internship	Paid work experience predominately based in London in many different sectors (Investment Banking, Accountancy, Marketing, IT, etc.)
Career in the financial sector	Any career either financially based (Accountant, Banker, Insurance broker, etc.) or non-financially based (Lawyer, HR, Recruitment, Marketing, etc.)

Table 1 - Important Definition

1. Introduction

1.1 Background

When applying for internships and graduate schemes, one almost always comes across the statement: “you will need to have obtained or be studying towards at least a 2:1 in any degree discipline” (Deloitte, 2021). Most corporate companies within the finance sector are open to applicants from all degree types and locations, as they suggest they “value diversity of thought, backgrounds, experiences and perspectives” (Morgan, 2021). An ex-recruiter for Goldman Sachs wrote that his company prefer to hire “people with unusual profiles. This is where the emphasis lies - it's all about trying to attract a diverse group of applicants who've studied history, or English Literature instead of just finance” (Smith, 2016). The finance industry is focused on ensuring their employees are from diverse backgrounds, to bring different ideas and thoughts to the everyday tasks.

During their time at university, some students are informed of the internships and graduate schemes available to them, hence possibly preparing them for a career in the finance industry if they are successful in gaining a graduate scheme. Another initiative that universities offer is networking sessions with companies, introducing the vast range of career paths open to students. STEM women suggest that networking sessions are vital to “build your network and career opportunities”, “practice interview techniques” and “find a job you never knew existed” (Unknown, 2019). It is these resources provided by the university which could be advancing more students to apply for roles within the finance industry. If these resources are not offered by all universities or to all degree types, an inequality is created.

1.2 Aims

This study aims to discuss the student’s awareness of the opportunities available to them in the finance industry, in particular comparing those who attended London universities against those who attended universities in the North East.

This will be achieved through a survey questioning the individual’s awareness, distributed by social media. The data is to be collected and used for comparison by region and degree type, to highlight any differences between the two.

2. Methodology

2.1 Purpose

The purpose of this study is to determine any differences in the understanding of the financial job market between those who have previously attended London universities, compared to those who have attended universities in the North East.

2.2 Target Audience

This survey is designed for a target audience of finalist students and graduates, between the ages of 20-28. This age range has been chosen since younger students may not have received the full benefits of their university or have decided upon a career path yet and as such could potentially skew the data.

2.3 Creation of Survey

The survey was created using a web-based tool called SurveyMonkey. This allowed for the design of a professional looking survey which would potentially entice more participants. Included on their platform was a tool which estimated the average time taken to complete the survey. Since this could be monitored, it was possible to create an efficient set of questions that could be answered in a minimized time frame to keep the interest of the participant.

2.4 Research Questions

The individual will have five ordinal choices to respond to the questions below, ranging from strongly agree to strongly disagree.

1. What university do you attend?
2. What is your degree?
3. My university has provided sufficient careers advice tailored for my degree.
4. My university has informed me of the career opportunities available in the financial sector.
5. During my time at university there has been opportunities to attend networking sessions with financial companies and find out more about the career opportunities available to me.
6. During my time at university, I have been made aware of Spring and Summer internships available in London.
7. Banking and Finance related careers are not for my degree.
8. My university has informed me that careers in the financial sector are open to all degree holders.
9. I would have reconsidered going into the Banking and Finance sector if I knew that it was open to all degree holders.

The above questions were selected since these are the most pivotal services that a university could provide to help an individual to be made aware of the financial industry.

2.5 Distribution of Survey

The survey was broadcast to three social media platforms: Instagram, Facebook and LinkedIn. Research found these three platforms to be the most suitable to reach the target audience. According to a recent poll by YouGov, Facebook and Instagram were the top two most popular social media platforms used by most individuals. LinkedIn was also chosen since it is possible to specifically target those between 20-28 with careers in finance. Collectively, these platforms would be able to target a large majority of the graduate population and as such, increase the likely number of participants.

2.6 Analysis of Data

The ordinal data will be analysed in excel through statistical techniques including determining the quartiles, correlation analysis, and percentage calculations.

The chi-squared method, as described in Sullivan and Sullivan's Textbook produced by Pearson, will be used to determine any correlations by calculating the p value between the two questions. It is this p-value, which if below the set significance level, would deduce any correlations between the responses of the questions.

To complete the chi square method, one must firstly decide on a level of significance and a hypothesis to test. For this project, the level of significance (p) will be 0.05. Anything found above this value will be rejected, hence no correlation between the two questions.

The expected value (E) must be calculated by multiplying the sum of the column by the sum of the row, divided by the total amount of participants. E is then subtracted from the original value (O) [the value of the results collected per each category] before being squared and divided by E , shown in equation 1.

$$\frac{((O-E)^2)}{E}$$

Equation 1

This process is completed for each entry in the table. To calculate the chi-square statistic, we sum the values calculated in equation 1.

$$\text{Chi-square statistic} = \sum \frac{((O-E)^2)}{E}$$

Equation 2

The chi-square value is used to determine the p-value. This value, alongside the degree of freedom, as shown in equation 3, is used to look up the relevant p-value in the chi-square table. This table can be found on the final page of this document.

$$\text{degree of freedom} = (\text{number of rows} - 1) * (\text{number of rows} - 1)$$

Equation 3

Visual tools will be used to also display the data in a clear and easy to understand manner.

3. Results

For clarity, this section will be divided into individual questions and their responses relating to their specific regions and degree types. Correlations will then be found between questions to determine if there is any influence or pattern to be found.

3.1 Sample Size and Response Rate

In this section, the experimental results of the survey will be discussed. Out of 50 responses to the survey a sample size of 48 was used. Two responses had to be rejected due to the nature of the location of the university. It is important to note that this is a very small sample size in comparison to the large student population present in the UK, so any results may not be representative of the entire student population.

Response rate is an interesting, but difficult to measure variable. The survey was posted among several university specific pages, all of which hold 1000+ members. Theoretically, this survey could potentially have reached over 500 individuals that would have qualified to participate in this poll, given they were active on these specific pages. However, the response rate of this survey was relatively low. The completion rate of survey responders was 100%, suggesting the time taken to complete the survey was quick enough to keep the attention of the reader.

3.2 Individual Results per Question

The following sections detail the responses to the individual questions in the survey.

3.2.1 What university do you attend?

There were 26 participants from the London region and 22 from the North East, making a total of 48 responders.

3.2.2 What is your degree?

An article by Higginbotham, 2021, suggests that to apply for a career in the finance sector, the candidate's degree "doesn't necessarily have to be in a finance-related subject" but "it should have a strong math focus" (Higginbotham, 2021). Therefore, for the purpose of this survey, the type of degree has been divided into two categories; math related (20 participants), and non-math related (28 participants).

Table 2 further divides the participants relating to their degree and geographical location.

	Math Related Degree	Non-Math Related Degree
London	16	10
North East	4	18

Table 2 – Region and Degree of Participants

3.2.3 My university has provided sufficient careers advice tailored for my degree.

Overall, there is an equal distribution of responses, with no overall majority, highlighted by the quartiles of the box plots shown in Figures 1 and 2. Most graduates from the London or North East regions have either been satisfied with their university's career department or not.

Careers advice according to region

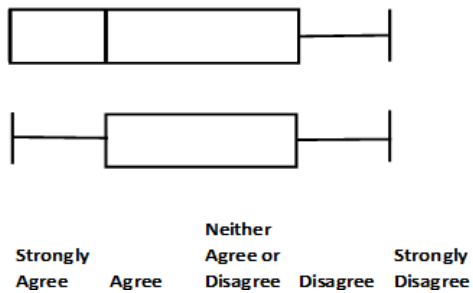


Figure 1 – Boxplot recording responses to 3.2.3 (region) Top plot shows responses by London graduates. Bottom plot shows responses for North East graduates

Careers advice according to degree

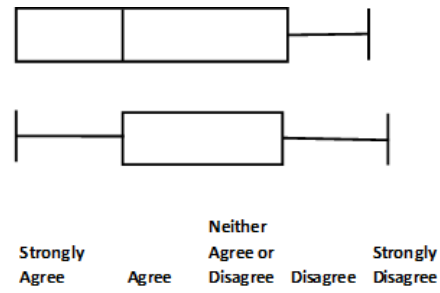


Figure 2 – Boxplot recording responses to 3.2.3 categorised by degree type. Top plot shows responses by math related degrees. Bottom plot shows responses for non-math related degrees.

3.2.4 My university has informed me of the career opportunities available in the financial sector.

Figure 3 shows that those who have completed non-math related degrees in North Eastern universities have not been made aware of these opportunities.

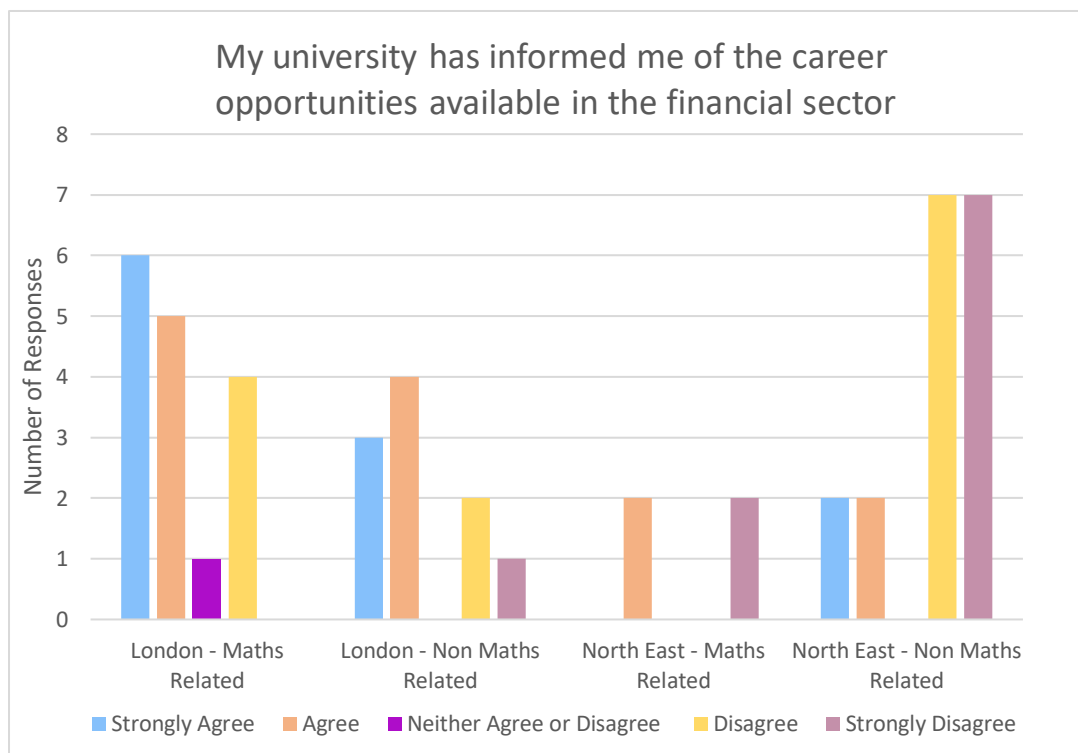


Figure 3 – Bar Graph for 3.2.4

Figure 4 shows a boxplot of responses split by region, with the top plot showing responses from London graduates and the bottom plot showing responses from North East graduates. From the top plot, one can deduce roughly 50% of London graduates within this survey had some form of knowledge from financial career opportunities from their university. This is heavily contrasted to the 50% of graduates from the North East who disagree to the statement, suggesting their university did not make them aware.

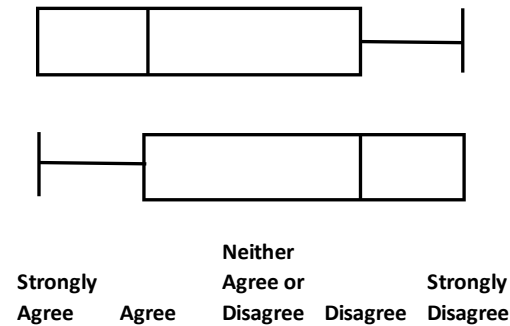


Figure 4 – Boxplot for 3.2.4. Top plot shows responses by London graduates. Bottom plot shows responses for North East graduates

3.2.5 During my time at university there has been opportunities to attend networking sessions with financial companies and find out more about the career opportunities available to me.

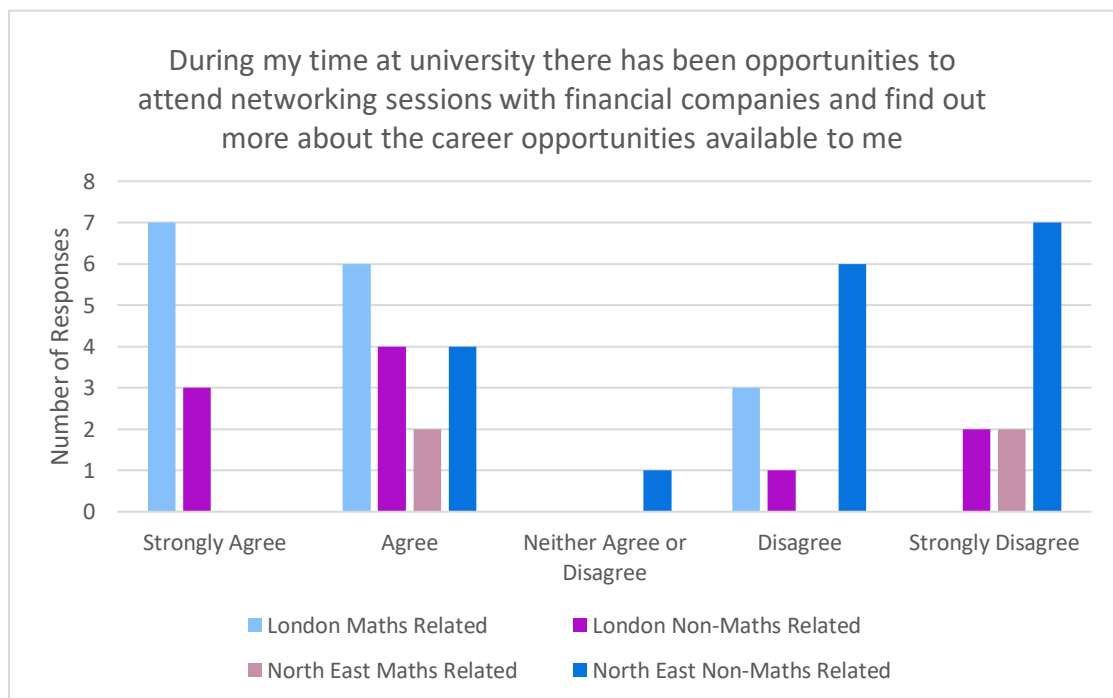


Figure 5 – Graph for 3.2.5

	London				North East			
	Math Related		Non-Math Related		Math Related		Non-Math Related	
	Freq	Ordinal answer	Freq	Ordinal Answer	Freq	Ordinal answer	Freq	Ordinal Answer
Lower Quartile	4	Strongly Agree	2.5	Strongly Agree	1	Agree	4.5	Neither Agree or Disagree
Median	8	Agree	5	Agree	2	Agree	9	Disagree
Upper quartile	12	Agree	7.5	Disagree	3	Strongly Disagree	13.5	Strongly Disagree

Table 3 – Quartiles for 3.2.5

Those who have completed a math or non-math related degree at a London university have stated that they have attended networking sessions provided by their university, with 75% of those completing math related degrees selecting ‘Agree’ or ‘Strongly Agree’. This is compared to those who have completed non-math related degrees in a North Eastern university, with 75% of the responders selecting they have received no form of networking sessions. The only responders to select ‘strongly agree’ in any category were from London universities.

3.2.6 During my time at university, I have been made aware of Spring and Summer internships available in London.

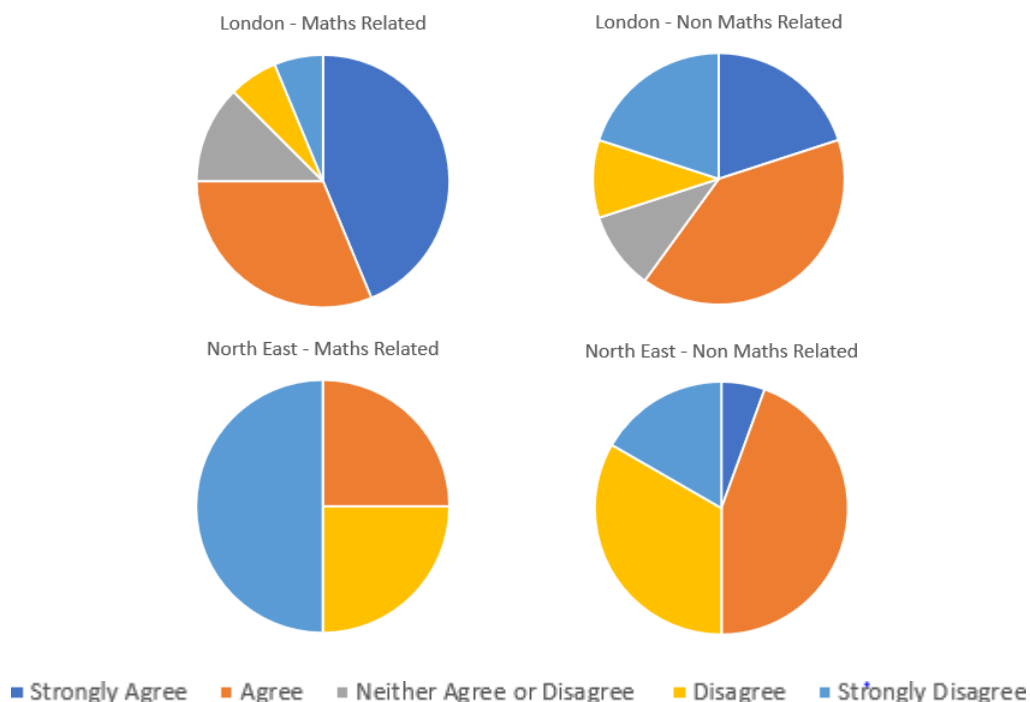


Figure 6 – Pie Chart of responses for 3.2.6

The charts in Figure 6 show that an overwhelming majority of London graduates have been informed of the internship prospects within the finance sector. However, 75% of those who have completed math related degrees in the North East, were unaware. Those who have completed non-math related degrees in the North East responded with 50% awareness of internship prospects.

This is an unexpected finding, since responses to other questions showed those who have graduated with non-math related degrees have seemingly been the least aware or informed about careers in the financial sector.

Figure 7 shows the boxplots of responses, as stratified by region. It shows that regardless of degree type, London graduates are more conscious of internship opportunities within the financial sector than those graduates from the North East.

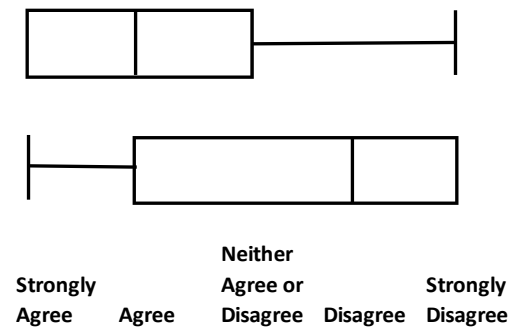


Figure 7 – Boxplot for 3.2.6. Top plot shows responses by London graduates. Bottom plot shows responses for North East graduates

3.2.7 Banking and Finance related careers are not for my degree.

Responses showed that those who completed math-related degrees, regardless of their region, felt that their degree was suitable for the banking and finance industry, with over 50% disagreeing with the statement. This was the opposite to those who completed non-math related degrees, with 50% agreeing to the statement, again regardless of their region.

3.2.8 My university has informed me that careers in the financial sector are open to all degree holders

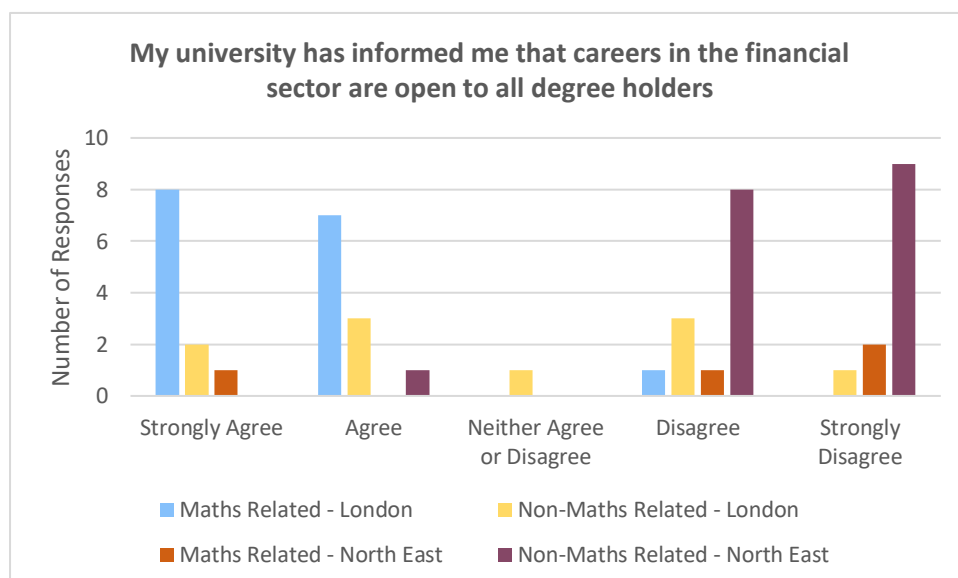


Figure 8 - Bar Graph of responses for 3.2.8

Figure 8 shows that those who have graduated with a math related degree from a London university have been made somewhat aware that financial careers are open to all degrees, with a large portion choosing either ‘Strongly Agree’ or ‘Agree’. This is opposed to a similar majority of non-math related graduates from North Eastern universities selecting either ‘Disagree’ or ‘Strongly Disagree.’ This showcases a large disadvantage to those who specifically study a non-math related degree within the North East, as they are not being made aware of the career possibilities open to them.

This is further suggested in Figure 9, which shows the quartiles of the responses according to location. Figure 9 shows a strong positive skew for those who attend university in London compared to the strong negative skew of those who attend university in the North East. This emphasizes a large inequality of awareness between the two regions.

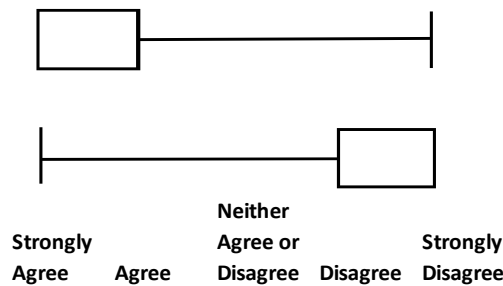


Figure 9 – Boxplot for 3.2.8. Top plot shows responses by London graduates. Bottom plot shows responses for North East graduates

3.2.9 I would have reconsidered going into the Banking and Finance sector if I knew that it was open to all degree holders.

There was an even distribution among this question between most participants, with 50% of each category agreeing to the statement. 75% of those who attended universities in the North East agreed they would have reconsidered.

3.1 Correlations

Two questions will be tested for a correlation, initially by a table created with excel to determine a regression line and its position. If a regression line is found on the diagonal, then there is a correlation between the two questions. This will be further tested by the chi-square test, with a significance level of $p = 0.05$. Any values found below 0.05 suggest a correlation between the two questions. Since the tables are 5 by 5 the degree of freedom for each table is 16, as determined by equation 3 discussed in 2.6 analysis of data.

3.3.1 Participants receiving financial careers advice vs their understanding of finance related jobs being open to all degrees

Strongly Agree	0	2	0	3	6
Agree	2	2	1	4	4
Neither	0	0	0	1	0
Disagree	3	6	0	3	1
Strongly Disagree	7	3	0	0	0
	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

Table 4 – Excel Chart showing correlation analysis for 3.3.1 – Receiving financial careers advice from the participants universities (pink – vertical axis), Financial career sectors open to all degree holders (black – horizontal axis).

The large number of responses on the diagonal indicates that there is a correlation between the two questions. This is expected since these career sessions target the financial industry and would typically explain the degrees necessary to apply for the available schemes.

Table 5 shows the expected values of the chi-square method followed from Sullivan and Sullivan's statistics textbook. The expected value is determined by multiplying the sum of the columns by the sum of the row divided by the total responses (48) as mentioned in equation 1 found in section 2.6. The $(O-E)^2/E$ table is summed giving a result of 31.63176683. Using the chi-square table (provided on page 22) and the degree of freedom (16), we determine the p value to be ≈ 0.01 . Since this is below the significance value of 0.05, a correlation and hence a dependence can be assumed.

	Expected Value (E)					(O-E) ² /E				
Strongly Agree	2.75	2.979167	0.229167	2.52083	2.520833333	2.75	0.32182	0.229167	0.091081	4.801825069
Agree	3.25	3.520833	0.270833	2.97917	2.979166667	0.4808	0.65693	1.963141	0.349796	0.349796037
Neither Agree or Disagree	0.25	0.270833	0.020833	0.22917	0.229166667	0.25	0.27083	0.020833	2.592803	0.229166667
Disagree	3.25	3.520833	0.270833	2.97917	2.979166667	0.0192	1.74569	0.270833	0.000146	1.314831002
Strongly Disagree	2.5	2.708333	0.208333	2.29167	2.291666667	8.1	0.03141	0.208333	2.291667	2.291666667
	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Strongly D	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

Table 5 – Excel Chart showing chi-squared method for 3.3.1 - Original Values(O) from table 4

3.3.2 Participant's opportunity to attend networking sessions provided by their university vs their understanding of finance internship available

Strongly Agree	0	0	0	3	7
Agree	1	2	2	9	2
Neither Agree or Disagree	0	1	0	0	0
Disagree	2	3	1	3	1
Strongly Disagree	5	3	0	3	0
	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

Table 6– Excel Chart showing correlation analysis for 3.3.2. Participants opportunity to attend networking sessions (pink, vertical axis), Awareness of finance internships (black, horizontal axis)

Table 6 shows a suggestable number of responses sitting on the diagonal of the table, implying a positive correlation between the two responses. This is expected since it is usual for networking sessions to be held for recruiting purposes and so these schemes would be advertised, raising awareness to the participant.

Following the chi-square method, we can again determine a level of dependence between the two questions, as shown in Table 7.

	Expected Value (E)					(O-E) ² /E				
Strongly Agree	1.666666667	1.875	0.625	3.75	2.083333333	1.666666667	1.875	0.625	0.15	11.60333333
Agree	2.666666667	3	1	6	3.333333333	1.041666667	0.333333	1	1.5	0.533333333
Neither Agree or Disagree	0.166666667	0.1875	0.0625	0.375	0.208333333	0.166666667	3.520833	0.0625	0.375	0.208333333
Disagree	1.666666667	1.875	0.625	3.75	2.083333333	0.066666667	0.675	0.225	0.15	0.563333333
Strongly Disagree	1.833333333	2.0625	0.6875	4.125	2.291666667	5.46969697	0.426136	0.6875	0.3068	2.291666667
	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

Table 7 – Excel Chart showing chi-squared method for 3.3.2 – Original Values (O) from table 6

Summing the above values, gives a chi-squared value of 35.52348485, and a corresponding *p* value of $\cong 0.005$. This is again below the significance value of 0.05, confirming a dependence between the two statements.

3.3.3 Participants' university offering of financial career advice vs awareness of internship opportunities

Strongly Agree	0	1	0	2	8
Agree	1	1	1	8	2
Neither Agree or Disagree	0	1	0	0	0
Disagree	2	4	2	5	0
Strongly Disagree	5	2	0	3	0
	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

Table 8 – Excel Chart showing correlation analysis for 3.3.3 – Advice on career opportunities in the financial sector (pink, vertical axis), Awareness of internships (black, horizontal axis)

Table 8 shows a high number of responses on the diagonal, suggesting there is a correlation between the participants being informed of the financial career prospects, and an awareness of spring/ summer internships. This is further confirmed by completing the chi-squared method on the data, shown in Table 9.

	Expected Value (E)					(O-E) ² /E				
Strongly Agree	1.833333333	2.0625	0.6875	4.125	2.291666667	1.833333333	0.547348	0.6875	1.0947	14.2189394
Agree	2.166666667	2.4375	0.8125	4.875	2.708333333	0.628205128	0.847756	0.043269	2.0032	0.18525641
Neither Agree or Disagree	0.166666667	0.1875	0.0625	0.375	0.208333333	0.166666667	3.520833	0.0625	0.375	0.20833333
Disagree	2.166666667	2.4375	0.8125	4.875	2.708333333	0.012820513	1.001603	1.735577	0.0032	2.70833333
Strongly Disagree	1.666666667	1.875	0.625	3.75	2.083333333	6.666666667	0.008333	0.625	0.15	2.08333333
	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

Table 9 – Excel Chart showing chi-squared method for 3.3.3 – Original Value (O) taken from table 8

The chi-squared value is calculated as 41.41771562, and the p value $\cong 0.001$. Again, the p value is below 0.05, indicating that there is a correlation between the two questions, and such a dependance.

4. Discussion

4.1 Outcomes of Survey

The responses to the survey show that graduates in the North East are less likely to be made aware of the financial career opportunities open to them.

Responders to the survey comprised of 33.4% graduates from the North East, who have not been educated about the finance job market. From those who disagreed with the statement: "My university has informed me of the career opportunities available in the financial sector (question 3.2.4)", 69.6% were from the North East, compared to 30.4% of participants from London, highlighting a strong majority of North East graduates are left uneducated in career opportunities. This is directly contrasted to 75% of those attending London universities agreeing to the question, further highlighting that London graduates are more likely to be informed of the financial career prospects.

31% of responses who answered question 3.2.5 regarding their university's organization of networking events with financial companies were from the North East and selected that they had not been given the chance to network with financial companies. This is compared to 12.5% of London graduates who disagreed to this statement, 12.5% of North East graduates who agreed to the statement and 41.6% of London graduates who agreed to the statement. Of those who had not been given the opportunity to network, 71.3% are from the North East. Of those who have been given the opportunity to network, only 22.2% were from the North East. This suggests that London universities are more likely to provide networking sessions for their students, hence giving these students an advantage to entering the financial careers market compared to those from North East universities.

Similarly, 37.6% of participants who agreed with question 3.2.6: 'During my time at university, I have been made aware of Spring and Summer internships available in London' were graduates from London universities. This is contrasted to 10.5% of participants who disagreed and were from London, suggesting many London graduates are aware of the internship opportunities offered to them. Of those who disagreed with this statement, 70.4% were graduates from the North East, with 25% of overall participants being from the North East and disagreeing with the question.

The correlations deduced in section 3.2 confirm that if an individual is less likely to be made informed of the financial career prospects ($p \leq 0.01$), then they are less likely to have had networking opportunities ($p \leq 0.005$), or to have an awareness of internship opportunities ($p \leq 0.001$). Given the figures discussed, one can see that on average 30% of each question is comprised of North East graduates suggesting they have not received any information or advice on venturing into the finance sector, which fits with the correlation analysis.

The results indicate a clear inequality for those who attend North East universities trying to gain a career in the financial industry, compared to those students attending London universities.

4.2 Factors to consider

It is important to remember the small sample size, and as such the results may not accurately represent a larger population. Although the results and conclusions made within this project indicate that graduates from the North East are not being provided with information of the financial careers available across the country, this may not be the case if a larger sample were

investigated.

The effect of sample size is also relevant when using the chi-square method to deduce correlations. Due to the small sample size, the accuracy of the chi-squared method is significantly reduced, as many columns/ rows contain 0's. Therefore, a caution should be needed when interpreting the results.

4.2 Additional Data Sets

During this survey, multiple universities were contacted to provide figures of graduates venturing into the finance industry post university. Newcastle University, Queen Mary, University of London (QMUL) and University College London (UCL) kindly provided these details and will be used discuss the wider context and accuracy of the survey.

It is key to mention, both QMUL and UCL provided their details for 2013-2017, with QMUL being per year, and UCL having to take an average over the five-year period. As such, the data from UCL may not be as accurate. Newcastle provided their figures for 2017, and therefore the figures used from 2017 will be used.

Due to undisclosed circumstances, 2017 is the most recent data made available to the public, and so it may not fully reflect current graduate circumstances.

4.2.1 Context

Table 10 shows the figures of those graduates entering financial services post university.

	Number of Graduates in the Finance Sector in 2017
Newcastle University	278
Queen Mary, University of London	127
University College London	257

Table 10 – Number of graduates in the financial sector according to university from 2017 data

Table 10 shows that in 2017, Newcastle University had the highest number of graduates entering the financial industry, suggesting that there may be less of an inequality than found within the survey.

4.2.2 Accuracy

Unfortunately, the data sets provided were not able to differentiate between the sectors within the financial industry to further compare the graduates going into the Investment banks and Accountancy firms, compared to those who ventured into retail banks, and finance departments of companies, which is what the survey focused on.

Therefore, it is difficult to discuss the inequality North East graduates face when understanding and applying to corporate financial jobs.

Conclusion

From this survey, it is evident there is a marginal inequality between graduates from the North East compared to London. The project found that, 69.6% of participants who disagreed with their university providing any information on internship opportunities being from the North East, 70.4% of participants disagreeing with an having an awareness of internships being from the North East, and 71.3% of those not given opportunities to network being North East graduates. These results suggest an overwhelming inequality.

However, when including the datasets from Newcastle University, QMUL and UCL, it suggests that there is a larger presence of North East graduates venturing into the financial industry than the results of this survey show. This is further paired with the small sample size of this survey, and so it could be concluded that this survey would not pose accurate compared to a larger population.

Therefore, although the results from this survey suggests there is a harsh inequality between the two regions, and as such London universities provide more information of the opportunities to their graduates than the North East, in the wider context and in the presence of the additional data sets provided, the results may not be fully representative. As such, it is not possible to draw definite conclusions on the financial career opportunities available to graduates from London universities compared to those from North East universities.

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Chi-Square Table

	0.995	0.99	0.975	0.95	0.9	0.5	0.2	0.1	0.05	0.025	0.02	0.01	0.005	0.002	0.001
1	0.0000397	0.000157	0.000982	0.00393	0.0158	0.455	1.642	2.706	3.841	5.024	5.412	6.635	7.879	9.550	10.828
2	0.0100	0.020	0.051	0.103	0.211	1.386	3.219	4.605	5.991	7.378	7.824	9.210	10.597	12.429	13.816
3	0.072	0.115	0.216	0.352	0.584	2.366	4.642	6.251	7.815	9.348	9.837	11.345	12.838	14.796	16.266
4	0.207	0.297	0.484	0.711	1.064	3.357	5.989	7.779	9.488	11.143	11.668	13.277	14.860	16.924	18.467
5	0.412	0.554	0.831	1.145	1.610	4.351	7.289	9.236	11.070	12.833	13.388	15.086	16.750	18.907	20.515
6	0.676	0.872	1.237	1.635	2.204	5.348	8.558	10.645	12.592	14.449	15.033	16.812	18.548	20.791	22.458
7	0.989	1.239	1.690	2.167	2.833	6.346	9.803	12.017	14.067	16.013	16.622	18.475	20.278	22.601	24.322
8	1.344	1.646	2.180	2.733	3.490	7.344	11.030	13.362	15.507	17.535	18.168	20.090	21.955	24.352	26.124
9	1.735	2.088	2.700	3.325	4.168	8.343	12.242	14.684	16.919	19.023	19.679	21.666	23.589	26.056	27.877
10	2.156	2.558	3.247	3.940	4.865	9.342	13.442	15.987	18.307	20.483	21.161	23.209	25.188	27.722	29.588
11	2.603	3.053	3.816	4.575	5.578	10.341	14.631	17.275	19.675	21.920	22.618	24.725	26.757	29.354	31.264
12	3.074	3.571	4.404	5.226	6.304	11.340	15.812	18.549	21.026	23.337	24.054	26.217	28.300	30.957	32.909
13	3.565	4.107	5.009	5.892	7.042	12.340	16.985	19.812	22.362	24.736	25.472	27.688	29.819	32.535	34.528
14	4.075	4.660	5.629	6.571	7.790	13.339	18.151	21.064	23.685	26.119	26.873	29.141	31.319	34.091	36.123
15	4.601	5.229	6.262	7.261	8.547	14.339	19.311	22.307	24.996	27.488	28.259	30.578	32.801	35.628	37.697
16	5.142	5.812	6.908	7.962	9.312	15.338	20.465	23.542	26.296	28.845	29.633	32.000	34.267	37.146	39.252
17	5.697	6.408	7.564	8.672	10.085	16.338	21.615	24.769	27.587	30.191	30.995	33.409	35.718	38.648	40.790
18	6.265	7.015	8.231	9.390	10.865	17.338	22.760	25.989	28.869	31.526	32.346	34.805	37.156	40.136	42.312
19	6.844	7.633	8.907	10.117	11.651	18.338	23.900	27.204	30.144	32.852	33.687	36.191	38.582	41.610	43.820
20	7.434	8.260	9.591	10.851	12.443	19.337	25.038	28.412	31.410	34.170	35.020	37.566	39.997	43.072	45.315
21	8.034	8.897	10.283	11.591	13.240	20.337	26.171	29.615	32.671	35.479	36.343	38.932	41.401	44.522	46.797
22	8.643	9.542	10.982	12.338	14.041	21.337	27.301	30.813	33.924	36.781	37.659	40.289	42.796	45.962	48.268
23	9.260	10.196	11.689	13.091	14.848	22.337	28.429	32.007	35.172	38.076	38.968	41.638	44.181	47.391	49.728
24	9.886	10.856	12.401	13.848	15.659	23.337	29.553	33.196	36.415	39.364	40.270	42.980	45.559	48.812	51.179
25	10.520	11.524	13.120	14.611	16.473	24.337	30.675	34.382	37.652	40.646	41.566	44.314	46.928	50.223	52.620
26	11.160	12.198	13.844	15.379	17.292	25.336	31.795	35.563	38.885	41.923	42.856	45.642	48.290	51.627	54.052
27	11.808	12.879	14.573	16.151	18.114	26.336	32.912	36.741	40.113	43.195	44.140	46.963	49.645	53.023	55.476
28	12.461	13.565	15.308	16.928	18.939	27.336	34.027	37.916	41.337	44.461	45.419	48.278	50.993	54.411	56.892
29	13.121	14.256	16.047	17.708	19.768	28.336	35.139	39.087	42.557	45.722	46.693	49.588	52.336	55.792	58.301
30	13.787	14.953	16.791	18.493	20.599	29.336	36.250	40.256	43.773	46.979	47.962	50.892	53.672	57.167	59.703
31	14.458	15.655	17.539	19.281	21.434	30.336	37.359	41.422	44.985	48.232	49.226	52.191	55.003	58.536	61.098
32	15.134	16.362	18.291	20.072	22.271	31.336	38.466	42.585	46.194	49.480	50.487	53.486	56.328	59.899	62.487
33	15.815	17.074	19.047	20.867	23.110	32.336	39.572	43.745	47.400	50.725	51.743	54.776	57.648	61.256	63.870
34	16.501	17.789	19.806	21.664	23.952	33.336	40.676	44.903	48.602	51.966	52.995	56.061	58.964	62.608	65.247
35	17.192	18.509	20.569	22.465	24.797	34.336	41.778	46.059	49.802	53.203	54.244	57.342	60.275	63.955	66.619