# Understanding the Impact of Institutional Financial Support on Student Success

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# Executive Summary

The research detailed in this report aims to establish whether or not financial support provided to students from low income households has had any significant impact on their success at University. Success is defined across four outcome measures; retention from first year to second year, completion of the degree within 5 years, attaining a good degree (2:1 or First), and progression to a positive graduate employment outcome.

The students in this analysis were separated into two cohorts due to the change in tuition fees that occurred in 2012, and changes to the bursary scheme itself. The analysis therefore looks at students who entered between 2009-2011 (first cohort) and 2012-2014 (second cohort). Two bursary variables were created, average cash amount over the academic career, and a household income category and amount categorical variable. Other influencing factors were controlled for in the logistic regression analysis. The key findings from the analysis are outlined below.

## Retention

- There was no significant difference in retention for students who received the Manchester Bursary when compared to those who did not qualify for finance based on their household income. 2009-11 new entrants who received only £1250 in their first year had a slightly lower probability of being retained (an odds ratio of 0.88), but this was not found to be significant unless looking at A Level entrants only (an odds ratio of 0.74).
- The findings remained the same when looking at students who had left Higher Education overall, as opposed to just leaving The University of Manchester (data supplied by HESA).
- This lack of significance could suggest either that there are no differences with respect to the amount of bursary a student receives and their probability of being retained, or that the bursary has successfully levelled the playing field between high income and low income students, enabling equal levels of student success.
- Other significant differences in retention rates were observed across ethnicity (Chinese students had higher retention rates) and sex (males had lower levels of retention than females).
- Students living in their parental homes in first year were only half as likely to continue into second year as those who lived in halls of residence. This was supported by the additional finding that as the distance a student's home address was from the university increased, their likelihood of being retained also increased significantly, and perhaps suggests that those students who are less involved with the university through their living arrangements or are less likely to become involved with and feel attached to the university.

## Completion

- Completion rates were high overall, but students that had received £3,000 across each year of study were nearly twice as likely to complete as those who received no bursary.
- It could be argued that the bursary has more than levelled the playing field in helping low income students complete at the same or better rate as high income students; however if that were the case we might expect to see lower completion rates for students from partial

household income students who were not eligible for finance, which does not appear to be the case.

## Attainment

- Pre-2012, students from low income households who received £1250 each year and students from mid-income households who did not qualify for financial support were significantly less likely to graduate with a good degree than those from high income households, with odds of 67% and 61% respectively.
- These same findings did not remain significant after the fee increase and with changes to the bursary funding; however, the amount of cash bursary received was significantly negatively associated with the probability of gaining a good degree, meaning that students receiving higher average bursary amount were less likely to gain a good degree. This perhaps suggests that increasing the amount of financial support to the most in need students has not completely helped to resolve the issue around attainment.
- Other significant differences in attainment were observed across ethnicities (with poorer attainment for Chinese, Indian and Black African students); sex (with males almost half as likely to gain a good degree after the fee increase) and entry qualification (with attainment poorer for lower A Level Tariff scores and BTECHs).
- Findings around distance from home were again supported for attainment, with local students significantly less likely to obtain a good degree.

## Graduate Outcomes

- Although employment outcomes for Low Income Household students did appear to be worse than those from high income households, these findings were not significant and therefore there was little evidence to suggest that the financial support has a significant impact on employment.
- Degree attainment was highly significant across all of the employment regression models, with students who obtained a higher degree classification being significantly more likely to progress to a positive employment outcome. This suggests that this is a stronger control variable in predicting employment outcomes and that addressing the issues around attainment for WP students may have an important knock on effect for their employment outcomes.
- Indian students had better employment outcomes than White students, and students who had completed an Integrated Masters were almost twice as likely to be in a positive graduate outcome as those who had not.

## Recommendations and Next Steps

Given that the regression analysis did not yield too many significant findings, it is difficult to interpret the results and to be able to conclude whether or not the financial support offered can be seen to have impacted on student success. The analysis highlighted some questions around the inclusion of so many control variables which perhaps may have contributed to the lack of findings, and it is unclear whether the NSS score, degree size and clearing variables are accurate in terms of what they are trying to control for. It is recommended that the regression models are undertaken again without the inclusion of these variables to see if this changes the findings in any way.

# Introduction

This report is focused on whether or not bursaries provided by The University of Manchester allow students from Widening Participation (WP) backgrounds to be just as successful as their peers. The report will measure 'student success' by four outcomes:

1. The retention rates of first year students into second year
2. Whether or not students completed their degree within 5 years
3. Whether or not students attained a 'good' (first class or upper-second class) degree.
4. What type of graduate outcomes the students received i.e. did they enter into graduate level employment.

The report will examine the profile of students who received a bursary at the University of Manchester. The outcome variables highlighted above will also be subject to a binary logistic regression analysis. During this analysis, multiple variables that have been shown to impact the outcome variables in previous research (Harrison and McCaig (2017)[1] – outlined in Appendix 1) will be controlled for allowing a truer reflection of the direct effects of bursaries to be shown.

This piece of research has been recommended by the Office for Fair Access (OFFA), who undertook a pilot research project from which a statistical model technical workbook has been developed[2]. The results from this report will feed into future evaluation monitoring for the University of Manchester's Access Agreement, and will help to evidence the impact of institutional financial support and policy development.

# Methodology

The main methodology used to prepare, measure and classify the data for the analysis of this report comes from OFFA's 2016 coding workbook[3] (also see Appendix 2), however certain modifications have been made in order to better suit the profile of the University of Manchester's student body. Any changes or alterations to the dataset or the methods of measurement and classification are detailed below.

## Sample

The sample draws its data from the following sources:

- HESA new entrants data (2009/10 – 2014/15)
- HESA graduate data (2010/11 – 2015/16)
- POLAR3 postcode data
- Disability Advisory and Support Service (DASS) Registered Disability data (2009/10 – 2014/15)
- Admissions data detailing clearing students (2009/10-2014/15)
- Destinations of Leavers from Higher Education (DLHE) survey data (2011/12 - 2015/16)

[1] Harrison, N. and McCaig, C., 2017. 'Examining the epistemology of impact and success of educational interventions using a reflective case study of university bursaries' *British Educational Research Journal* 43(2) pp. 290-309

[2] https://www.offa.org.uk/egp/impact-of-financial-support/

[3] https://www.offa.org.uk/wp-content/uploads/2016/11/Institutional-Financial-Support-Coding-Workbook.pdf

- Higher Education and Bursaries Scholarship Scheme (HEBSS) financial data (2009/10 - 2014/15)
- Campus Solutions Financial Award data (2009/10 - 2014/15)

The sample was filtered so that it only comprised of students who met the following criteria:

- English domiciled
- Higher Education Funding Council for England (HEFCE) funded
- Studied full-time
- Studied for a first degree
- Entered into their first year of study in the year of entry (i.e. no Foundation year students)
- Did not intercalate
- Did not leave the course due to death or serious illness
- Did not withdraw prior to 1st December in their starting year

In addition to this sampling, certain other exclusions were made based on household income and financial award data. Appendix 3 outlines the amount of bursary money that students were entitled to according to their year of entry; any students who received other amounts or unexpected amounts at any point in their academic career were removed from the sample.

Similarly, students who entered between 2009 and 2011 and who had an 'Unknown' household income were removed from the first model, as they may have been from partial income households but had chosen not to be assessed due to the lack of finance available to them at the time.

The subject area of Education contained a very small sample of students and was removed within the regression analysis to facilitate the analysis. The subject area of 'Medicine and Dentistry' contains a very small number of classified degrees and had very high graduate outcomes so this subject was not included in the regression models. There are further admissions due to missing data across other variables but these are minimal.

## Outcome Variables

The four outcome variables were binary, and were defined in the following ways:

- Retention - whether or not a student continued to the start of their second year. Students who were identified as leaving the University of Manchester for another institution were considered to be non-retained. NB - A further regression model is included based on students leaving Higher Education, which matches the HESA definition of non-continuation and is based on data for new entrants 2012 to 2014.
- Completion – whether or not a student completed a full degree within 5 years. Students who were classified as NA, Posthumous or Transferred to another institution were excluded from the analysis. Any other defining categories (such as still being active, inactive or achieving a lesser award) were considered as non-completion.
- Attainment – whether or not the student obtained a good degree. Those who obtained a first or a 2:1 were considered to have achieved a good degree; all other classified degrees were considered as lower degrees. This variable was also used as a control in the employment outcome models.

- Graduate employment outcomes – whether or not the student entered into a positive destination six months after graduation. A positive destination was defined as a managerial or professional job (coded 1-3 on the Standard Occupational Classification), or graduate level further study; a negative destination was defined as any job coded SOC 4-9 jobs or unemployment. Graduates who were taking time out to travel or anything else were excluded from the analysis.

## Principal Variable

In order to identify whether or not financial support had impacted on student success, principal variables were created that categorised the level of bursary cash students had received, based on their household income. This was a complex process, due to the different levels of financial support offered over the data period, and the fact that students' household income was assessed each year of their academic studies, often changing their entitlement to finance throughout the course of their academic career.

In addition to this, fee discounts were offered as part of the bursary scheme from 2012/13 onwards. As these were deemed likely to have had little impact on the student during their time at University, fee discounts were removed from the total bursary amounts. Therefore definitions of financial support as included in the analysis relate only to cash bursary amounts and accommodation discounts. This again accounted for more variation in the categories within the principal variables.

Two principal variables were created to measure financial support, these were:

- Average cash bursary – a continuous variable measuring the amount of cash bursary received over students' full career at the University. Total cash bursary amount was divided by the number of "active years" between a student's start date and end date (determined by registration on 1st December). As this variable measures average over a career, it was only included in the full career outcome variables (completion, attainment and employment outcomes), and not in the retention models.
- Bursary Category – A categorical variable based on the amount of cash bursary received over a student's academic career (or in their year of entry for retention) and their household income as determined by the assessments. As students could be assessed each year within their career and receive different amounts of cash bursary as a result, a number of different categories were created attempting to group together students of differing circumstances. Appendix 3 outlines the thresholds and amounts offered based on year of entry, and Table 1 detailed the final categories used in the models.

***Table 1: Summary of the categories used to measure and define bursary in this report and the regression models each variable was used for***

| Outcome Variable | Bursary Category Variable Name | Bursary Category Variable Composition | Cohort 1 * | Cohort 2 ** |
|---|---|---|---|---|
| Retention | Low 1000 | Low Household Income assessment in year of entry + £1000 cash bursary | | ✓ |
| | Low 1250 | Low Household Income assessment in year of entry + £1250 cash bursary | ✓ | |
| | Low 3000 | Low Household Income assessment in year of entry + £3000 cash bursary | ✓ | ✓ |
| | Partial 0 | Partial Household Income assessment in year of entry + no bursary (Cohort 1) **or** £0 cash bursary [*£2000 tuition fee discount]* (Cohort 2) | ✓ | ✓ |
| | Partial 1000 | Partial Household Income assessment in year of entry + £1000 cash bursary *(£1000 tuition fee discount)* | | ✓ |
| | Partial 2000 | Partial Household Income assessment in year of entry + £2000 bursary *(no tuition fee discount)* | | ✓ |
| | High 0 | High Household Income assessment in year of entry + no bursary | ✓ | ✓ |
| | Unknown 0 | No available household income assessment data for year of entry + no bursary | | ✓ |
| Completion, Attainment and Graduate Employment | Low, £1250 | Low Household Income assessment each year of study + £1250 average cash bursary | ✓ | |
| | Low, £1250 - £3000 | Low Household Income assessment each year of study + between £1250 and £3000 average cash bursary | ✓ | |
| | Low, < £2000 | Low Household Income assessment each year of study + < £2000 average cash bursary | | ✓ |
| | Low, £2000 - £3000 | Low Housheold Income assessment each year of study + between £2000 and £3000 average cash bursary | | ✓ |
| | Low, £3000 | Low Household Income assessment each year of study + £3000 average cash bursary | ✓ | ✓ |
| | Low/Partial, < £500 | Low or Partial Household Income assessments each year of study + < £500 average cash bursary | ✓ | |
| | Low/Partial, £500 - £1000 | Low or Partial Household Income assessments each year of study + between £500 and £1000 average cash bursary | ✓ | |
| | Low/Partial, > £1000 | Low or Partial Household Income assessments each year of study + > £1000 average cash bursary | ✓ | |
| | Partial, £0 | Partial Household Income assessment each year of study + no bursary | ✓ | |
| | Partial, < £2000 | Partial Household Income assessment each year of study + < £2000 average cash bursary | | ✓ |
| | Partial, £2000 | Partial Household Income assessment each year of study + £2000 average cash bursary | | ✓ |
| | Partial/High, £0 | Partial or High Household Income assessments each year of study + no bursary | ✓ | |
| | Mixed Low/Partial/High, < £500 | Combination of Low and Partial and/or High Household Income assessments each year of study + < £500 average cash bursary | ✓ | |
| | Mixed Low/Partial/High, > £500 | Combination of Low and Partial and/or High Household Income assessments each year of study + > £500 average cash bursary | ✓ | |
| | Mixed Low/Partial, < £2000 | Combination of Low and Partial (and any other) Household Income assessments each year of study + < £2000 average cash bursary | | ✓ |
| | Mixed Low/Partial, > £2000 | Combination of Low and Partial (and any other) Household Income assessments each year of study + > £2000 average cash bursary | | ✓ |
| | Mixed Low/High/Unknown, < £2000 | Combination of Low and High (and Unknown) Household Income assessments each year of study + < £2000 average cash bursary | | ✓ |
| | Mixed Low/High/Unknown, > £2000 | Combination of Low and High (and Unknown) Household Income assessments each year of study + > £2000 average cash bursary | | ✓ |
| | Mixed Partial/High/Unknown, < £1000 | Combination of Partial and High and/or Unknown Household Income assessments each year of study + < £1000 average cash bursary | | ✓ |
| | Mixed Partial/High/Unknown, > £1000 | Combination of Partial and High and/or Unknown Household Income assessments each year of study + > £1000 average cash bursary | | ✓ |
| | High, £0 | High Household Income assessment each year of study + no bursary | ✓ | ✓ |
| | High/Unknown, £0 | High or Unknown household income assessment each year of study + no bursary | | ✓ |
| | Unknown, £0 | No available household income assessment data each year of study + no bursary | | ✓ |

*** Cohort 1:**

Retention = 2009/10 – 2011/12
Completion = 2009/10 – 2010/11
Attainment = 2009/10 – 2011/12
Employment = 2009/10 – 2011/12

**** Cohort 2:**

Retention = 2012/13 – 2014/15
Completion = N/A
Attainment = 2012/13 – 2013/14
Employment = 2012/13 – 2013/14

**Mixed categories composition:**

Cohort 1: Mixed Low/Partial/High = Low/Partial/High or Low/High
Cohort 2: Mixed Low/Partial = Low/Partial or Low/Partial/Unknown or Low/Partial/High or Low/Partial/High/Unknown
Cohort 2: Mixed Low/High/Unknown = Low/High or Low/High/Unknown
Cohort 2: Mixed Partial/High/Unknown = Partial/Unknown or Partial/High or Partial/High/Unknown

## Control Variables

Numerous control and outcome variables were created in order to carry out the analysis. Appendix 2 contains a full list of variables recommended for the analysis by OFFA; any alterations, additions or comments to this are outlined below.

- Two forms of entry qualification were used in the analysis based around A-level tariff and categorical entry qualifications. As a pre-university qualification (control) variable (i.e. entry qualifications), we used the top 3 A-level grade data expressed as a points score using the following grade scoring system: A = 120, B = 100, C = 80, D = 60 and E = 40. A*s were treated as A's for the purpose of this analysis as they were introduced during the evaluation period. This variable excludes students entering with a variety of qualifications other than A-levels; so we also created another entry qualification categorical variable based on qualification types (i.e. A-levels, BTEC, Access qualifications, International baccalaureates and other qualifications). In this variable A-levels were split further using tariff data in 6 additional categories (<360, 360-399, 400-439, 440-479 and 480-519 and >519). The employment regression models only used the categorical entry qualification as degree attainment is much stronger predictor of graduate outcomes.
- Degree course size reflects the size of the organisational unit that the students are taught in during their first year of study. This includes different organisational structures including Schools, Divisions and programme areas as defined through the NSS institutional subject areas (e.g. FLS is split into different subjects areas: Biomedicine, Neurology, anatomical science, genetics, biology and pharmacology).
- NSS data is based on the overall level of satisfaction (Q22). Scores are linked to programmes rather than individual student scores (which are not available); where individual programme level data is not available JACS or School level data is used. For retention, the NSS data is based on the data from the year that they started at the University. The completion, attainment and employment outcome analyses use NSS data from the year of graduation.
- For ethnicity, OFFA grouping conventions were used, but Black African and Black Caribbean were combined into a general Black category due to small numbers in the individual groups.
- Within the Subject variable, education and medicine & dentistry were removed from some of the regression models (see above).

Additional control variables that had not been specified by OFFA were also included in the analysis. These were:

- Whether or not the student received hardship funds from the university.
- The amount of other financial aid the student received (excluding the Manchester Bursary).
- Whether students had obtained an Integrated masters - this was included in the employment outcomes analysis only as it has previously been found to have a positive impact on graduate outcomes.
- Whether students had had completed the Manchester Access Programme (MAP) on entry.

## Data Analysis

Each outcome variable is considered below with descriptive analysis followed by the key findings from the regression analysis, including highlighting whether keys trends are significant and a discussion of the odds ratios. An odds ratio is a relative measure of effect, which allows the comparison of one group (the comparison group) with other groups within a variable (e.g. performance of white students compared to other ethnic groups). If the outcome is the same in both groups the ratio will be 1, which implies there is no difference in terms of performance of the two groups in relation to the outcome variable used. If the Odds Ratio is less than 1, then the comparison group is performing better than the group it is being compared to. If the Odds Ratio is greater than 1, the comparison group is not performing as well as the group it is being compared to.

# Profile of Bursary Recipients

The descriptive statistics in this section represent a profile of students between 2009/10 and 2014/15 who received the Manchester bursary in their year of entry, compared to those who received a partial bursary, or no bursary at all dependent on their household income. Full charts and tables are provided in Appendix 4, and a summary is outlined below.

- Just over 50% of new entrants in this cohort each year were assessed as being from low income households, peaking in 2012 at 53%. The split between partial and high household income students appears to have changed in 2013, falling from one third being assessed as high to around one quarter – however this is most likely due to the change in threshold for partial students, increasing in this year from £35,000 to £42,611.
- There is a broader range of ages observed in the Low income household category; with almost 12% aged 21 or over (compared to less than 5% in the partial and high income groups). This may be due to mature students' personal income being their means of assessment rather than parental income (as with young students).
- There were a higher proportion of low income students living in their parental homes or in other forms of accommodation in their first year. Only 64% of students from low income households lived in halls of residence in their first year, compared to 89% of those from high income households. This could suggest that low income students are more likely to be local to the area, and choose to stay at home in order to lower their university costs; but also perhaps means that they are engaging in less of the student experience than other students.
- These findings are echoed by the distance from home data, which shows that almost 50% of the low income household cohort were from areas less than 50km away from the University, compared to the high income household cohort where the same proportion were from up to 100km away.
- With respect to ethnicity, there are much higher proportions overall of non-white students in the low income category (around 40%, compared to just 14% of the high cohort). Pakistani, Bangladeshi, Chinese and Black African students particularly are much more overrepresented in the low income cohort than high or partial.
- POLAR 3 data appears to correlate with household income. 32% of students from low income household (and 27% of partial income household students) were from Quintiles 1 or 2, compared to just 20% of the high income household cohort.

- Proportions for the highest qualification categories appear to be fairly similar; however students from low income households were slightly less likely to have entered with the top A Level tariffs (440+) and had a higher proportion of entrants with non-A Level qualifications, such as Access or BTEC courses.
- There is little difference in the make-up of the household income cohorts with regards to disability, sex or subject area.

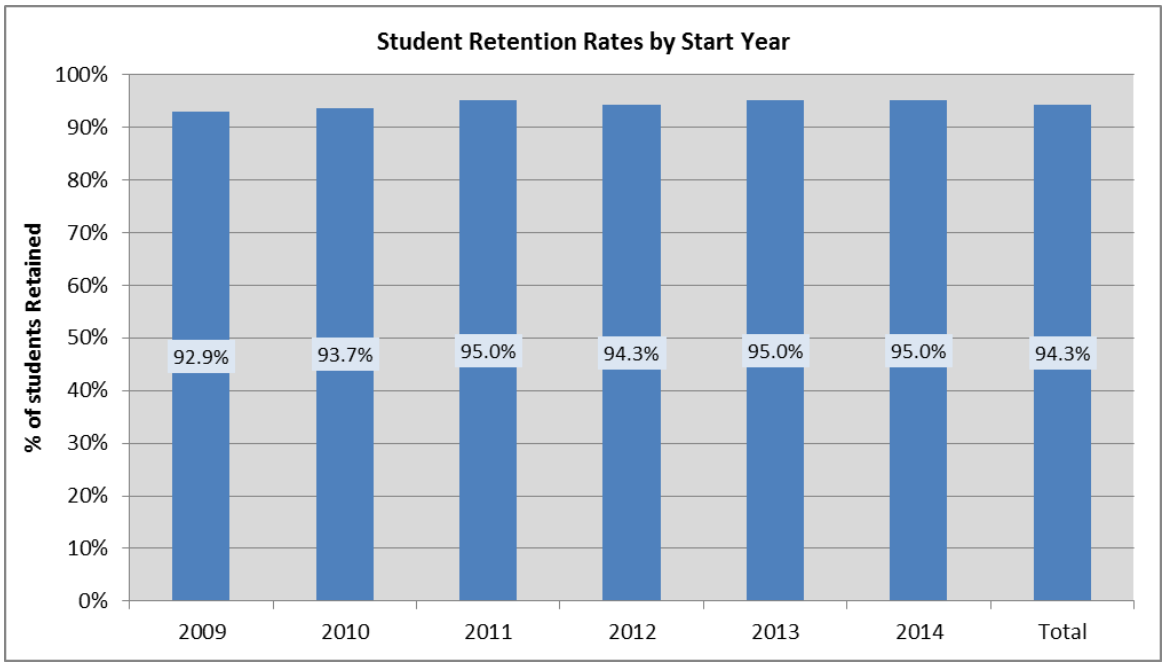
## Retention - University of Manchester

This section examines retention rates for the 2009/10 - 2011/12 and 2012/13 - 2014/15 new entrant cohorts. Students were considered to be retained provided they re-enrolled for their second year of studies and were at the University on the 30th November within their 2nd year. Those who left in their first year before the 1st of December were discounted from the analysis. Descriptive charts outlining retention trends across the bursary categories is shown below, as well as the results of the binary logistic regression examining whether or not receipt of financial support has a significant impact on retention rates when controlling for other factors. The initial section considers HESA data that details whether students left the University of Manchester, and a final section provides regression data for students that left Higher Education overall.

### Descriptive Analysis

Figure 1 shows that there has been a small increase in retention across the six year period, but that retention is high for this cohort overall at around 95%. The retention levels have plateaued across the period 2013-2014 at 95%.

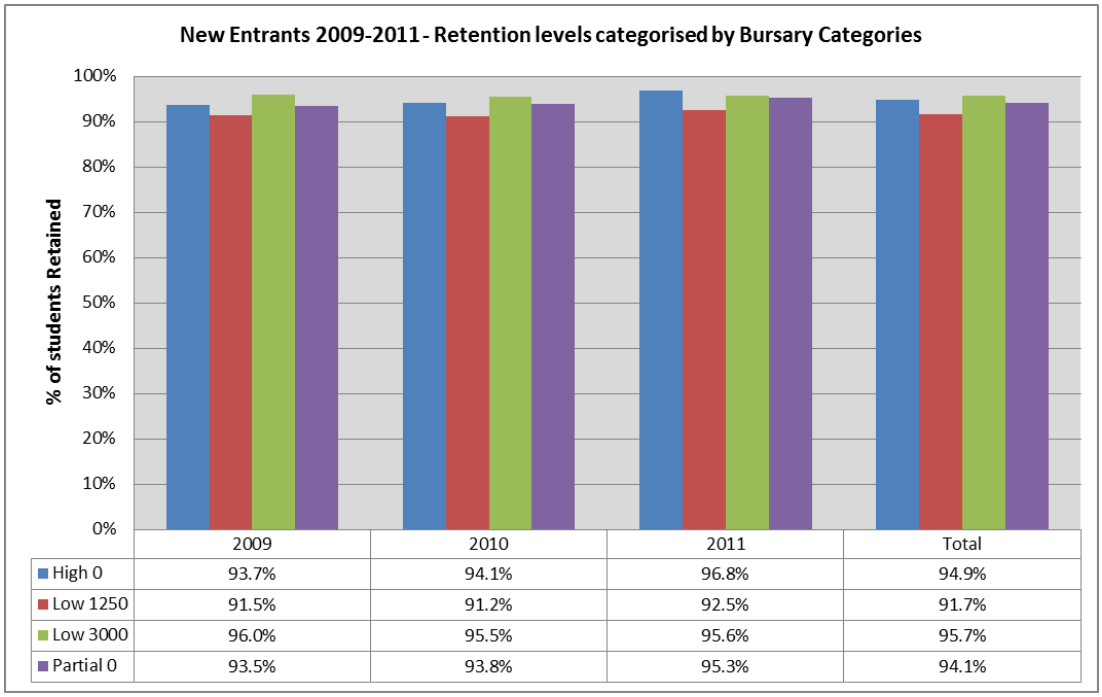
***Figure 1: Rates of student retention by starting year from 2009-2014***




The chart below (Figure 2) splits retention across the bursary categories within new entrant student cohorts 2009 to 2011. Retention for low household income students who received £3000 of financial support had the highest continuation rate, followed by those from high income households.

Students from low income households that received only £1250 had the lowest continuation rate at 91.7% over the three year period.

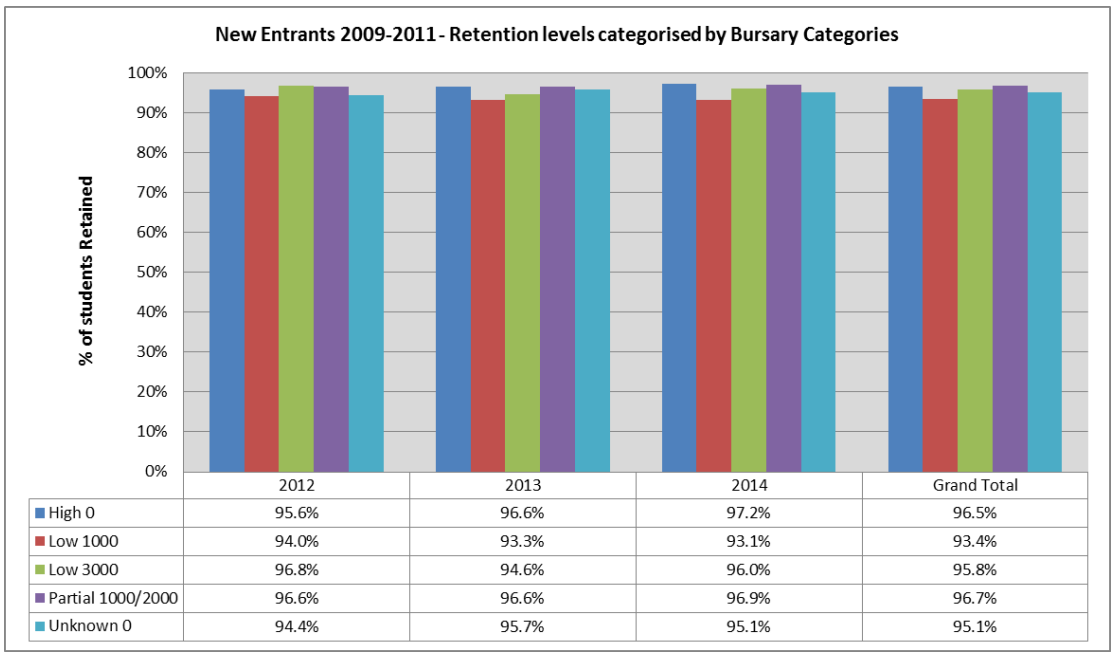
***Figure 2: Retention rates of 2009-11 starting students by their bursary category***




| | 2009 | 2010 | 2011 | Total |
|---|---|---|---|---|
| High 0 | 93.7% | 94.1% | 96.8% | 94.9% |
| Low 1250 | 91.5% | 91.2% | 92.5% | 91.7% |
| Low 3000 | 96.0% | 95.5% | 95.6% | 95.7% |
| Partial 0 | 93.5% | 93.8% | 95.3% | 94.1% |

Across the 2012 to 2014 bursary groups, the partial household income group had the highest retention at 96.7% followed by the high household income group at 96.5%. The low income group that received £1,000 bursary in cash/accommodation fees had the lowest retention rate (see Figure 3 below).

***Figure 3: Retention rates of 2012-2014 new entrants by bursary category***




| | 2012 | 2013 | 2014 | Grand Total |
|---|---|---|---|---|
| High 0 | 95.6% | 96.6% | 97.2% | 96.5% |
| Low 1000 | 94.0% | 93.3% | 93.1% | 93.4% |
| Low 3000 | 96.8% | 94.6% | 96.0% | 95.8% |
| Partial 1000/2000 | 96.6% | 96.6% | 96.9% | 96.7% |
| Unknown 0 | 94.4% | 95.7% | 95.1% | 95.1% |

## Regression Model Results

### Principal Variable - Bursary

Students who received the Manchester Bursary were not significantly more or less likely to be retained than those who did not qualify for finance based on their household income (Table 2). Although students from Low Income Households who received only £1250 in their first year (2009-11 cohort) had a lower odds ratio of being retained (0.88), this was not found to be significant. The lack of significant values could suggest either that there are no differences with respect to the amount of bursary a student receives and their probability of being retained, or that the bursary has successfully levelled the playing field between high income and low income students enabling equal outcomes.

The data in table 2 is based on regression models that control for entry qualifications using categorical data based on highest qualification on entry. Similar models were also run using the tariff score of student's top three A-levels which provides stronger numerical data but reduces the sample size (see appendix 5-8 for full regression models). Students from Low Income Households who received only £1250 in their first year (2009-11 cohort) had a lower odds ratio of being retained in comparison to students from High Household income households (0.74), and in this model this was found to be significant ($p<0.05$). In the 2009-11 period students receiving a £3,000 bursary compared to those from high income households were more likely to be retained but this was not significant.

In the 2012-14 student cohort, the odds ratio of 0.70 for students whose household income was not assessed ('Unknown 0') was significant when compared to students from high income households (Table 2). Unfortunately as this group is comprised of students about whom we have no financial data it would be unwise to speculate on their composition, however the lack of similarity to the 'High 0' group suggests that they are not merely comprised of high income household students who were not eligible for financial support and thus they should be retained as a separate category in future research.

**Table 2: Odds ratio and significance levels for bursary groups when examining retention (categorical entry qualifications)**

Comparison Group: High 0

| Years | Category | Odds Ratio | Significant (0.05) |
|---|---|---|---|
| **2009-11** | Low 1250 | 0.88 | N |
| | Low 3000 | 1.17 | N |
| | Partial (No Bursary) | 0.96 | N |
| **2012-14** | Low 1000 | 1.00 | N |
| | Low 3000 | 0.81 | N |
| | Partial 0 | 0.90 | N |
| | Partial 1000 | 0.94 | N |
| | Partial 2000 | 1.15 | N |
| | Unknown 0 | 0.70 | Y |

## Additional Variables

The control variables that were included in the regression modelling showed significance differences in some areas. Key findings are outlined below, and the full odds ratios and model can be found in Appendix 5 to 8.

- With respect to the 2009-11 cohort, the odds ratio for Chinese students showed that they are significantly more likely to be retained than White students (an odds ratio of 7.96). This trend was not significant at the 95% confidence level in the later 2012-14 cohort but still had a high odds ratio at 2.52. Students with poor retention compared to white students were Black Caribbean, Black African and Pakistani but these differences were not significant and did not carry through to the later model (see Table 3 for descriptive statistics).
- The NSS score (indicating satisfaction with the course) is significant for the 2009-11 cohorts but shows a negative association, meaning that students on courses rated higher in satisfaction were more likely to leave. This trend was reversed for the 2012-14 cohort but this was not significant. The small units of increase coupled with the paradoxical effects observed have led us to conclude using the respective year's final year student NSS score as a means to evaluate the current starting year's satisfaction is not an acceptable method.
- The distance between the University and a student's home address was highly significant ($p<0.001$) for the 2009-11 cohort, with each km equating to a 1.002 times increase in retention. This is linked to findings in the 2012-14 cohort where students living in their own home or parental home were 0.52 and 0.48 times less likely to be retained than those in university accommodation. This perhaps suggests that those students who are less involved with the university through their living experiences i.e. those living nearer to the university or choosing to live at home, are less likely to be retained and are less likely to become involved with and feel attached to the university.
- Retention is poorer for males compared to females. Male students were 0.87 times less likely to continue studying than females in the 2009/11 cohort, and this increased in the later cohort to 0.77 where the odds ratio was found to be significant.
- Students with a known disability appeared less likely to be retained in the earlier cohort (particularly where they did not receive Disabled Student Allowance), however these differences were not found to be significant, and by the later cohort the differences in retention outcomes had decreased for disabled students.
- With respect to subject there were some significant differences in retention across both models and a number of subject areas. Identifying a subject that can be used as a comparison group is difficult, but Mathematics was chosen for this purpose. The effects plots (see Appendix 5-9) show the differing retention rates across all subjects with the highest retention rates being in Medicine and Dentistry across both cohorts, and a general improvement in retention across all subjects for the 2012-14 cohort when compared to the 2009-11 cohort.
- Two forms of entry qualifications were used across the different regression models. Retention rates increased significantly with an increase in top 3 A Level tariff scores (with students who obtained higher tariff points being the most likely to be retained). Students entering with BTEC diplomas across both data period were significantly less likely to continue than A-level students. BTEC students were 0.20 times (in 2009-11) and 0.22 times (in 2012-14) less likely to be retained compared to those who were admitted on A-levels.

Students entering with Access courses qualifications were significantly less likely to continue than those with A-levels in the 2012/14 model.

***Table 3: Total retention rates of different ethnicities by cohort grouping***

| Ethnicity | 2009-11 Total Retention | Diff White Students 09-11 | 2012-14 Total Retention | Diff White Students 12-14 |
|---|---|---|---|---|
| **White** | 94.2% | | 94.8% | |
| **Black Caribbean** | 85.0% | -9.2% | 93.8% | -1.0% |
| **Black African** | 88.7% | -5.6% | 92.5% | -2.3% |
| **Indian** | 94.1% | -0.1% | 95.2% | 0.4% |
| **Pakistani** | 89.8% | -4.4% | 95.4% | 0.6% |
| **Bangladeshi** | 93.6% | -0.6% | 93.1% | -1.7% |
| **Chinese** | 96.4% | 2.1% | 96.6% | 1.8% |
| **Mixed** | 93.5% | -0.8% | 95.7% | 0.9% |
| **Other** | 92.5% | -1.7% | 94.3% | -0.5% |
| **Unknown** | 92.1% | -2.2% | 88.9% | -5.9% |
| **Grand Total** | **93.8%** | | **94.8%** | |

## Retention – Higher Education

HESA also supplied data related to students leaving Higher Education; this is in contrast to the data above which is based on students leaving the University of Manchester (and therefore includes students that transferred to other institutions). The leaving HE data was provided for the time period 2012-14 and shows very similar patterns to the retention data that has already been outlined, with the only significant difference found between the High household income group and the Unknown group (Table 4). The odds ratio data below shows that the Low household income bursary groups who received £1000 or £3000, and the partial group who received no cash bursary (tuition fee discount only) had lower continuation rates than the high household income group; however these difference were not found to be significant.

**Table 4: Odds ratio and significance levels for bursary groups when examining retention to all HE**

Comparison Group: High 0

| Years | Category | Odds Ratio | Significant (0.05) |
|---|---|---|---|
| **2012-14** | Low 1000 | 0.99 | N |
| | Low 3000 | 0.87 | N |
| | Partial 0 | 0.53 | N |
| | Partial 1000 | 1.36 | N |
| | Partial 2000 | 1.21 | N |
| | Unknown 0 | 0.71 | Y |

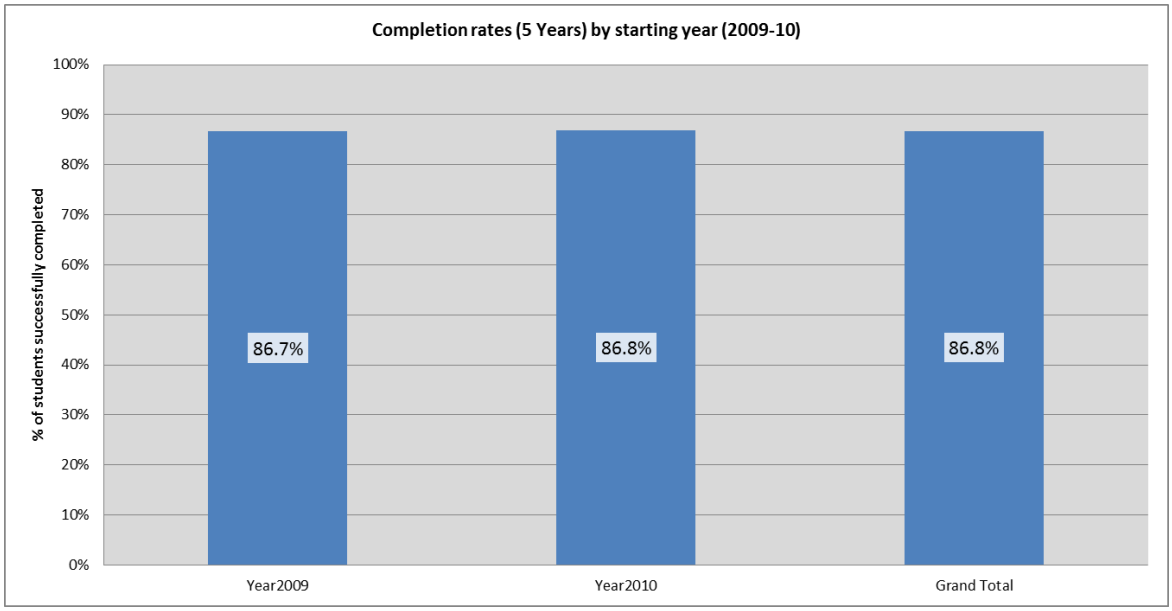
# Completion

This section will examine completion rates, defined as whether or not a student completed a first degree within 5 years. Descriptive charts detail the relationship between bursary and completion; this is then followed by the results of the binary logistic regression analysis for the bursary variable as well as the effects (if any) of the control variables.

## Descriptive Analysis

Figure 4 outlines the overall completion rates of students. It should be noted that due to the time frame given for completion we could only examine two years of data (2009 and 2010 starters). Under this definition of completion, 87% of students at the University of Manchester complete their degree within five years.

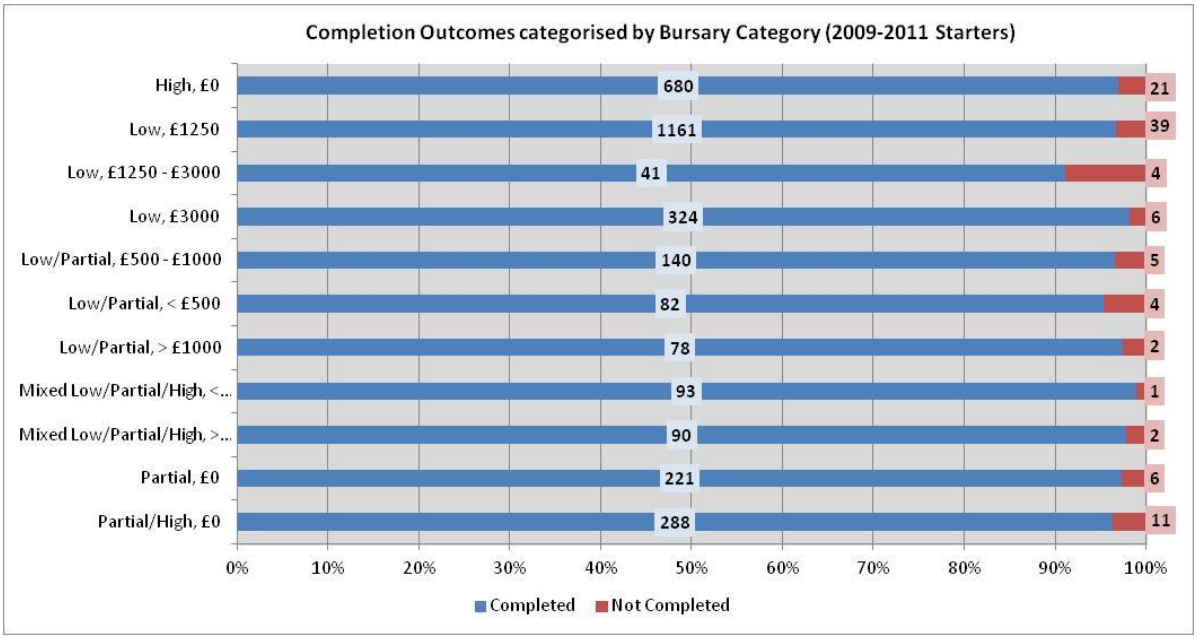
***Figure 4: Completion rates of of students starting in 2009 and 2010***




The chart above is based on all new starters in 2009 and 2010 whilst the data below is based on all completers with household income data available over the data period, of which the cohort is much smaller. The completion levels for the cohort with household income data was 98% compared to the 87% for all starters.

The range of completion levels across the bursary categories was 91.1% to 98.9% (see Figure 5 below). The categories with the lowest completion levels were the low and partial categories including Low £1250-£3000 at 91.1% and Low/Partial <£500 at 95.4%. The Low £3000 category had the second highest completion level at 98.2%; other categories with high completion levels were Mixed Low/Partial/High >£500 (97.8%) and Mixed Low/Partial/High <£500 (98.9%).

***Figure 5: Completion rates of students starting in 2009 and 2010 split by their bursary grouping***



## Regression Model Results

### Principal Variable - Bursary

With respect to the results of the regression model for completion within 5 years, the average amount of cash bursary received was not found to have significant impact on a student's likelihood of completing, as shown in Table 5 (see Appendices 11-14 for full models); except where low income household students had received between £1250 and £3000 over their career. These students were significantly less likely to complete their studies than the high household income group (odds ratio of 0.28). Students that were consistently low income and received £3,000 across each year of study were nearly twice as likely to complete their studies (odds ratio of 1.95). It should be noted that these students had achieved 3 A grades on entry (enabling them to access a higher bursary amount), however entry qualifications are controlled for in this model.

It could be argued that the bursary has overall levelled the playing field in helping the majority of low income students complete at the same rates as high income students; however if that were the case we might expect to see lower completion rates for students from partial household income students who were not eligible for finance, which does not appear to be the case. It is therefore unclear that student finance is linked to completion rates from this data.

***Table 5: Odds ratios and significance levels for bursary categories when examining completion (Entry Qualification category model)***

Comparison group: High, £0

| Years | Bursary Grouping | Category | Odds Ratio | Significant (0.05) |
|---|---|---|---|---|
| **2009-10** | Amount + | Low, £1250 | 1.02 | N |
| | Assessment | Low, £1250 - £3000 | 0.28 | Y |
| | | Low, £3000 | 1.95 | N |
| | | Low/Partial, £500 - £1000 | 0.89 | N |
| | | Low/Partial, < £500 | 0.84 | N |
| | | Low/Partial, > £1000 | 1.73 | N |
| | | Mixed Low/Partial/High, < £500 | 2.81 | N |
| | | Mixed Low/Partial/High, > £500 | 1.34 | N |
| | | Partial, £0 | 1.24 | N |
| | | Partial/High, £0 | 0.75 | N |
| | Average cash bursary | - | 1.00 | N |

### Additional Variables

Very few significant findings are observed on this measure for the control variables (see full regression models in Appendices 11 – 14). Medicine and Dentistry students were significantly more likely not to have completed when compared to Maths, however the increased length of Medicine and Dentistry courses should be considered as a likely reason for this. Male students were significantly less likely to have completed than female students (odds ratio 0.59 in the first model).

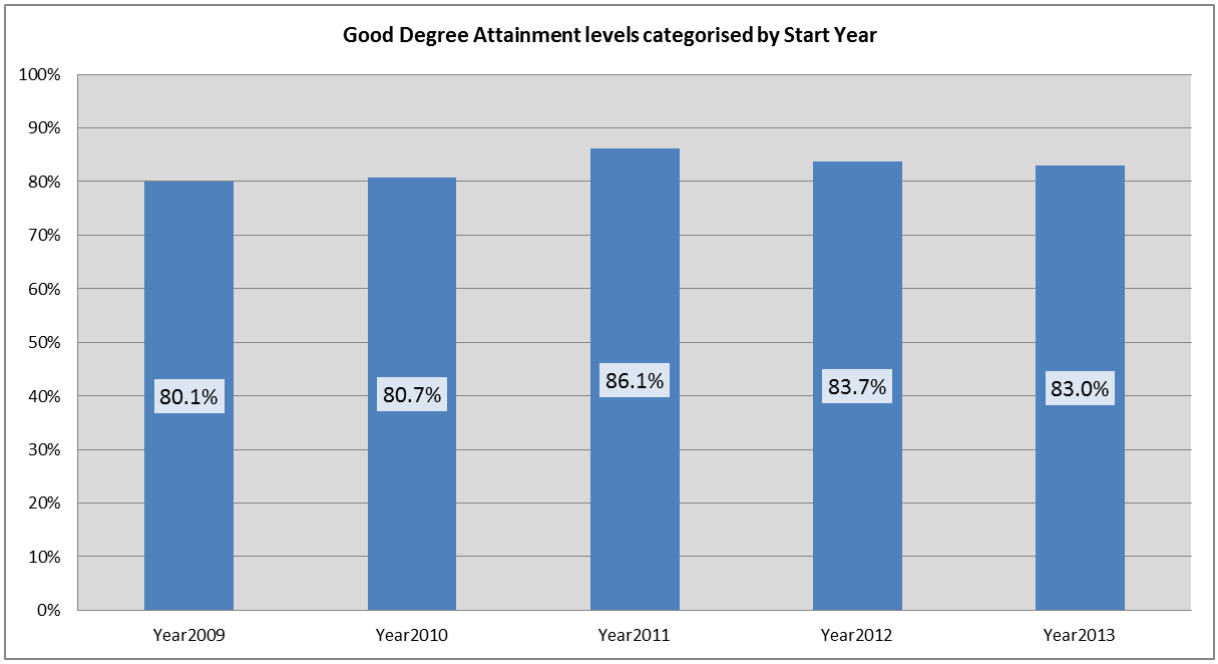
## Attainment

Attainment is split into those students who obtained a 'Good degree' (those who obtained a degree result of 2:1 or First) and 'Lower degree' (any degree outcome below a 2:1). The descriptive charts below detail overall attainment trends across the five year period; this is then followed by the results of the binary logistic regression analysis examining the impact of financial support and the control variables on attainment.

### Descriptive Analysis

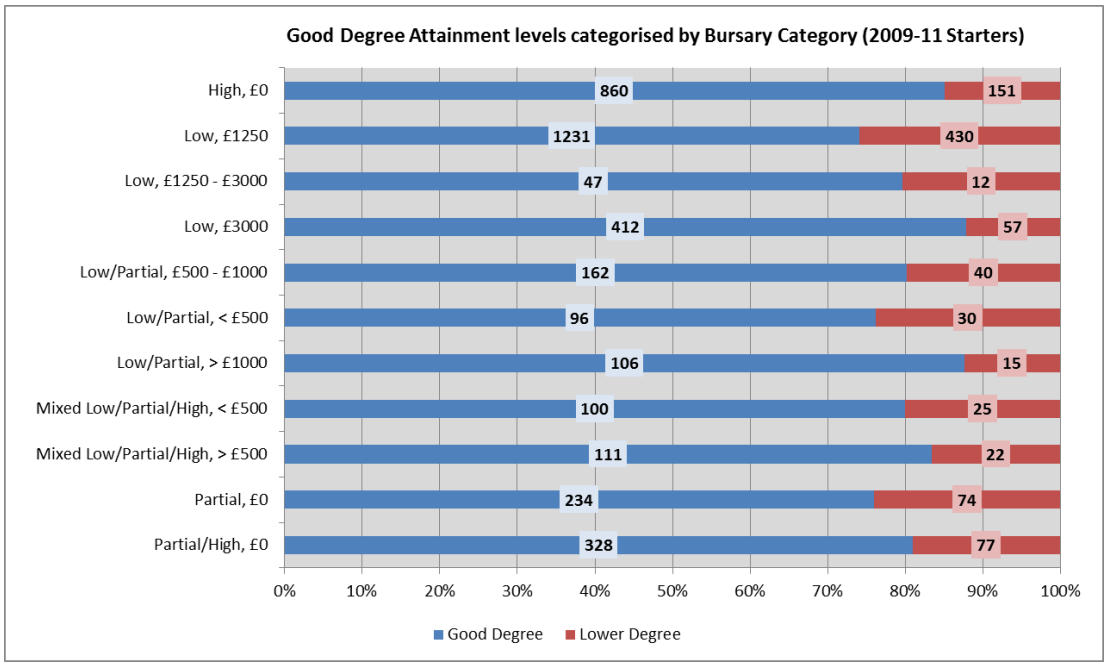
Figure 6 shows that overall good degree levels have increased across the data period and there was a peak for the 2011 cohort (86.1%), with levels decreasing in the next two years.

***Figure 6: Attainment levels of a 'Good Degree' for students starting in 2009-2013***



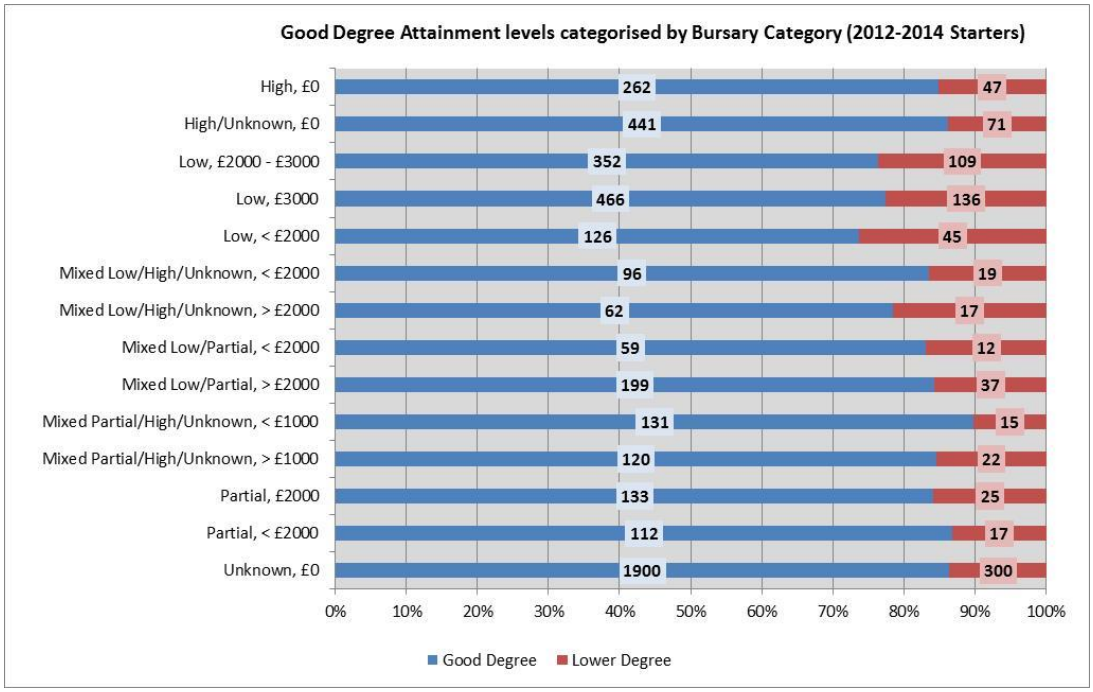

Attainment of students from low income households is noticeably different from those from higher income groupings, with them seemingly being less likely to secure a good degree (see Figure 7). The exception to this is students in the 2009-11 cohort who received £3000 per year in financial support. These students appeared more likely to attain a good degree; however as specified in the methodology those students received the 'Manchester Advantage Scholarship' award due to receiving 3 A grades at A Level, so their higher academic performance is most likely a factor in improving their performance across their degree, as opposed to it being related to the monetary amount they received.

***Figure 7: Attainment levels of students starting in 2009-11 separated by bursary category***




Students who entered in 2012 and 2013 who were from Low Income Households again appear to have poorer attainment than those from less-disadvantaged backgrounds (see Figure 8 below), with attainment at less than 80%. Attainment outcomes were highest for the 'Mixed Partial/High/Unknown, < £1000' at 89.7%, followed by the Partial, < £2000 (86.8%), Unknown, £0 (86.4%) and High/Unknown, £0 (86.1%).

***Figure 8: Attainment levels of students starting in 2012-13 separated by bursary category***



## Regression Model Results

### Principal Variable - Bursary

The regression model for attainment showed that in the 2009-11 cohort, both students from low income households who received on average £1250 per year, and students from more mid-income households who did not qualify for financial support ('Partial, £0' group) were significantly less likely to graduate with a good degree than the control group (those from high income households) – see Table 6 below. The odds ratios show that 'Low, £1250' were 0.67 times less likely to obtain a good degree than the 'High, £0' group, whilst 'Partial, £0' were 0.61 times less likely to obtain a good degree. These findings hold when controlling for top 3 A Level qualifications only (see appendix 15-22 for full models).

These results suggest that, for the earlier cohort, a £1250 bursary was not enough to level the playing field for low income students, and that those who fell just outside of the threshold were also at a disadvantage by not being eligible for any bursary support.

However these significant differences do not appear in the second model (post fee increase and with changes to the bursary funding). Although not significant, the odds ratios for Partial income students who received some level of cash bursary are greater than 1 - this perhaps suggests that the giving of some money to those students between high and low income brackets has helped to address the initial attainment gap.

However in this second model, the amount of cash bursary received was significantly negatively associated with the probability of gaining a good degree, meaning that students receiving higher average bursary amount were less likely to gain a good degree. This perhaps relates to the Low income household students who received the full £3000 per year, who had an odds ratio of 0.75 compared to high income household students (although this is not significant). This perhaps suggests that increasing the amount of financial support to the most in need students has not completely helped to resolve the issue around attainment.

***Table 6. Odds ratios and significance levels of bursary categories when examining attainment***

Comparison group: 0/High

| Years | Bursary Grouping | Category | Odds Ratio | Significant (0.05) |
|---|---|---|---|---|
| **2009-11** | Amount + Assessment | Low, £1250 | 0.67 | Y |
| | | Low, £1250-£3000 | 0.73 | N |
| | | Low, £3000 | 1.35 | N |
| | | Low/Part, £500-£1000 | 0.90 | N |
| | | Low/Part, <£500 | 0.64 | N |
| | | Low/Part, >£1000 | 1.06 | N |
| | | Mixed L/P/H, <£500 | 0.84 | N |
| | | Mixed L/P/H, >£500 | 0.97 | N |
| | | Partial, £0 | 0.61 | Y |
| | | Partial/High, £0 | 0.81 | N |
| | Average cash bursary | - | 1.00 | N |
| **2012-13** | Amount + Assessment | High/Unknown,£0 | 1.15 | N |
| | | Low, £2000-£3000 | 1.00 | N |
| | | Low,£3000 | 0.75 | N |

| | | | |
|---|---|---|---|
| | Low,< £2000 | 0.79 | N |
| | Mixed L/H/U,<£2000 | 0.85 | N |
| | Mixed L/H/U,>£2000 | 0.81 | N |
| | Mixed L/P, < £2000 | 1.06 | N |
| | Mixed L/P, > £2000 | 1.22 | N |
| | Mixed P/H/U, < £1000 | 1.75 | N |
| | Mixed P/H/U, > £1000 | 0.90 | N |
| | Part,£2000 | 1.32 | N |
| | Part,< £2000 | 1.40 | N |
| | Unknown,£0 | 1.20 | N |
| Average cash bursary | - | 0.99 | Y |

### Additional Variables

The control variables that were factored into the regression models showed some areas of significance in terms of impact on attainment. These are outlined below and full results can be found in Appendices 15 - 22.

- In the 2009-11 cohort, males were significantly less likely to obtain a good degree than females (odds ratio of 0.65). This trend also carried over into 2012-13 (odds ratio of 0.54) suggesting that the gender attainment gap has worsened after the fee increase.
- A number of findings were observed with regards to ethnicity:
    - Chinese students were significantly less likely to attain a good degree than White students (odds ratio of 0.61). This finding is not significant in the later models, however the odds ratio is still low at 0.63. Attainment for White and Chinese students has increased over that time frame (see Table 7) but the gap has widened between the two data periods.
    - Indian students are also significantly less likely to obtain a good degree when compared to White students and this finding holds over both models with attainment for this group; however the attainment gap has narrowed slightly between the two data periods (see Table 7).
    - Black African students are less likely to attain good degree than White students, significantly so in the 2012-13 model where they are half as likely to obtain a good degree (odds ratio of 0.40).
- Distance from home was significant across both models, with an odds ratios of 1.002. This mirrors the earlier stated findings for retention; that those who lived closer to the university were less likely to be retained, suggesting that this is a factor that continues to impact throughout the student career.
- In the 2009-11 cohort, students who entered with non A-level qualifications (excluding the International Baccalaureate) were significantly less likely to attain a 'good' degree than those who had three A-levels with a tariff of 360-399. This gap has narrowed into the later cohort for all qualifications except the BTEC (see Table 8).
- Students with higher A-level tariff scores were twice as likely to attain a good degree as those with lower scores. This provides strong evidence that the grades of a student coming in to this university play a large role in determining their degree outcome (see Table 8).

*Table 7: Total 'Good Degree' attainment rates by ethnicity and cohort grouping*

| Ethnicity | 2009-11 Total Attainment | Diff White Students 09-11 | 2012-13 Total Attainment | Diff White Students 12-13 |
|---|---|---|---|---|
| **White** | 84.2% | | 85.7% | |
| **Black Caribbean** | 84.5% | 0.3% | 81.8% | -3.9% |
| **Black African** | 64.9% | -19.3% | 67.8% | -17.9% |
| **Indian** | 73.3% | -10.9% | 77.9% | -7.8% |
| **Pakistani** | 70.6% | -13.7% | 78.8% | -7.0% |
| **Bangladeshi** | 74.7% | -9.5% | 68.5% | -17.3% |
| **Chinese** | 70.6% | -13.6% | 71.2% | -14.6% |
| **Mixed** | 83.2% | -1.1% | 82.7% | -3.1% |
| **Other** | 76.0% | -8.2% | 72.8% | -12.9% |
| **Unknown** | 78.9% | -5.3% | 60.0% | -25.7% |
| Grand Total | **82.2%** | | **83.4%** | |

***Table 8: Odds ratios and significance levels for the highest qualification the student had upon entering university when examining the attainment of a 'Good Degree'***

Comparison group: A-level 360-399

| Model details | Highest Qualification on entry | Odds ratios | Significant (0.05) |
|---|---|---|---|
| **2009-11, Bursary category** | A-Level <360 | 0.62 | Y |
| | A-Level 400-439 | 1.09 | N |
| | A-Level 440-479 | 1.38 | Y |
| | A-Level 480-520 | 1.10 | N |
| | A-Level >520 | 2.11 | Y |
| | Access | 0.21 | Y |
| | BTEC | 0.34 | Y |
| | HE above Degree | 0.22 | Y |
| | HE below Degree | 0.32 | N |
| | IB | 1.58 | N |
| | Other | 0.21 | Y |
| **2012-13, Bursary category** | A-Level <360 | 0.54 | Y |
| | A-Level 400-439 | 1.11 | N |
| | A-Level 440-479 | 1.39 | Y |
| | Access | 0.66 | N |
| | BTEC | 0.13 | Y |
| | HE above Degree | 0.92 | N |
| | HE below Degree | 1.78 | N |
| | IB | 2.05 | N |
| | Other | 1.70 | N |

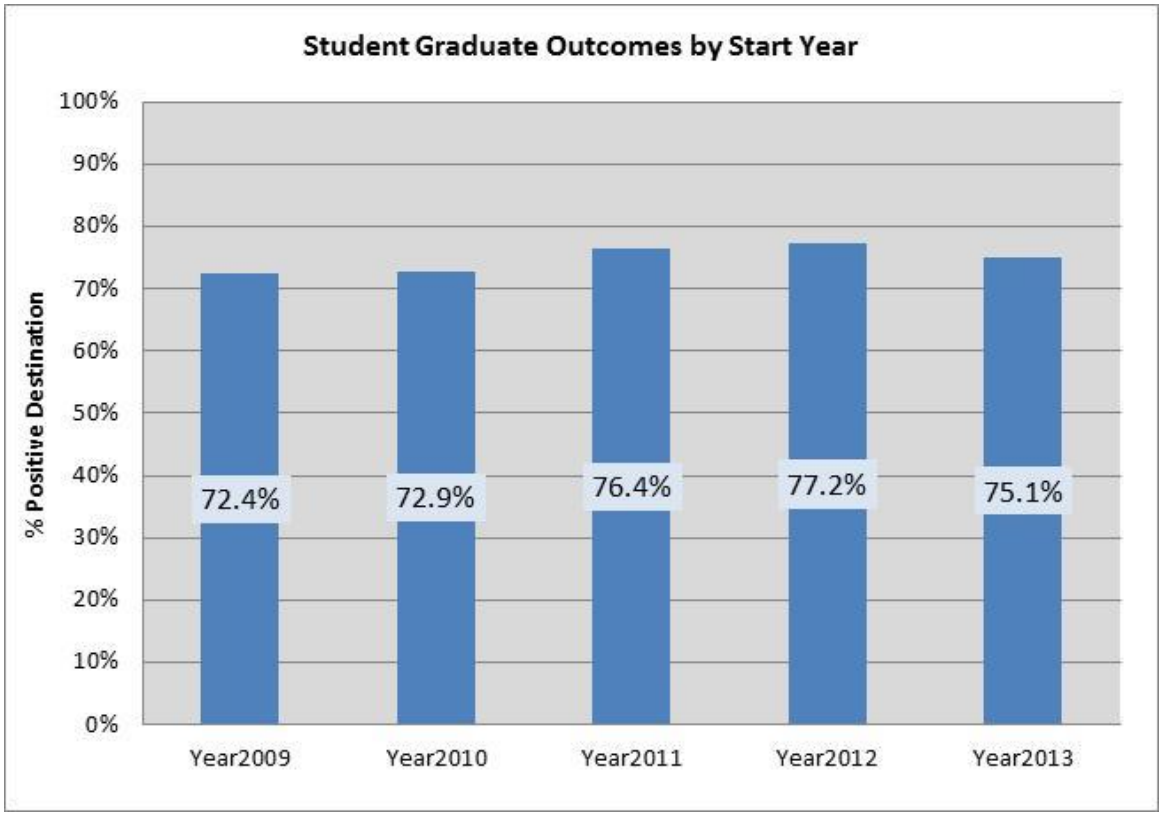
## Employment Outcomes

The section below details the findings of this report with respect to graduate employment outcomes. Positive graduate outcomes were defined those jobs coded as SOC 1-3 as well as graduate level further study. Those in jobs coded SOC 4-9 as well as unemployment were considered to be a 'negative outcome'. Below are descriptive charts detailing the overall trends in employment outcomes, followed by the results of the binary logistic regression model for bursary as well as any significant effects of the control variables.

## Descriptive Analysis

Figure 9 shows that there has been a gradual increase in overall positive employability outcomes for this cohort each year from 2009 to a peak in 2012, before a slight decrease in 2013.

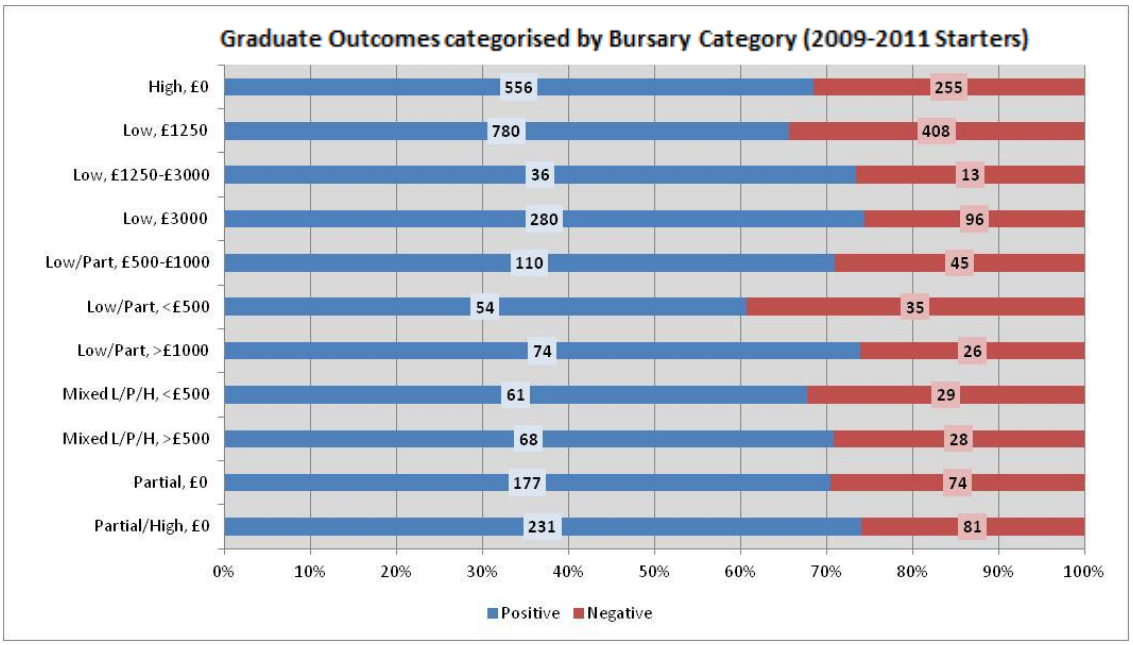
***Figure 9: Summary of students starting in 2009-13 in positive employment destinations***




In 2009-11 (Figure 10), employability outcomes appear to be slightly better for low income household students who received £3000, between £1250 and £3000, and those from Low/Partial backgrounds who received more than £1000.

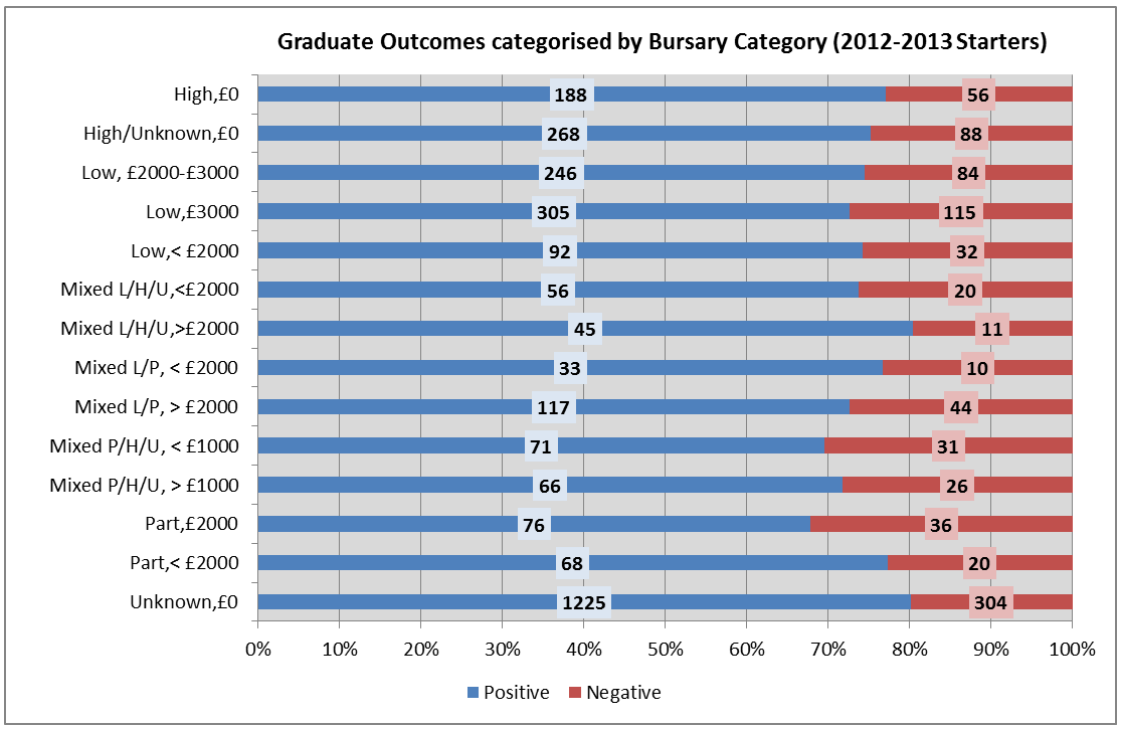
However those from low or low/partial income households who received £1,250 or <£500 respectively had the poorest outcomes, which perhaps suggests that students from lower income backgrounds students who did not receive high levels of bursary support struggled to gain positive employment outcomes.

***Figure 10: Graduate outcomes of students starting in 2009-11 separated into bursary category***




The trends in the later cohort (2012-13) are not as clear (see Figure 11 below), as the groups with the highest positive destination are Mixed Low/High/Unknown (>£2000), Unknown (£0) and Partial (< £2,000). The groups with the poorest positive destination outcomes were Partial (£2,000), Mixed Partial/High/Unknown (£1000), Mixed Partial/High/Unknown (> £1000) and Low (£3,000).

***Figure 11: Graduate outcomes of students starting in 2012-13 separated by bursary category***



## Regression Model Results

### Principal Variable - Bursary

With regards to the regression analysis for graduate employability outcomes, there was little evidence to suggest that the financial support has a significant impact on employment, when all other factors are controlled for (see Table 9). Although employment outcomes for Low Income Household students who received smaller amounts of money did appear to be worse than those from high income households (and those who received the full £3000 in the later cohorts), these findings were not significant.

Similarly, there were mixed outcomes for students in the 'Partial' groupings, with seemingly better outcomes in the first cohort where they received no funding than in the second model where they did receive funding - but again the results were not significant (see Appendices 23 to 26 for full models).

This lack of significance can be interpreted as the bursary having no impact on employability outcomes, or that the bursary has in fact levelled the playing field and closed the gap between students with less household income and those with a higher household income. It is however important to point out that attainment was highly significant across all of the employment regression models, with students who obtained a higher degree classification being significantly more likely to progress to a positive employment outcome (shown in Figure 12). This perhaps suggests that this is a stronger control variable in predicting employment outcomes, and that addressing the issues around attainment for WP students may have an important knock on effect for their employment outcomes.

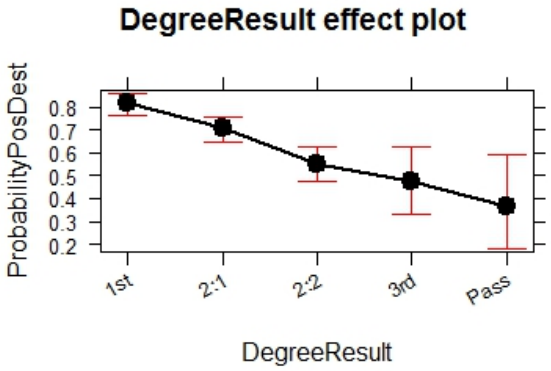
***Table 9. Odds ratios and significance levels of bursary categories when examining graduate employment outcomes***

Comparison Group: 0/High

| Years | Bursary Grouping | Category | Odds Ratio | Significant (0.05) |
|---|---|---|---|---|
| **2009-11** | Amount + Assessment | Low, £1250 | 0.92 | N |
| | | Low, £1250-£3000 | 1.00 | N |
| | | Low, £3000 | 1.08 | N |
| | | Low/Part, £500-£1000 | 1.06 | N |
| | | Low/Part, <£500 | 0.73 | N |
| | | Low/Part, >£1000 | 0.95 | N |
| | | Mixed L/P/H, <£500 | 1.11 | N |
| | | Mixed L/P/H, >£500 | 1.01 | N |
| | | Partial, £0 | 1.24 | N |
| | | Partial/High, £0 | 1.29 | N |
| | Average amount | - | 1.00 | N |
| **2012-13** | Amount + Assessment | High/Unknown,£0 | 0.97 | N |
| | | Low, £2000-£3000 | 0.75 | N |
| | | Low,£3000 | 0.85 | N |
| | | Low,< £2000 | 1.01 | N |
| | | Mixed L/H/U,<£2000 | 0.90 | N |
| | | Mixed L/H/U,>£2000 | 0.91 | N |
| | | Mixed L/P, < £2000 | 0.67 | N |
| | | Mixed L/P, > £2000 | 0.70 | N |

| | | | | |
|---|---|---|---|---|
| | | Mixed P/H/U, < £1000 | 0.64 | N |
| | | Mixed P/H/U, > £1000 | 0.65 | N |
| | | Partial, £2000 | 0.64 | N |
| | | Part,< £2000 | 0.98 | N |
| | | Unknown,£0 | 1.29 | N |
| | Average amount | - | 1.00 | Y |

***Figure 12: Effects Plot outlining the probability of being in a positive destination by degree result (2009-11 cohort)***




## Additional Variables

The impact of degree attainment on employment outcomes has already been outlined, but significant findings were also observed on a number of other variables (see Appendices 23-26).

- In the 2009-11 data period, Indian students were significantly more likely to be in a positive destination than White students (odds ratio of 1.55 in the categorical entry qualifications model). Although the odds ratio remained high in the 2012-13 model, the different was not found to be significant.
- With respect to subject studies, there are certain noticeable trends in employability outcomes. Subjects such as those allied to medicine, law and computer science were more likely to be in a positive destination, and those such as Historical & philosophical studies, languages, arts and design and social studies were less likely (when compared to Mathematics).
- Students who completed an Integrated Masters were almost twice as likely to be in a positive graduate outcome compared to their counterparts who had not undertaken one (odds ratio of 1.68 in the 2009-11 model, and 1.89 in the 2012-13 model).

# Recommendations and Next Steps

This report was undertaken as an extension of the recommendations made by OFFA for Universities to improve the evidence around the impact of financial support and to inform strategy around ensure that financial support packages are working effectively.

OFFA produced a technical workbook in order to guide universities in undertaking this analysis which largely shaped the methodology previously outlined in this report.

Some of the findings from the data have led us to question the validity of a number of the control variables however, and it may be the case that their inclusion in the regression analysis resulted in fewer significant findings. These variables are:

- NSS score for degree – it is presumed that this variable intended to control for the overall quality of the course offered as measured through satisfaction of students. However the findings with this variable were mixed, and there was some question as to how accurately it was a true reflection of quality of the course, given that it related to the experiences of a different cohort of students who had already graduated.
- Degree size – again the assumption here is that the number of other students on a course may impact upon student experience and perhaps therefore on success outcomes. However this variable could only identify the number of students registered on similar courses grouped together by subject area, and therefore most likely did not accurately control for the average number of students who would also be physically present in classes.
- Clearing entrant – it is unclear what impact clearing has on student success and whether or not this is a significant factor on outcomes. If this aimed to control for students who may have entered with lower grades as a result of coming through the clearing process, then arguably this would be controlled for through the entry qualifications variable.

It is recommended that the regression analyses be re-run at a later date without these variables in order to see how this changes the findings; however it is unclear whether or not this could feed into the monitoring evaluation for OFFA due to the recommendations they have made around evaluation.

## Appendix 1 –Research Proposal

# Project Specification

### *Research Title*

The impact of receiving a student bursary on: retention, degree completion, degree attainment and graduate outcomes.

### *Research Aims*

- To identify, when controlling for other variables, whether receiving a bursary from the university has an impact on the retention of first year students when compared to those who do not receive the bursary.
- To assess whether or not students who receive a university bursary have similar likelihoods of completing their first degree in 5 years compared to those that have not been awarded it, when controlling for other variables.
- To ascertain whether or not students who have been awarded the bursary achieve similar proportions of 'good' (first or 2:1) degrees when compared with students that have not been given the bursary.
- To identify, when controlling for other variables, the graduate level outcomes of those who receive a university bursary and whether or not they differ from those that did not receive the bursary.
- To create a profile detailing the characteristics of those likely to receive a bursary.

### *Summary of Relevant Research*

Harrison and McCaig (2017) used university bursaries a case study with which to reflect upon the impacts and successes, if any, of educational interventions pertaining to economically disadvantaged students. Their research focused on students with a bursary and a comparison group of marginally less disadvantage, thus without a bursary. They examined four measures: 'Whether the student had been retained into their second year of study (not necessarily having progressed)'; Whether the student had completed a degree programme within five years (longer programmes such as medicine were excluded); 'Whether the student achieved a 'good' degree – a first or upper-second-class degree'; and 'Whether the student was in graduate-level graduate outcomes six months after graduation, with various exceptions for travelling, parenthood, etc.'. It is this method that will form the basis for the research intended to be carried out by this project. Harrison and McCaig (2017) examined the administrative data for five universities from 2009-2010 and 2012-2013 using bursary students and then non-bursary group of students (that had incomes slightly above the maximum threshold for the bursary) for comparison. They found that there were 3 different results for these measures that were mixed across the universities with no patterns for specific universities. These results were: bursary students had significantly worse outcomes than their comparison group; alternatively they had no statistically significant differences; or they had statistically better outcomes than their comparison groups.

These varied findings mirror similar research by Nursaw Association (2015) and their research into the effects of financial support on retention and academic achievement. Specifically they found that

no significant difference with respect to financial aid and retention rates with most of the universities examined, although one reported significantly higher retention rates for financially aided students when compared to non-aided, whilst two institutions reported inverse results. Two institutions then also examined the effects of bursaries on students progressing to post-graduate education. One institution found that a higher percentage of bursary students intended to progress when compared to 'the broader cohort' whilst the second institution found that 66% of students felt that debt would be an 'important or 'very important factor' as to whether or not they progressed.

In their recent report Wyness (2017) studying data obtained from 22 universities (8 Russel Group and 16 non-Russel group) using 1-5 cohorts from each university of students beginning their studies from 2006-2011. They then examine the amount of bursary a student received and their parent's income (where possible) and background information such as ethnicity or tariff scores for A-levels these were them examined against their final degree grade. The findings of this research were that for every £1000 of aid a student's chances of getting a 'good' degree go up by 3.7%. However, this is not constant and decreases as the amount of aid increases before finally stopping at £1906.

## *Brief Synopsis of the Research*

This research will consider cohort data from the starting first year students from the University of Manchester from September in 2009-2014 examining and controlling for a multitude of variables (see Appendix) in order to assess the effects of bursaries on the student's retention to second year. Data for graduates from June in 2012 to 2015 will be used against those same factors to assess the graduate outcomes of the students as well as whether or not they received a 'good' degree or were more or less likely to complete their course. The data will be assessed via regression modelling as summarised in a report in order to determine the effects of bursaries throughout their implementation at The University of Manchester and help aid in policy decisions and provide evidence for the OFFA (Office for Fair Access).

## *Methodology*

### *Sample (See Table 1.)*

The sample contains all new students and students enrolled from September 2009 to September 2014 as well as graduates for those academic years (June 2010 to June 2016) who are English (international students as well as those from Wales, Northern Ireland and Scotland were omitted). The years 2009/10, 2010/11, 2011/12 will be used as a cohort for the study with respect to the attainment and graduation outcomes, whilst the year 2012/13 will also be used for attainment. The data for 2009/10–2013/14 will be used will be used to calculate retention levels and all years will be used to show completion data.

### *Reasons for Filtering the Sample in this way*

- As international students are not eligible for the bursary they have been excluded from the sample.
- The data for undergraduates was selected from 2009 forwards to allow for greater standardisation with regards to other universities allowing for more meaningful comparisons when comparing the data.

- Undergraduate data from 2009 to 2015 also corresponds with time periods before and after the tuition fee rise and thus captures the increase in amounts of financial support the University gave out allowing a comparison of whether or not increased bursaries were successful at levelling the playing field for disadvantaged students.
- Graduate data was taken from the years 2011/12, 2012/13, 2014/15 which allows us to compare those graduates against the total funding they received from the university to assess their impact.
- The bursary schemes that were implemented at the University of Manchester were not universal and as such different categories will be used for the analysis to reflect this (Table 2.). The data from 2009 to 2011 will examine those who had a family income of under £25,000 as a (continuous variable) as they were the only group to receive a bursary. Whilst data from 2012 onwards shall use the categories (ordinal variable): Under £25,000 (full bursary), £25,000-£32,000 (partial bursary) and £32,000+ (high income).

Table 1. The Variables each Academic year will supply data for.

| Year | Retention | Degree Completion | 'Good' Degree | Graduate Outcomes |
|---|---|---|---|---|
| 2009/10 | YES | YES | YES | YES |
| 2010/11 | YES | YES | YES | YES |
| 2011/12 | YES | NO | YES | YES |
| 2012/13 | YES | NO | YES | YES |
| 2013/14 | YES | NO | YES | YES |
| 2014/15 | YES | NO | NO | NO |

| Key | |
|---|---|
| | Before the tuition fee increase |
| | After the tuition fee increase |

Table 2. Bursary Cohorts and the Methods of Measurement

| Time Period | Categories by which Bursaries are Measured | Variable Type |
|---|---|---|
| 2009/10-2011/12 | Under £25,000 (Bursary), £25,000-£35,000 (Just Above Bursary) and over £25,000 (No Bursary) | Ordinal/ Continuous |
| 2012/13-2014/15 | Under £25,000 (Full Bursary), £25,000-£35,000 (Partial Bursary) and £35,000+(No Bursary) | Ordinal/ Continuous |

| Key | |
|---|---|
| | Before the tuition fee increase |
| | After the tuition fee increase |

*Possible Issues Regarding Sample Selection*

- The lack of inclusion of students from Wales, Northern Ireland and Scotland will not give a true reflection of the impact of university bursaries on all eligible students.
- Missing data with regards to means testing results in a lack of low income students who have not received a bursary in the data.

*Data Sources*

- HESA (Higher Education Statistics Agency) 2009/10, 2010/11, 2011/12, 2012/13, 2013/14, 2014/15, 2015/16 student returns data.
- POLAR (Participation of Local Areas) 3 data.
- DLHE (Destinations for Leavers from Higher Education) Survey data 2009/10, 2010/11, 2011/12, 2012/13, 2013/14, 2014/15 and 2015/16.
- HEBSS (Higher Education and Bursaries Scholarship Scheme) financial data 2009/10, 2010/11, 2011/12, 2012/13, 2013/14 and 2014/15.
- DSO (Disability Support Office) Registered Disability Data.

*Types of Analysis*

- Descriptive analysis of the data set to identify any trends that may be apparent in the data.
- A multiple binary logistical regression analysis to allow us to see the effects (if any) the receiving of a bursary has on the outcome variables, whilst allowing us to control for other variables that may influence the results.

*Data Limitations*

- POLAR data compares relatively large areas (wards). This means that the nuances of individual areas, such as high income streets in generally low income areas are lost.
- POLAR data only uses 18 and 19 year-old which means 20 and 21 year olds coming to university (who are classified as young students) for their first degree are not considered.
- The recommended HESA data consists of students that have left higher education all together as opposed to the data we shall be using which includes students who transfer to other universities; this means that the data for used for measuring how many first year students were retained may be different depending on which data set is examined.
- Many low income students that are eligible for the bursary may not have been means tested meaning they are prevented from being used as a category in our data. Hence, a direct comparison cannot be made between low income students without a bursary and low income students with a bursary.

## *Proposed Circulation*

Stephanie Lee and Mandy Crow

## *Report Availability*

The target for the final draft of this report being available is the 01/10/2017.

## *Appendix 2 – Variable List* [4]

| Control variables | Coding and notes |
|---|---|
| Sex | 0 = Female, 1 = Male<br>(in the institutions to date, there have been no transgender individuals – if any arise in the pilots, this will need consideration) |
| Nationality | 0 = UK, 1 = Other |
| Age on entry | 1 = 20 and under, 2 = 21 to 24, 3 = 25 to 29, 4 = 30 and over |
| First year accommodation | 1 = institutional / private halls, 2 = parental home, 3 = own home, 4 = other rented, 5 = other (including not known and not in attendance) |
| Ethnicity | The extensive list of categories have been aggregated to ensure a reasonable coverage for analysis. As always, this is not optimal.<br><br>1 = White, 2 = Black Caribbean, 3 = Black African, 4 = Indian, 5 = Pakistani, 6 = Bangladeshi, 7 = Chinese, 8 = Mixed Heritage, 9 = Other, 10 = Unknown |
| Disability | 1 = No known disability, 2 = Disability and receiving DSA, 3 = Disability and not receiving DSA |
| Subject | The need here is to collapse the three JACS codes for the degree into a single variable which reasonably represents the student's study. The principle used is that where a subject clearly dominates (100% or 67:33) then this is used, but if the components are equal (50:50 or 33:33:33) then a 'mixed' group is used. An Excel spreadsheet is provided to automate this coding process, although it may need some local adaptation. Due to its partial implementation, any 'I' JACS codes should be collapsed into 'G'.<br><br>1 = A, 2 = B, 3 = C, 4 = D, 5 = F, 6 = G, 7 = H, 8 = J, 9 = K, 10 = L, 11 = M, 12 = N, 13 = P, 14 = Q, 15 = R, 16 = T, 17 = V, 18 = W, 19 = X , 20 = Z (MIXED) |
| POLAR | As per the POLAR quintiles – i.e. 1 to 5. |
| Distance from home to university | As a continuous variable – i.e. 0 to ∞. |
| NSS score for degree | As a continuous variable – i.e. 0 to 100. There is likely to be a significant proportion of missing data which will challenge the analysis. Missing values should therefore be replaced with a mean – ideally for the department/faculty, but otherwise for the university as a whole. |
| Degree size (all students in year) | As a continuous variable – i.e. 1 to ∞. |
| Franchise course | 0 = No, 1 = Yes |
| Clearing entrant | 0 = No, 1 = Yes |

[4] OFFA, 2016. *'Understanding the impact of institutional financial support on student success: Coding workbook'* OFFA. Available at: https://www.offa.org.uk/wp-content/uploads/2016/11/Institutional-Financial-Support-Coding-Workbook.pdf [Accessed on: 10th June 2017].

| | |
|---|---|
| Entry qualifications | This is a complex process and quite possibly not an optimal one. The first stage is to collapse the numerous different categories into five basic ones:<br><br>1. A Levels and similar (including IB)<br>2. BTEC diplomas and other vocational qualifications<br>3. Access to HE courses<br>4. Prior HE experience (below full degree)<br>5. Other / not known<br><br>This is further complicated as the HESA codes for 2009 and 2012 cohorts differ. The following lists may not be exhaustive (as they are based on the initial institutions) and so more fitting may be necessary):<br><br>**2009**<br>1 = P50, P62, P63<br>2 = P41, P42, P46, P80, P92, P93, P94<br>3 = X00, X01<br>4 = CXX, JXX<br>5 = Q80, X02, X04<br>(NB: DXX/HXX/MXX are previous degree level qualifications and so should not be in the sample)<br><br>**2012**<br>1 = 37-40, 47<br>2 = 41, 43 |
| | 3 = 44-45<br>4 = 21-31<br>5 = 55-99<br>(NB: 1-16 are previous degree level qualifications and so should not be in the sample)<br><br>The second stage is to subdivide the first category (i.e. A Levels and similar) into tariff groups. The tariff score recorded for other qualifications is not reliable and should be discarded. (NB: Attention is needed here not to conflate empty/missing tariff data with a zero tariff.)<br><br>Clearly the tariff scores typical of different institutions are likely to vary widely with the entry profile of the institution. The approach taken for this stage to date has been to calculate quartiles for the tariffs (for A Level and similar qualifications) and to use these quartile thresholds to split this group into four sub-groups, with a fifth for students with A Levels, but no recorded tariff score (it is unclear why this occurs, but it seems relatively common to have some).<br><br>The resulting coding is therefore:<br><br>1. A Levels and similar – Q1 tariff<br>2. A Levels and similar – Q2 tariff<br>3. A Levels and similar – Q3 tariff<br>4. A Levels and similar – Q4 tariff<br>5. A Levels and similar – unknown tariff<br>6. BTEC diplomas and other vocational qualifications<br>7. Access to HE courses<br>8. Prior HE experience (below full degree)<br>9. Other / not known |
| Degree result (2009 cohort only and only for employability analysis) | 0 = Lower second, third class or pass degree, 1 = First or upper second class degree |

| Principal variable | Coding and notes |
|---|---|
| Bursary / household income combination | This is the key variable within the analysis and the hardest to specify and code, partly due to the variety of different bursary schemes in operation and the nature of the data available.<br><br>It is important to pause at this point to consider the purpose of bursaries (in the terms of this study, at least) and the underpinning epistemology of what they are expected to achieve. Broadly speaking, their purpose is to provide a means of ameliorating the predicted educational disadvantage derived from coming from a low income background or being a member of a group felt likely to suffer disadvantage in higher education. In other words, bursaries are awarded as the university expects that the student will otherwise have poorer outcomes than other students in terms of retention, degree result and/or employability. This issue of comparison (to other students) is therefore important.<br><br>The overriding principle in coding is therefore the creation of a 'comparison' group of students who are similar to bursary holders, but who did not receive a bursary, either through a prioritisation process or ineligibility. This is best illustrated through examples:<br><br>1. A university makes bursaries available to all students with a household income of £25,000. The comparison group might therefore be students with household incomes between £25,001 and £42,600 (the upper threshold for the student maintenance grant for 2012 cohort).<br><br>2. A university makes a limited number of bursaries available to students with a household income of £25,000, but prioritises those from certain geographical areas. In this instance, the comparison group(s) might be those students with a household income of £25,000 outside of the target areas and/or those with household incomes between £25,001 and £42,600.<br><br>3. A university awards bursaries to students on the basis of criteria which are not means-tested – e.g. ethnicity, care leavers, disabled people, coming through an access route. The most comparison group might be comprised of students with low household incomes who might also be expected to have lower-than-average outcomes.<br><br>This is yet further complicated by many universities having multiple bursary schemes with very different criteria or priorities.<br><br>The household income data are also problematic. Firstly, it is important to recognise that there is a difference between a zero figure (i.e. very low income and likely benefit-dependency) and a missing figure. Missing figures generally represent individuals who have not engaged with the student finance means-testing process. For the most part, this indicates individuals from very high income households (as they know they will not be eligible for means-tested grants/loans), but there are some individuals who do not engage for cultural reasons or who engage, but refuse permission for their income details to be passed to universities. It is therefore obvious why the zero and missing groups should not be conflated; in transferring data between software packages, missing figures can be automatically replaced by zeroes and this needs careful management. |

The formulation of the coding categories thus have to be specified by individual institutions, potentially with multiple bursary groups. There may also be an interest in examining the outcomes for students with higher household incomes. An example that may serve as a useful template was:

1. Household income between £25,001 and £42,600 (comparison group)
2. Students receiving a bursary due to household income under £25,000
3. Students receiving a bursary due to entry through access route, but with a household income over £25,000
4. Household income over £42,601
5. Household income missing

For analysis purposes, the comparison group should be coded as (1) – other codings are not important. Needless to say, it is important to ensure that the coding groups are exhaustive and mutually exclusive. Different household income threshold are likely to be needed for different cohorts – the equivalent figure to £42,600 for the 2009 cohort was £50,020).

| Outcome variables | Coding and notes |
|---|---|
| Continued (2012 cohort only) | 0 = No, 1 = Yes (i.e. did not enter second year at university) |
| Completion (2009 cohort only) | 0 = No, 1 = Yes (i.e. achieved a full degree [not interim award] within five years)<br><br>This measure has been problematic in several of the institutions to date due to the ways in which data is coded within the student records system and due to withdrawing students being re-registered for lower awards. This will therefore need careful specification within the data extraction and preparation stage. Ordinarily, institutions might expected 75-85% of students to complete, so variations outside of this range need extra scrutiny. |
| Degree result (2009 cohort only) | Two options depending on institutional relevance:<br><br>Either: 0 = Lower second class degree and below, 1 = First and upper second class degree<br>Or: 0 = Upper second class degree and below, 1 = First class degree<br><br>The latter option is more likely to be relevant to institutions with higher entry requirements where a higher proportion of students achieve first class degrees. |
| Employment outcome (2009 cohort only) | 0 = No, 1 = Yes (i.e. achieved a graduate-level outcome, as per standard definition) |

## Appendix 3 - Manchester bursary schemes

Only students who received cash in line with the following schemes (for each year of their career) were included in the analysis.

| Year of Entry | Scheme | Household Income | Amount |
|---|---|---|---|
| 2009, 2010, 2011 | Manchester Guarantee Bursary | <£25,000 | £1,250 per annum |
| | Manchester Advantage Scholarship * | <£25,000 | £3,000 per annum |
| 2012 | Manchester Bursary | <£25,000 | £3,000 in each year of study<br><br>*(£1,000 cash bursary and £2,000 fee or accommodation discount in Year 1; cash bursary/fee discount or split in subsequent years)* |
| | | £25,000 - £35,000 | £1,000 cash bursary in first year of study<br><br>£2,000 in subsequent years of study *(cash bursary, fee discount, accommodation discount or split)* |
| 2013 | Manchester Bursary | <£25,000 | £3,000 in each year of study<br><br>*(£1,000 cash bursary and £2,000 fee or accommodation discount in Year 1; cash bursary, fee discount, accommodation discount or split in subsequent years)* |
| | | £25,000 - £42,611 | £2,000 in each year of study<br><br>*(Cash bursary, fee discount, accommodation discount or split)* |
| 2014 | Manchester Bursary | <£25,000 | £3,000 in each year of study<br><br>*(£1,000 cash bursary and £2,000 fee or accommodation discount in Year 1; cash bursary, fee discount, accommodation discount or split in subsequent years)* |
| | | £25,000 - £42,620 | £2,000 in each year of study<br><br>*(Cash bursary, fee discount, accommodation discount or split)* |

* for those who attained 3 A grades at A level

*Additional Note* – Students who undertook a work placement or study abroad year were eligible a tuition fee discount or a cash award in that year, dependent on their circumstances. The table below outlines this in more detail. These students were not discounted from the analysis; however the financial support that they accessed during their year out was removed from the overall career totals in order to keep the averages more consistent and with the reasoning that the financial support available was most likely just enough to cover minimum costs and therefore not advantage them further at other points in their University career.

| Year of Entry | Study Programme | Household Income | Tuition Fee Discount | Cash award |
|---|---|---|---|---|
| 2009, 2010, 2011 | Any work placement or year abroad scheme | <£25,000 | | £625 |
| 2012 | Study Abroad year | <£25,000 | £1,350 | £1,500 |
| | | £25,000 - £35,000 | £675 | £1,000 |
| | Erasmus Work Placement | <£25,000 | £1,350 | |
| | | £25,000 - £35,000 | £675 | |
| | Work Placement (non-Erasmus) | <£25,000 | £1,800 | |
| | | £25,000 - £35,000 | £900 | |
| 2013 | Study Abroad year | <£25,000 | £1,350 | £1,500 |
| | | £25,000 - £42,611 | £675 | £1,000 |
| | Erasmus Work Placement | <£25,000 | £1,350 | |
| | | £25,000 - £42,611 | £675 | |
| | Work Placement (non-Erasmus) | <£25,000 | £1,800 | |
| | | £25,000 - £42,611 | £900 | |
| 2014 | Study Abroad year | <£25,000 | £1,350 | £1,500 |
| | | £25,000 - £42,620 | £675 | £1,000 |
| | Erasmus Work Placement | <£25,000 | £1,350 | |
| | | £25,000 - £42,620 | £675 | |
| | Work Placement (non-Erasmus) | <£25,000 | £1,800 | |
| | | £25,000 - £42,620 | £900 | |

## Appendix 4 - Charts and Tables for Bursary Profile

***Figure 13: Summary of students starting in 2009-14 separated by their household income***

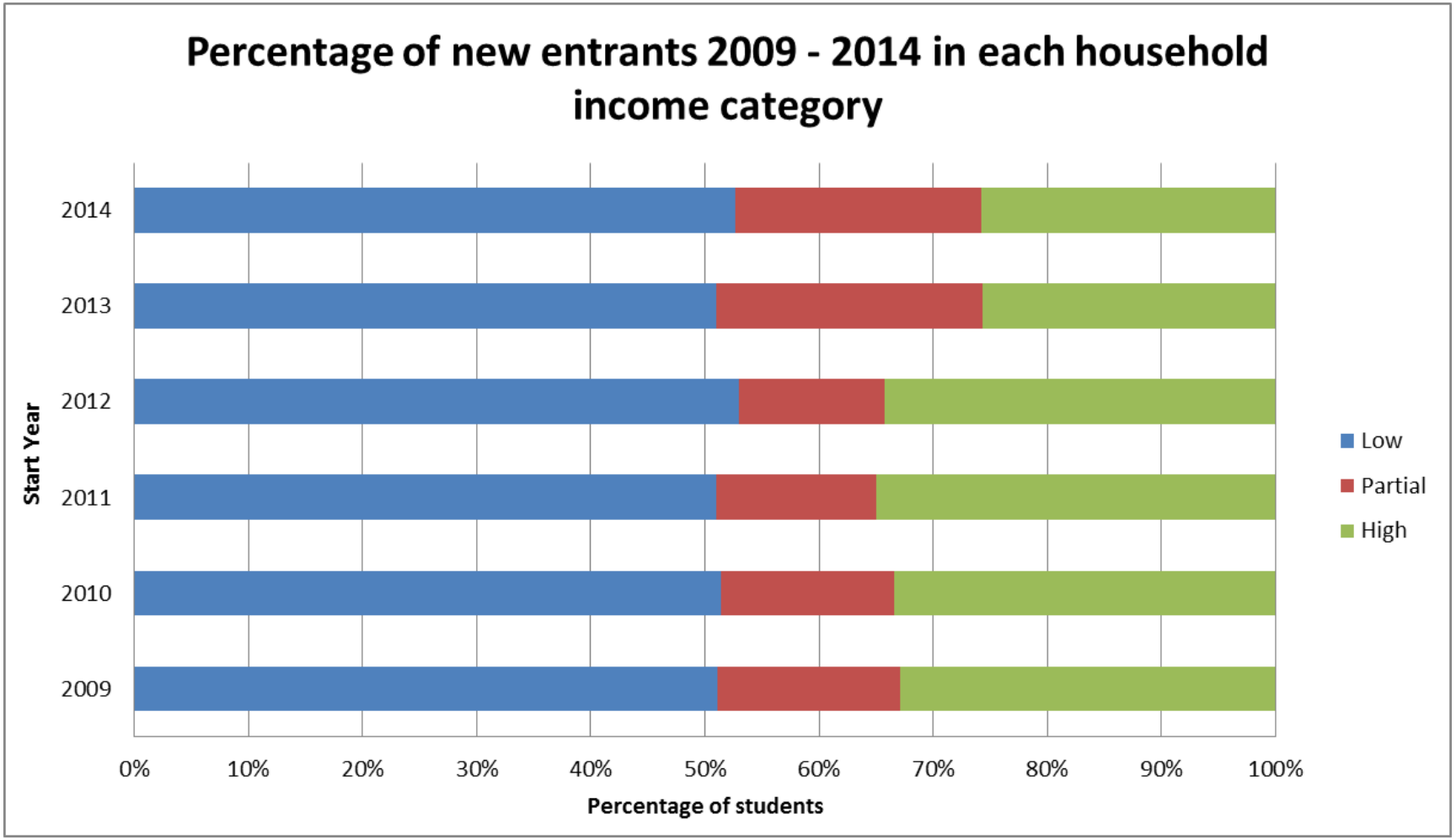


*Figure 14: 2009-14 new entrants by household income and age*

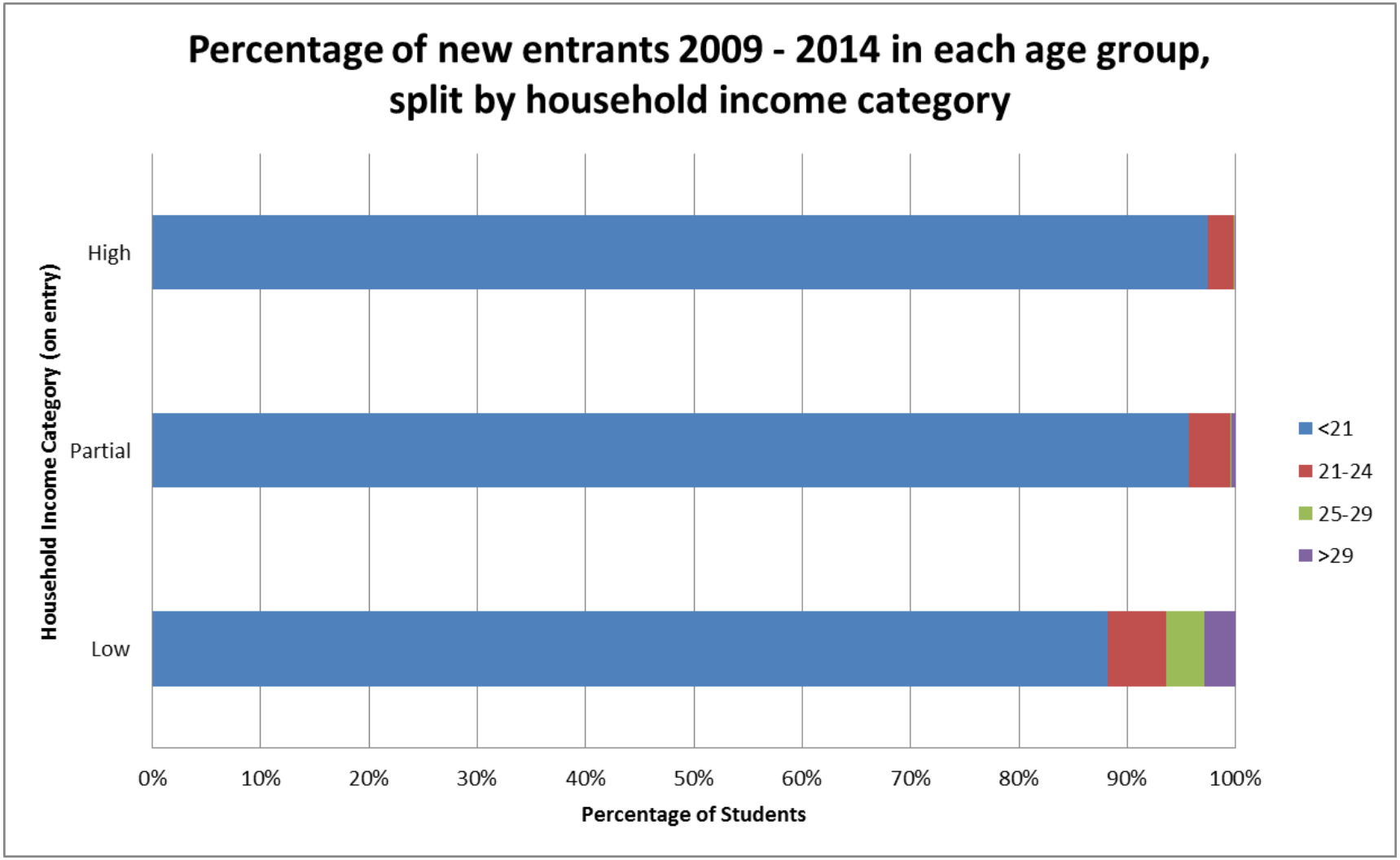


*Figure 15: 2009-14 new entrants by household income and first year accommodation*

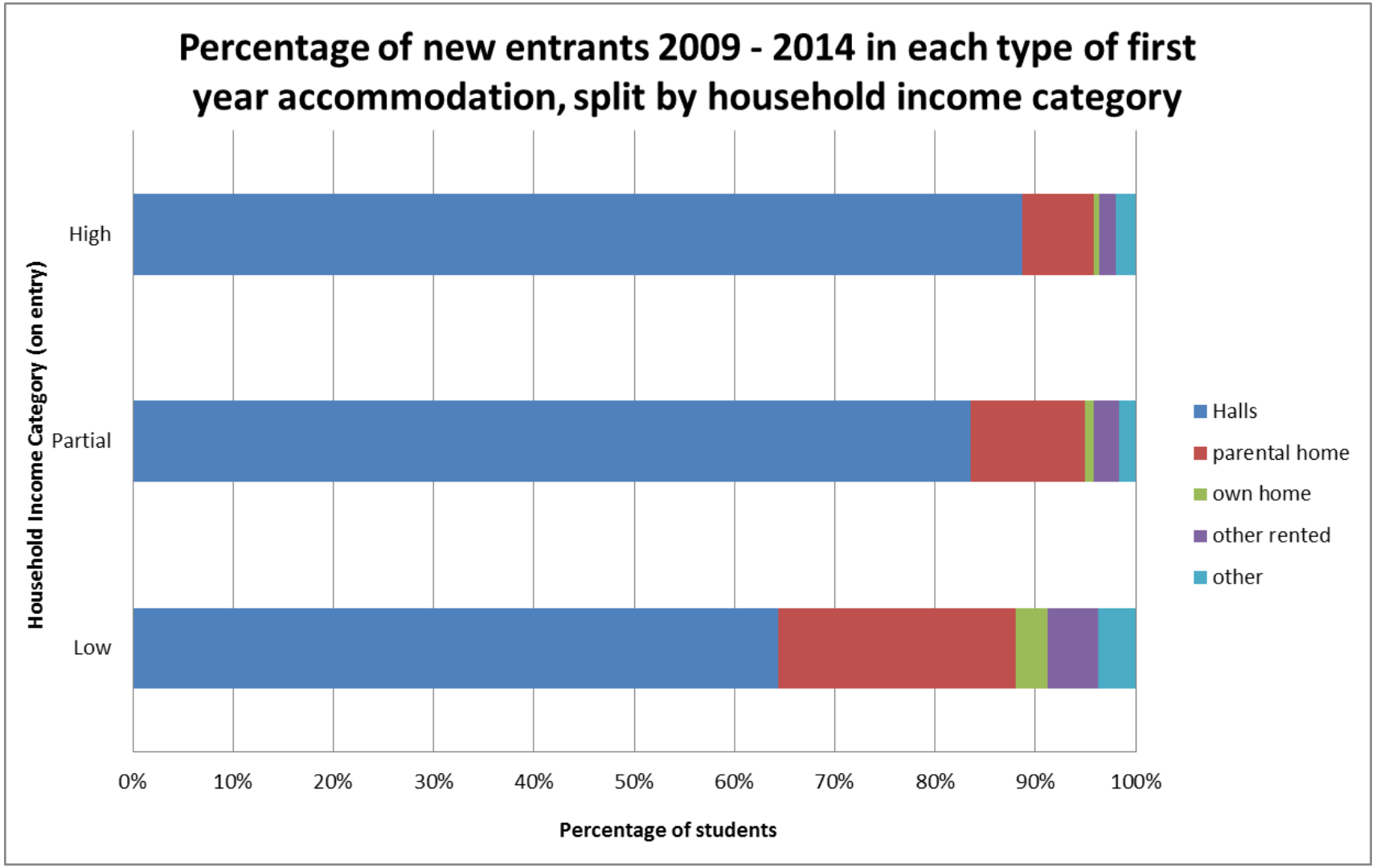


*Figure 16: 2009-14 new entrants by household income and distance their home address is away from the university in kilometres*

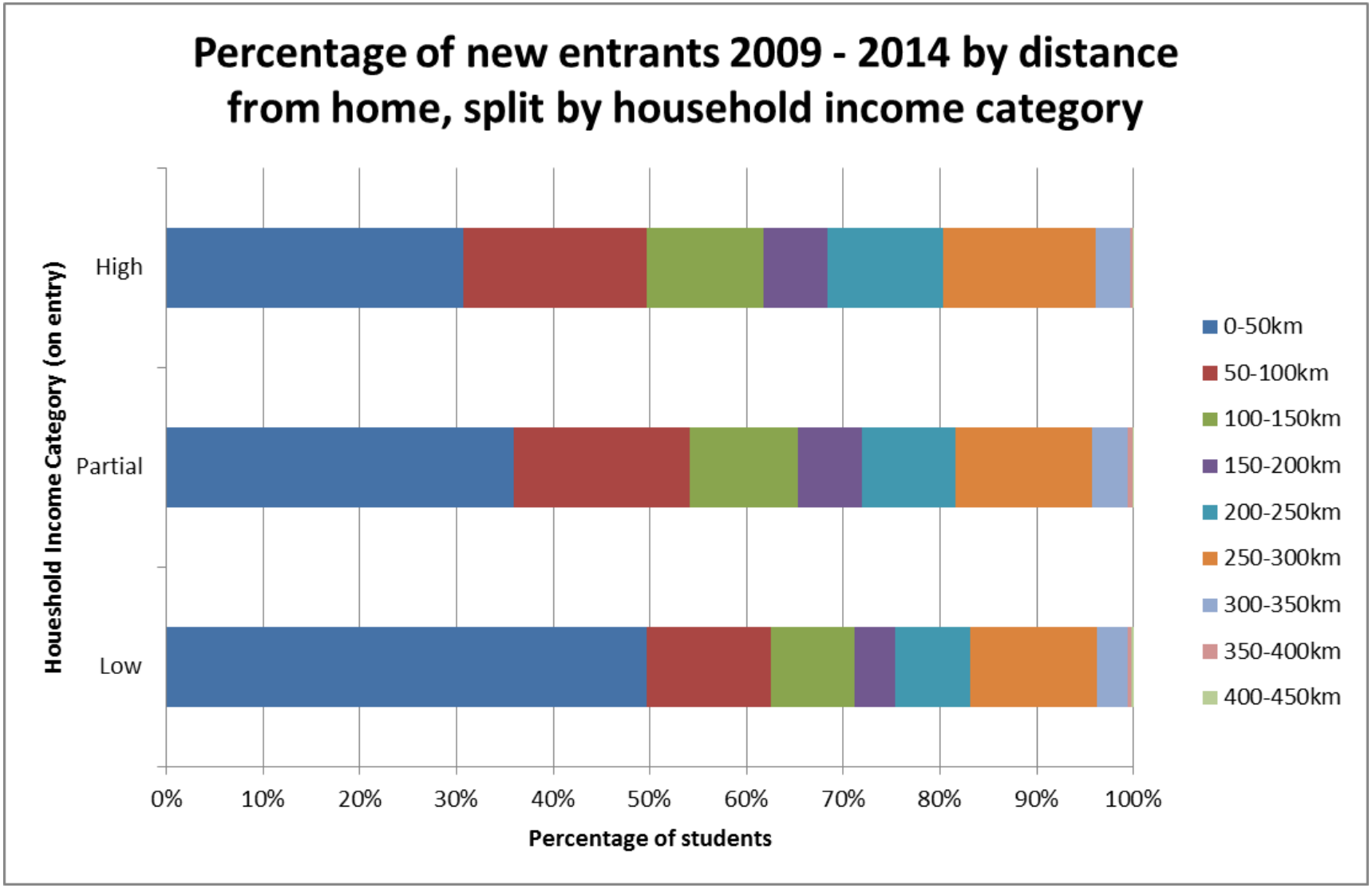


*Figure 17: 2009-14 new entrants separated by household income and ethnicity*

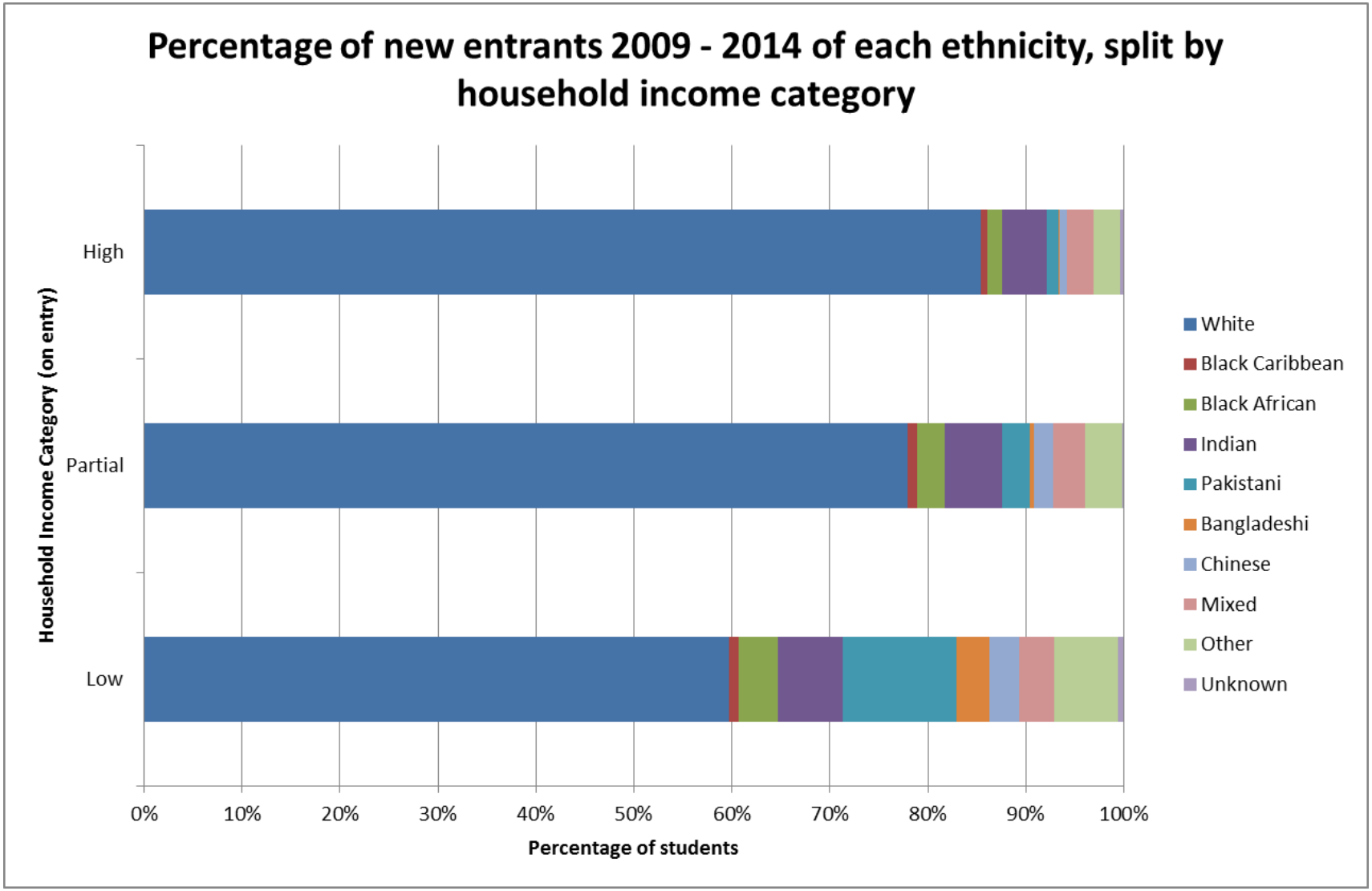


*Figure 18: 2009-14 new entrants by household income and POLAR3 quintile*

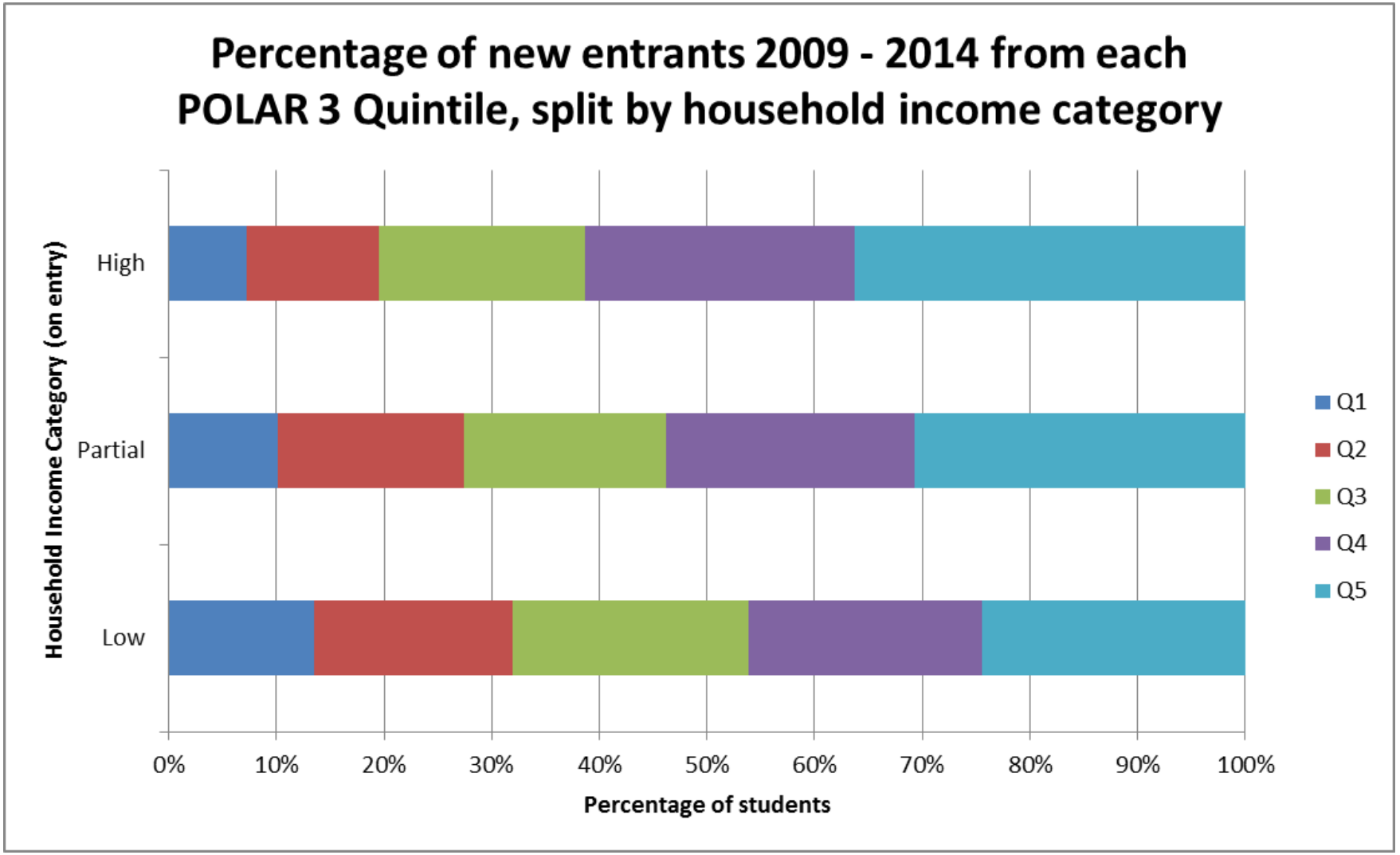


*Table 10: 2009-14 new entrants by household income and highest qualifications upon entering the University of Manchester*

| | Household Income Category (on entry) | | | | | |
|---|---|---|---|---|---|---|
| | Low | | Partial | | High | |
| Subject | Number | % | Number | % | Number | % |
| A-Level <360 | 1264 | 16.2% | 397 | 15.1% | 588 | 12.6% |
| A-Level 360-399 | 1348 | 17.3% | 467 | 17.8% | 757 | 16.2% |
| A-Level 400-439 | 1265 | 16.2% | 442 | 16.8% | 817 | 17.5% |
| A-Level 440-479 | 1042 | 13.4% | 392 | 14.9% | 754 | 16.1% |
| A-Level 480-520 | 729 | 9.3% | 300 | 11.4% | 561 | 12.0% |
| A-Level >520 | 1288 | 16.5% | 503 | 19.2% | 1041 | 22.2% |
| Access | 281 | 3.6% | 22 | 0.8% | 11 | 0.2% |
| BTEC | 150 | 1.9% | 30 | 1.1% | 23 | 0.5% |
| HE above Degree | 87 | 1.1% | 16 | 0.6% | 33 | 0.7% |
| HE below Degree | 92 | 1.2% | 20 | 0.8% | 35 | 0.7% |
| IB | 20 | 0.3% | 13 | 0.5% | 12 | 0.3% |
| Other | 239 | 3.1% | 23 | 0.9% | 48 | 1.0% |
| **Total** | **7805** | | **2625** | | **4680** | |

*Figure 19 : 2009-14 new entrants by household income and disability status*

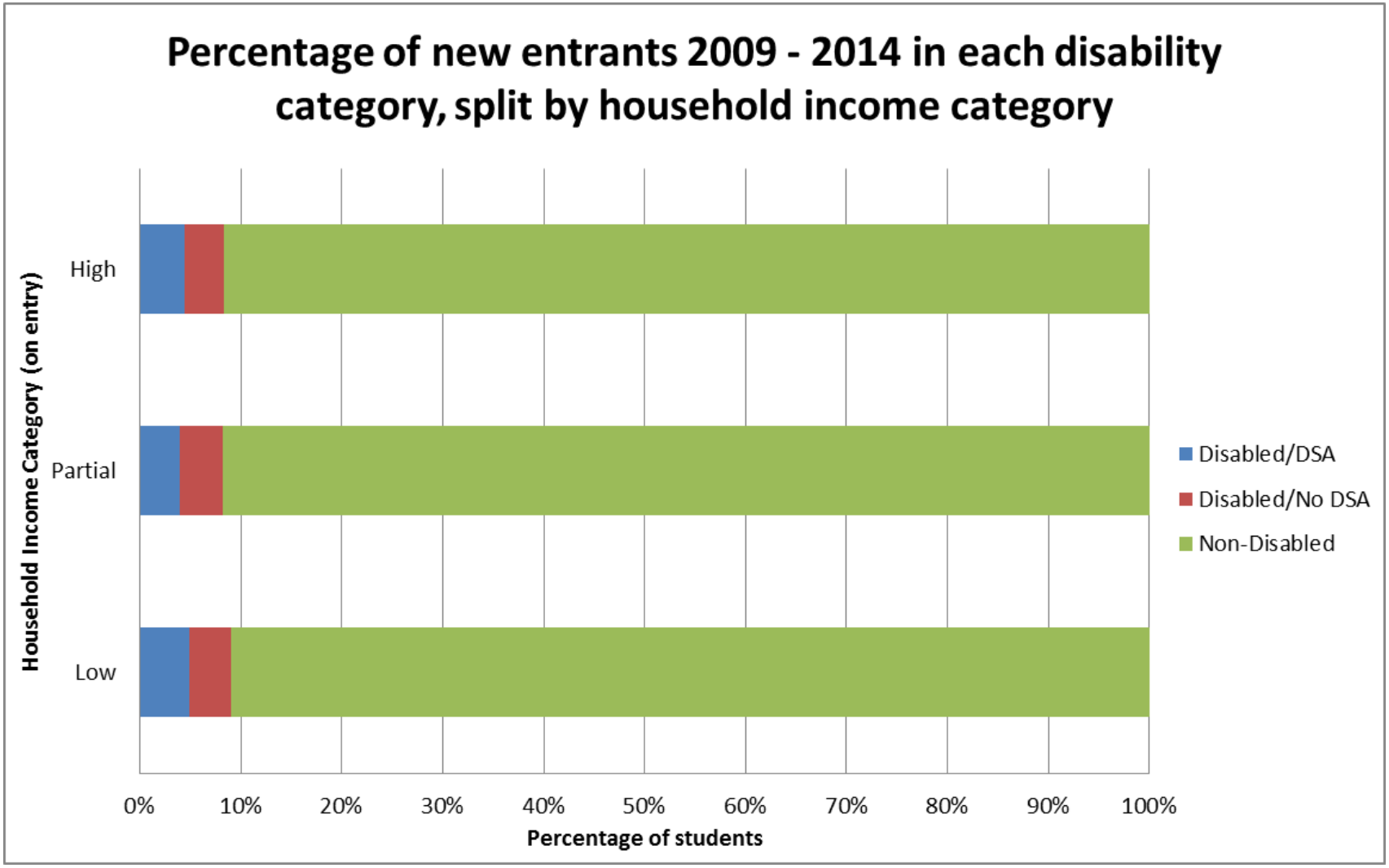


*Figure 20: 2009-14 new entrants by household income and sex*

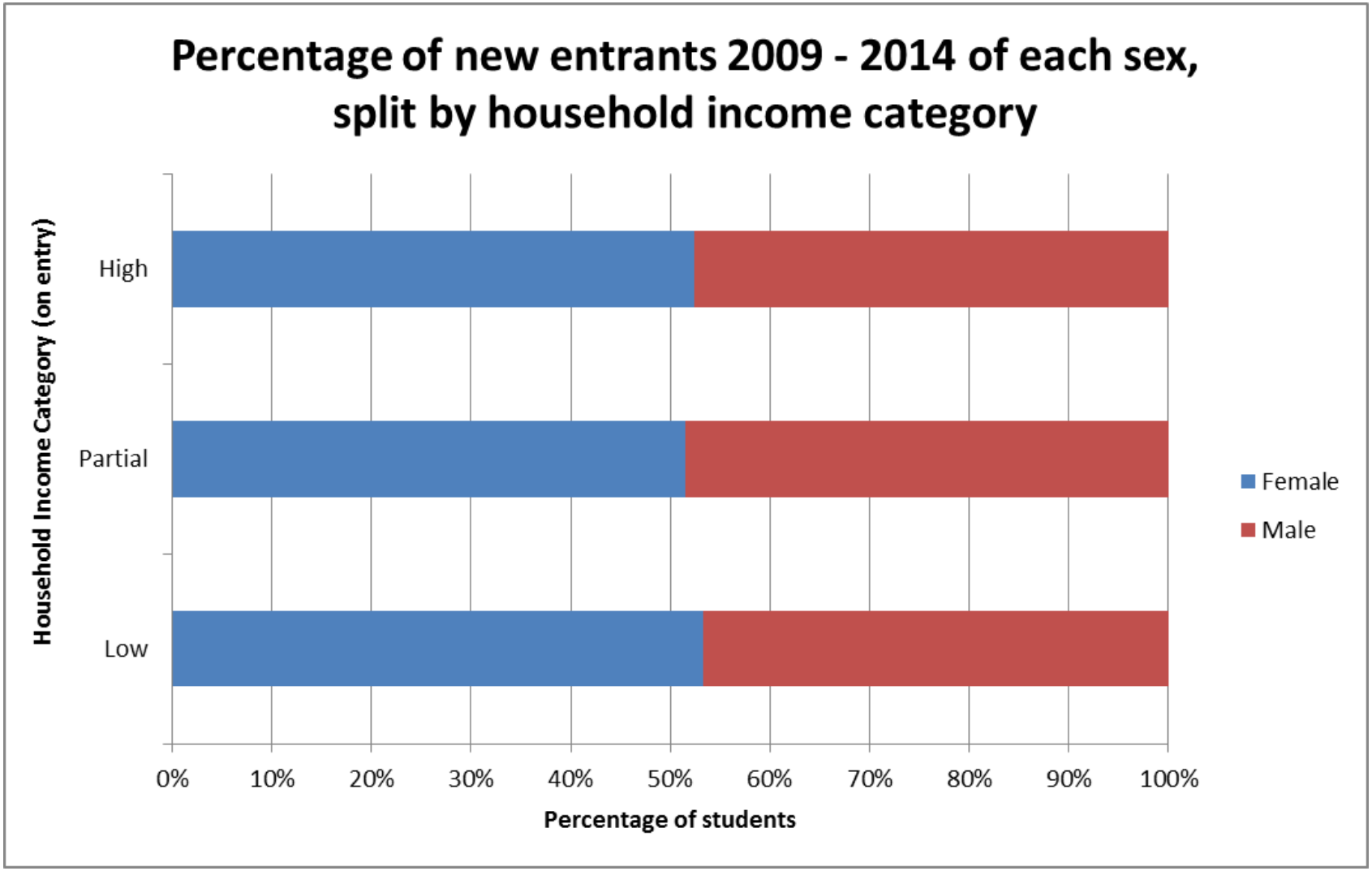
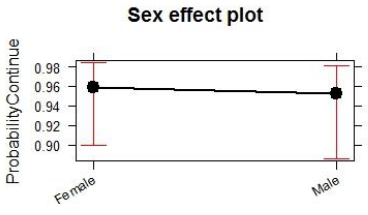
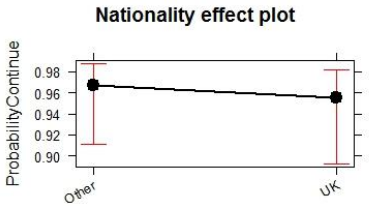


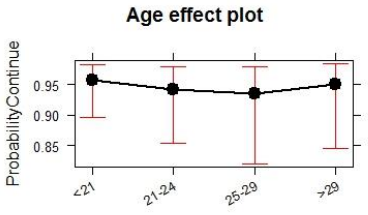
***Table 11: 2009-14 new entrants by household income and by subject studied***

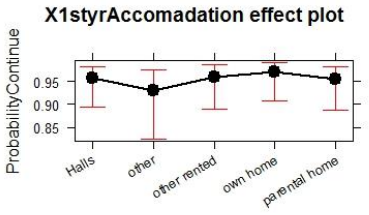
| | Household Income Category (on entry) | | | | | |
|---|---|---|---|---|---|---|
| | Low | | Partial | | High | |
| **Subject** | **Number** | **%** | **Number** | **%** | **Number** | **%** |
| Languages | 842 | 10.7% | 313 | 11.9% | 586 | 12.5% |
| Biological Sciences | 814 | 10.4% | 326 | 12.4% | 568 | 12.1% |
| MIXED | 758 | 9.6% | 260 | 9.9% | 476 | 10.1% |
| Social studies | 718 | 9.1% | 198 | 7.5% | 384 | 8.2% |
| Subjects allied to medicine | 693 | 8.8% | 158 | 6.0% | 223 | 4.7% |
| Medicine & dentistry | 641 | 8.2% | 174 | 6.6% | 331 | 7.0% |
| Physical Sciences | 551 | 7.0% | 254 | 9.6% | 451 | 9.6% |
| Engineering & technology | 537 | 6.8% | 190 | 7.2% | 325 | 6.9% |
| Business & adminstrative studies | 520 | 6.6% | 156 | 5.9% | 267 | 5.7% |
| Historical & philosophical studies | 453 | 5.8% | 138 | 5.2% | 279 | 5.9% |
| Law | 442 | 5.6% | 107 | 4.1% | 173 | 3.7% |
| Mathematical sciences | 367 | 4.7% | 136 | 5.2% | 244 | 5.2% |
| Geographical studies | 182 | 2.3% | 98 | 3.7% | 183 | 3.9% |
| Computer Science | 123 | 1.6% | 45 | 1.7% | 81 | 1.7% |
| Creative arts & Design | 97 | 1.2% | 60 | 2.3% | 96 | 2.0% |
| Other | 65 | 0.8% | 2 | 0.1% | 8 | 0.2% |
| Architecture, building & planning | 56 | 0.7% | 20 | 0.8% | 29 | 0.6% |
| **Grand Total** | **7859** | | **2635** | | **4704** | |

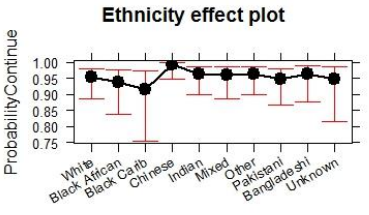
## Appendix 5 – Regression – Retention 2009-11 Cat Entry Quals (Bursary Cat)

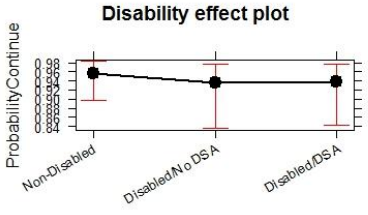


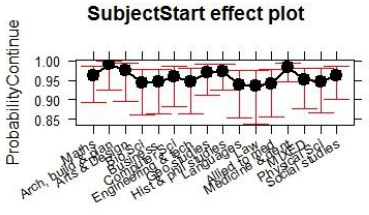



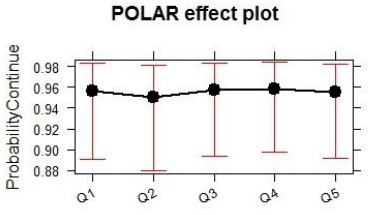



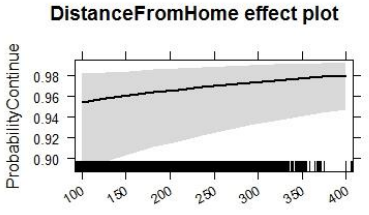



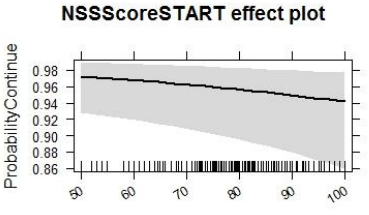



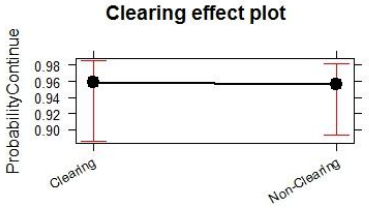



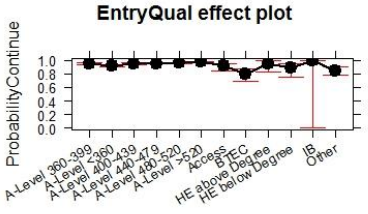



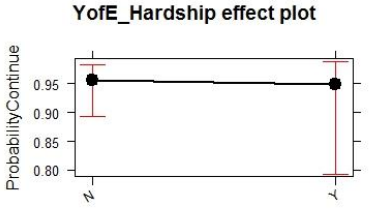



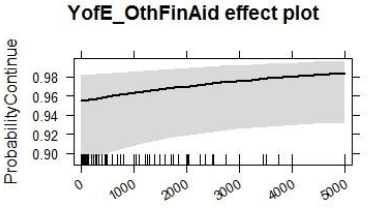



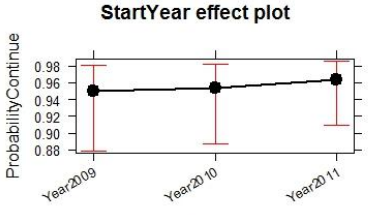


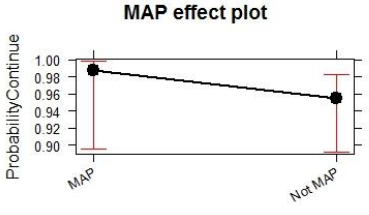


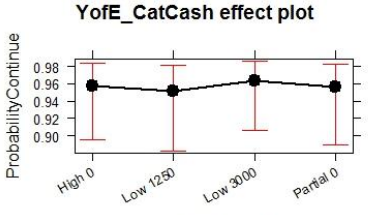



```
glm(formula = ProbabilityContinue ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subject
Start + POLAR + DistanceFromHome + NSSScoreSTART + DegreeSizeSTART + Clearing + EntryQual + YofE_Hardship + YofE_Ot
hFinAid + StartYear + MAP + YofE_CatCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.1896   0.2156   0.2969   0.3886   1.2078
```

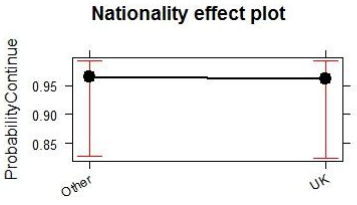
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 5.70E+00 | 1.27E+00 | 4.502 | 6.73E-06 | *** | 298.8674 |
| Sex[T.Male] | -1.40E-01 | 1.06E-01 | -1.316 | 0.188264 | | 0.869706 |
| Nationality[T.UK] | -3.21E-01 | 2.41E-01 | -1.329 | 0.18369 | | 0.7257861 |
| Age[T.21-24] | -3.04E-01 | 2.25E-01 | -1.351 | 0.176617 | | 0.7375658 |
| Age[T.25-29] | -4.32E-01 | 3.49E-01 | -1.239 | 0.215272 | | 0.6492094 |
| Age[T.>29] | -1.54E-01 | 4.21E-01 | -0.367 | 0.713938 | | 0.8569292 |
| X1styrAccomadation[T.other] | -4.85E-01 | 2.51E-01 | -1.93 | 0.053615 | . | 0.6160051 |
| X1styrAccomadation[T.other rented] | 7.79E-02 | 2.64E-01 | 0.296 | 0.767579 | | 1.0809821 |
| X1styrAccomadation[T.own home] | 4.24E-01 | 3.99E-01 | 1.062 | 0.288081 | | 1.5282144 |
| X1styrAccomadation[T.parental home] | -2.87E-02 | 1.62E-01 | -0.177 | 0.859413 | | 0.9717079 |
| Ethnicity[T.Black African] | -2.95E-01 | 2.90E-01 | -1.017 | 0.309023 | | 0.7445316 |
| Ethnicity[T.Black Carib] | -6.49E-01 | 4.28E-01 | -1.518 | 0.12908 | | 0.5225681 |
| Ethnicity[T.Chinese] | 2.07E+00 | 1.01E+00 | 2.054 | 0.040004 | * | 7.9565859 |
| Ethnicity[T.Indian] | 2.24E-01 | 2.52E-01 | 0.888 | 0.37448 | | 1.2508208 |
| Ethnicity[T.Mixed] | 1.61E-01 | 3.12E-01 | 0.516 | 0.605603 | | 1.1750374 |
| Ethnicity[T.Other] | 2.67E-01 | 2.80E-01 | 0.953 | 0.340568 | | 1.3053876 |
| Ethnicity[T.Pakistani] | -1.26E-01 | 2.19E-01 | -0.577 | 0.564264 | | 0.8813504 |
| Ethnicity[T.Bangladeshi] | 2.65E-01 | 4.89E-01 | 0.542 | 0.588158 | | 1.30304 |
| Ethnicity[T.Unknown] | -1.06E-01 | 5.45E-01 | -0.195 | 0.845666 | | 0.8992448 |
| Disability[T.Disabled/No DSA] | -4.20E-01 | 2.54E-01 | -1.653 | 0.098429 | . | 0.6569154 |
| Disability[T.Disabled/DSA] | -3.92E-01 | 2.28E-01 | -1.723 | 0.084844 | . | 0.6755014 |
| SubjectStart[T.Arch, build & plan] | 1.51E+00 | 1.06E+00 | 1.421 | 0.155194 | | 4.5357933 |
| SubjectStart[T.Arts & Design] | 4.48E-01 | 6.66E-01 | 0.673 | 0.50126 | | 1.5648657 |
| SubjectStart[T.Bio Sci] | -4.19E-01 | 3.16E-01 | -1.328 | 0.184072 | | 0.6575069 |

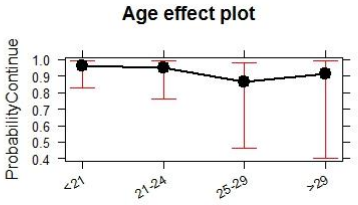
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectStart[T.Business ] | -3.65E-01 | 3.36E-01 | -1.087 | 0.276973 | | 0.6943355 |
| SubjectStart[T.Computer Sci] | -3.12E-02 | 4.40E-01 | -0.071 | 0.943425 | | 0.9692429 |
| SubjectStart[T.Engineering & tech] | -3.50E-01 | 3.42E-01 | -1.024 | 0.305949 | | 0.7046881 |
| SubjectStart[T.Geo studies] | 2.81E-01 | 4.52E-01 | 0.621 | 0.534317 | | 1.3243212 |
| SubjectStart[T.Hist & phil studies] | 3.81E-01 | 3.90E-01 | 0.977 | 0.328448 | | 1.4636012 |
| SubjectStart[T.Languages] | -4.69E-01 | 3.31E-01 | -1.418 | 0.156256 | | 0.6255025 |
| SubjectStart[T.Law] | -5.21E-01 | 3.65E-01 | -1.428 | 0.153411 | | 0.5936888 |
| SubjectStart[T.Allied to med] | -4.23E-01 | 3.47E-01 | -1.22 | 0.222418 | | 0.6550131 |
| SubjectStart[T.Medicine & dent] | 8.86E-01 | 4.70E-01 | 1.885 | 0.059473 | . | 2.4241962 |
| SubjectStart[T.MIXED] | -2.51E-01 | 3.31E-01 | -0.759 | 0.447757 | | 0.7778668 |
| SubjectStart[T.Physical Sci] | -3.32E-01 | 3.23E-01 | -1.029 | 0.303499 | | 0.7175591 |
| SubjectStart[T.Social studies] | 1.46E-02 | 3.53E-01 | 0.041 | 0.967034 | | 1.014697 |
| POLAR[T.Q2] | -1.30E-01 | 1.91E-01 | -0.681 | 0.495862 | | 0.8783589 |
| POLAR[T.Q3] | 8.25E-03 | 1.91E-01 | 0.043 | 0.965464 | | 1.0082801 |
| POLAR[T.Q4] | 5.33E-02 | 1.90E-01 | 0.281 | 0.779043 | | 1.054746 |
| POLAR[T.Q5] | -2.12E-02 | 1.86E-01 | -0.114 | 0.909135 | | 0.9790231 |
| DistanceFromHome | 2.90E-03 | 6.28E-04 | 4.621 | 3.82E-06 | *** | 1.0029082 |
| NSSScoreSTART | -1.58E-02 | 5.33E-03 | -2.965 | 0.003031 | ** | 0.984334 |
| DegreeSizeSTART | -4.11E-06 | 6.75E-04 | -0.006 | 0.995144 | | 0.9999959 |
| Clearing[T.Non-Clearing] | -6.20E-02 | 2.81E-01 | -0.221 | 0.82531 | | 0.9399111 |
| EntryQual[T.A-Level <360] | -5.22E-01 | 1.67E-01 | -3.127 | 0.001764 | ** | 0.593214 |
| EntryQual[T.A-Level 400-439] | -5.57E-02 | 1.77E-01 | -0.315 | 0.752796 | | 0.9458039 |
| EntryQual[T.A-Level 440-479] | 1.43E-01 | 1.92E-01 | 0.742 | 0.458259 | | 1.1532684 |
| EntryQual[T.A-Level 480-520] | 2.43E-01 | 2.19E-01 | 1.106 | 0.268623 | | 1.2744312 |
| EntryQual[T.A-Level >520] | 7.61E-01 | 2.21E-01 | 3.452 | 0.000556 | *** | 2.1406296 |
| EntryQual[T.Access] | -6.18E-01 | 3.63E-01 | -1.704 | 0.088432 | . | 0.5390753 |
| EntryQual[T.BTEC] | -1.60E+00 | 3.36E-01 | -4.761 | 1.92E-06 | *** | 0.2016947 |
| EntryQual[T.HE above Degree] | 1.38E-01 | 7.87E-01 | 0.175 | 0.861149 | | 1.1475165 |
| EntryQual[T.HE below Degree] | -9.12E-01 | 5.31E-01 | -1.717 | 0.085903 | . | 0.40172 |
| EntryQual[T.IB] | 1.18E+01 | 2.18E+02 | 0.054 | 0.956949 | | 130613.78 |
| EntryQual[T.Other] | -1.25E+00 | 2.68E-01 | -4.661 | 3.14E-06 | *** | 0.2862184 |
| YofE_Hardship[T.Y] | -1.64E-01 | 6.42E-01 | -0.255 | 0.79877 | | 0.8489967 |
| YofE_OthFinAid | 2.15E-04 | 1.22E-04 | 1.761 | 0.078198 | . | 1.0002154 |
| StartYear[T.Year2010] | 8.36E-02 | 1.21E-01 | 0.693 | 0.488365 | | 1.0872157 |
| StartYear[T.Year2011] | 3.29E-01 | 1.34E-01 | 2.446 | 0.01445 | * | 1.389161 |

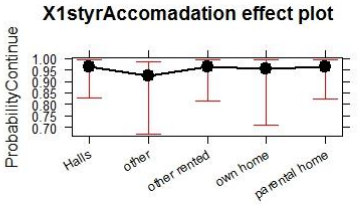
| | | | | | | |
|---|---|---|---|---|---|---|
| MAP[T.Not MAP] | -1.32E+00 | 1.04E+00 | -1.272 | 0.203384 | | 0.2679379 |
| YofE_CatCash[T.Low 1250] | -1.32E-01 | 1.31E-01 | -1.009 | 0.312926 | | 0.8760781 |
| YofE_CatCash[T.Low 3000] | 1.55E-01 | 1.97E-01 | 0.786 | 0.431599 | | 1.1680083 |
| YofE_CatCash[T.Partial 0] | -4.07E-02 | 1.62E-01 | -0.251 | 0.801489 | | 0.9601171 |

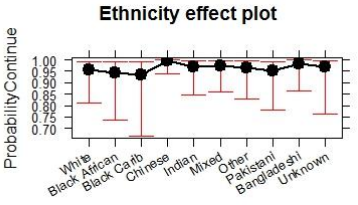
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 3332.3  on 7272  degrees of freedom
Residual deviance: 3053.1  on 7210  degrees of freedom
  (8238 observations deleted due to missingness)
AIC: 3179.1

Number of Fisher Scoring iterations: 13
```

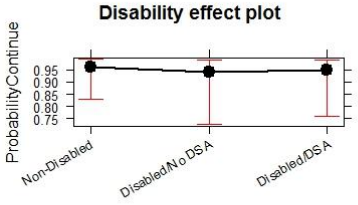
## Appendix 6 – Regression – Retention 2009-11 A-Level Tariff (Bursary Cat)

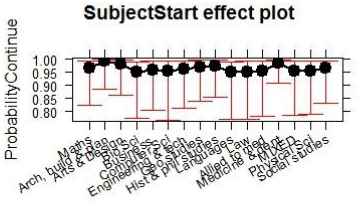



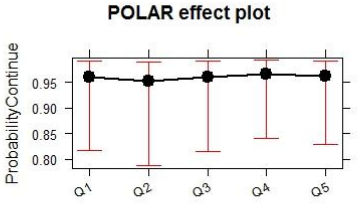



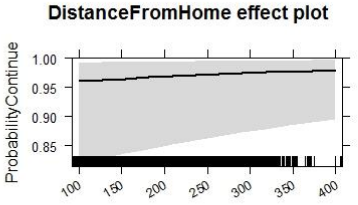



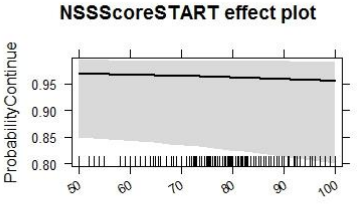



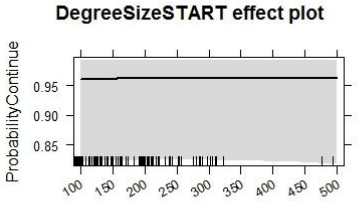



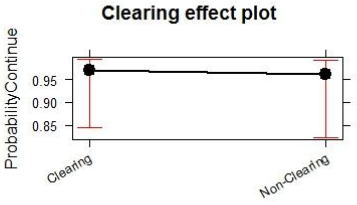



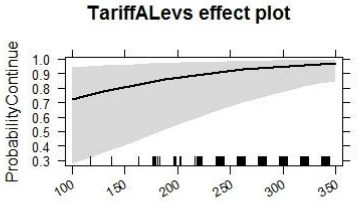



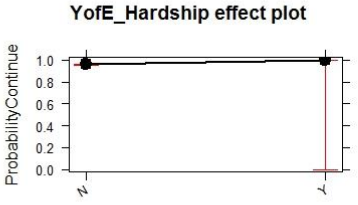



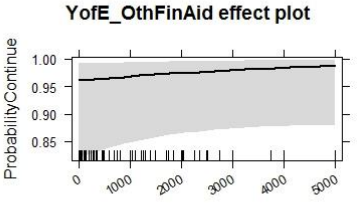



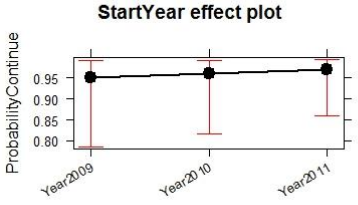



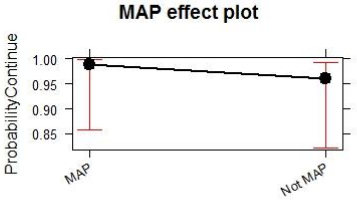



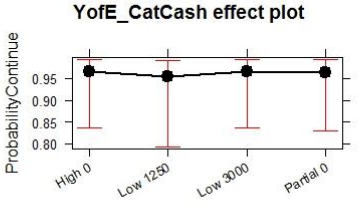



```
glm(formula = ProbabilityContinue ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subject
Start + POLAR + DistanceFromHome + NSSScoreSTART + DegreeSizeSTART + Clearing + TariffALevs + YofE_Hardship + YofE_
OthFinAid + StartYear + MAP + YofE_CatCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2488   0.2138   0.2836   0.3556   1.5034
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 1.82E+00 | 1.47E+00 | 1.241 | 0.21471 | | |
| Sex[T.Male] | -1.93E-01 | 1.20E-01 | -1.613 | 0.10671 | | 0.8243995 |
| Nationality[T.UK] | -1.28E-01 | 3.09E-01 | -0.414 | 0.67865 | | 0.8799414 |
| Age[T.21-24] | -2.70E-01 | 3.41E-01 | -0.791 | 0.42869 | | 0.7635322 |
| Age[T.25-29] | -1.37E+00 | 5.65E-01 | -2.423 | 0.01537 | * | 0.2546157 |
| Age[T.>29] | -8.47E-01 | 1.14E+00 | -0.742 | 0.45814 | | 0.4289135 |
| X1styrAccomadation[T.other] | -7.60E-01 | 2.97E-01 | -2.557 | 0.01057 | * | 0.46776 |
| X1styrAccomadation[T.other rented] | 3.60E-02 | 3.46E-01 | 0.104 | 0.91708 | | 1.0366766 |
| X1styrAccomadation[T.own home] | -2.00E-01 | 6.85E-01 | -0.291 | 0.77073 | | 0.8191402 |
| X1styrAccomadation[T.parental home] | 1.77E-02 | 1.90E-01 | 0.093 | 0.92569 | | 1.0178372 |
| Ethnicity[T.Black African] | -2.88E-01 | 3.56E-01 | -0.81 | 0.41806 | | 0.7497616 |
| Ethnicity[T.Black Carib] | -4.69E-01 | 5.40E-01 | -0.869 | 0.385 | | 0.6258153 |
| Ethnicity[T.Chinese] | 2.18E+00 | 1.01E+00 | 2.153 | 0.03133 | * | 8.8286313 |
| Ethnicity[T.Indian] | 3.63E-01 | 3.03E-01 | 1.195 | 0.23193 | | 1.4370609 |
| Ethnicity[T.Mixed] | 5.44E-01 | 4.25E-01 | 1.278 | 0.20127 | | 1.7221956 |
| Ethnicity[T.Other] | 2.30E-01 | 3.30E-01 | 0.697 | 0.48603 | | 1.2579709 |
| Ethnicity[T.Pakistani] | -1.14E-01 | 2.57E-01 | -0.444 | 0.65696 | | 0.8923472 |
| Ethnicity[T.Bangladeshi] | 9.43E-01 | 7.40E-01 | 1.274 | 0.20262 | | 2.5663894 |
| Ethnicity[T.Unknown] | 2.59E-01 | 7.38E-01 | 0.351 | 0.72583 | | 1.2952452 |
| Disability[T.Disabled/No DSA] | -5.18E-01 | 2.83E-01 | -1.832 | 0.06694 | . | 0.5957108 |
| Disability[T.Disabled/DSA] | -3.52E-01 | 2.67E-01 | -1.318 | 0.18761 | | 0.7034911 |
| SubjectStart[T.Arch, build & plan] | 1.36E+00 | 1.07E+00 | 1.266 | 0.20561 | | 3.8806397 |
| SubjectStart[T.Arts & Design] | 7.04E-01 | 7.85E-01 | 0.897 | 0.36989 | | 2.0224305 |
| SubjectStart[T.Bio Sci] | -3.78E-01 | 3.32E-01 | -1.14 | 0.25448 | | 0.685299 |
| SubjectStart[T.Business ] | -1.65E-01 | 3.78E-01 | -0.437 | 0.66222 | | 0.8477241 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectStart[T.Computer Sci] | -2.88E-01 | 4.73E-01 | -0.608 | 0.54286 | | 0.7496866 |
| SubjectStart[T.Engineering & tech] | -1.03E-01 | 3.86E-01 | -0.266 | 0.79029 | | 0.9023977 |
| SubjectStart[T.Geo studies] | 1.70E-01 | 4.74E-01 | 0.36 | 0.71908 | | 1.1856605 |
| SubjectStart[T.Hist & phil studies] | 2.12E-01 | 4.13E-01 | 0.513 | 0.60779 | | 1.2359007 |
| SubjectStart[T.Languages] | -3.97E-01 | 3.49E-01 | -1.136 | 0.25578 | | 0.672334 |
| SubjectStart[T.Law] | -3.32E-01 | 4.11E-01 | -0.808 | 0.4193 | | 0.7173438 |
| SubjectStart[T.Allied to med] | -3.06E-01 | 3.74E-01 | -0.817 | 0.41389 | | 0.7366076 |
| SubjectStart[T.Medicine & dent] | 8.50E-01 | 4.92E-01 | 1.728 | 0.08394 | . | 2.3405829 |
| SubjectStart[T.MIXED] | -3.09E-01 | 3.47E-01 | -0.89 | 0.37321 | | 0.7341808 |
| SubjectStart[T.Physical Sci] | -2.84E-01 | 3.36E-01 | -0.843 | 0.39898 | | 0.7531431 |
| SubjectStart[T.Social studies] | 1.03E-02 | 3.79E-01 | 0.027 | 0.9783 | | 1.0103431 |
| POLAR[T.Q2] | -2.04E-01 | 2.23E-01 | -0.914 | 0.36097 | | 0.8158702 |
| POLAR[T.Q3] | -3.20E-02 | 2.21E-01 | -0.145 | 0.885 | | 0.9685163 |
| POLAR[T.Q4] | 1.54E-01 | 2.22E-01 | 0.694 | 0.48756 | | 1.1667242 |
| POLAR[T.Q5] | 5.58E-02 | 2.13E-01 | 0.262 | 0.79337 | | 1.0574285 |
| DistanceFromHome | 2.26E-03 | 6.90E-04 | 3.274 | 0.00106 | ** | 1.0022595 |
| NSSScoreSTART | -7.55E-03 | 6.22E-03 | -1.213 | 0.22506 | | 0.9924804 |
| DegreeSizeSTART | 1.02E-04 | 7.70E-04 | 0.133 | 0.89423 | | 1.0001024 |
| Clearing[T.Non-Clearing] | -2.62E-01 | 3.22E-01 | -0.813 | 0.41627 | | 0.769588 |
| TariffALevs | 9.86E-03 | 1.96E-03 | 5.039 | 4.68E-07 | *** | 1.0099128 |
| YofE_Hardship[T.Y] | 1.30E+01 | 3.12E+02 | 0.042 | 0.96687 | | 425066.11 |
| YofE_OthFinAid | 2.31E-04 | 1.75E-04 | 1.325 | 0.18505 | | 1.0002313 |
| StartYear[T.Year2010] | 1.92E-01 | 1.34E-01 | 1.439 | 0.15028 | | 1.2121553 |
| StartYear[T.Year2011] | 5.19E-01 | 1.55E-01 | 3.349 | 0.00081 | *** | 1.6796745 |
| MAP[T.Not MAP] | -1.23E+00 | 1.05E+00 | -1.177 | 0.23933 | | 0.2911257 |
| YofE_CatCash[T.Low 1250] | -2.92E-01 | 1.42E-01 | -2.058 | 0.03962 | * | 0.7466939 |
| YofE_CatCash[T.Low 3000] | 2.45E-02 | 2.34E-01 | 0.105 | 0.91663 | | 1.0247616 |
| YofE_CatCash[T.Partial 0] | -4.85E-02 | 1.79E-01 | -0.271 | 0.78653 | | 0.9526478 |

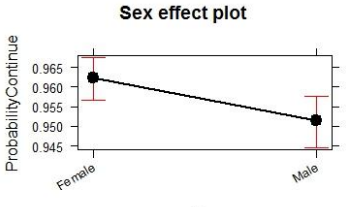
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

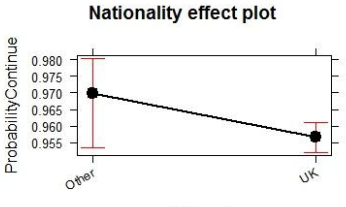
(Dispersion parameter for binomial family taken to be 1)

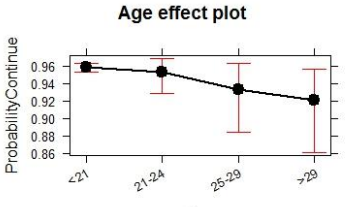
    Null deviance: 2641.6  on 6577  degrees of freedom

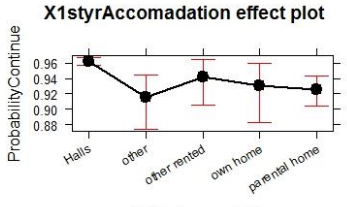
```
Residual deviance: 2467.3  on 6525  degrees of freedom
  (8933 observations deleted due to missingness)
AIC: 2573.3

Number of Fisher Scoring iterations: 14
```

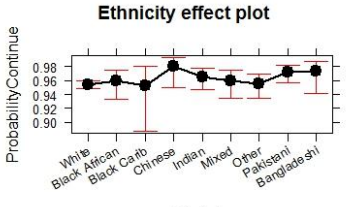
# Appendix 7 – Regression – Retention 2012-14 Cat Entry Quals (Bursary Cat)

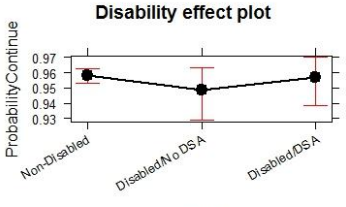


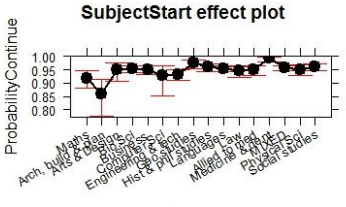



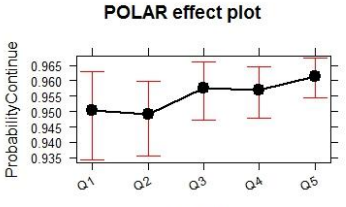



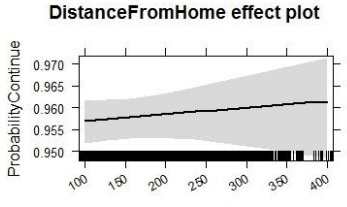



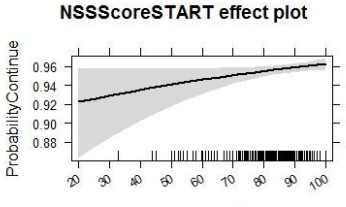



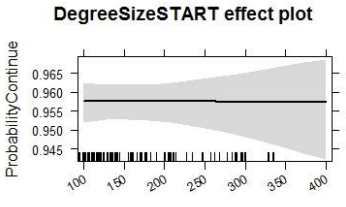



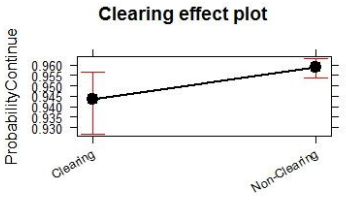



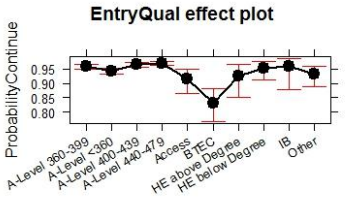



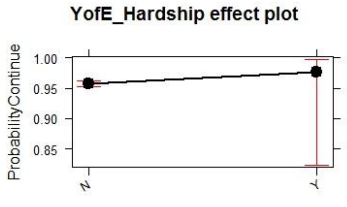



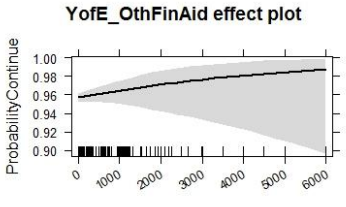



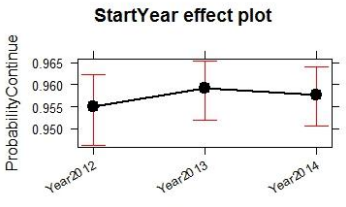



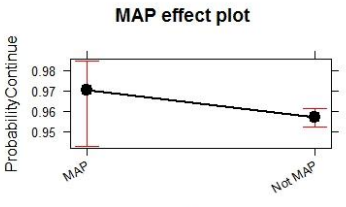



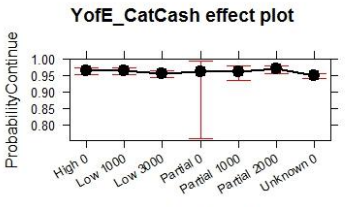



```
glm(formula = ProbabilityContinue ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subject
Start + POLAR + DistanceFromHome + NSSScoreSTART + DegreeSizeSTART + Clearing + EntryQual + YofE_Hardship + YofE_Ot
hFinAid + StartYear + MAP + YofE_CatCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3477   0.2317   0.2837   0.3469   1.2030
```

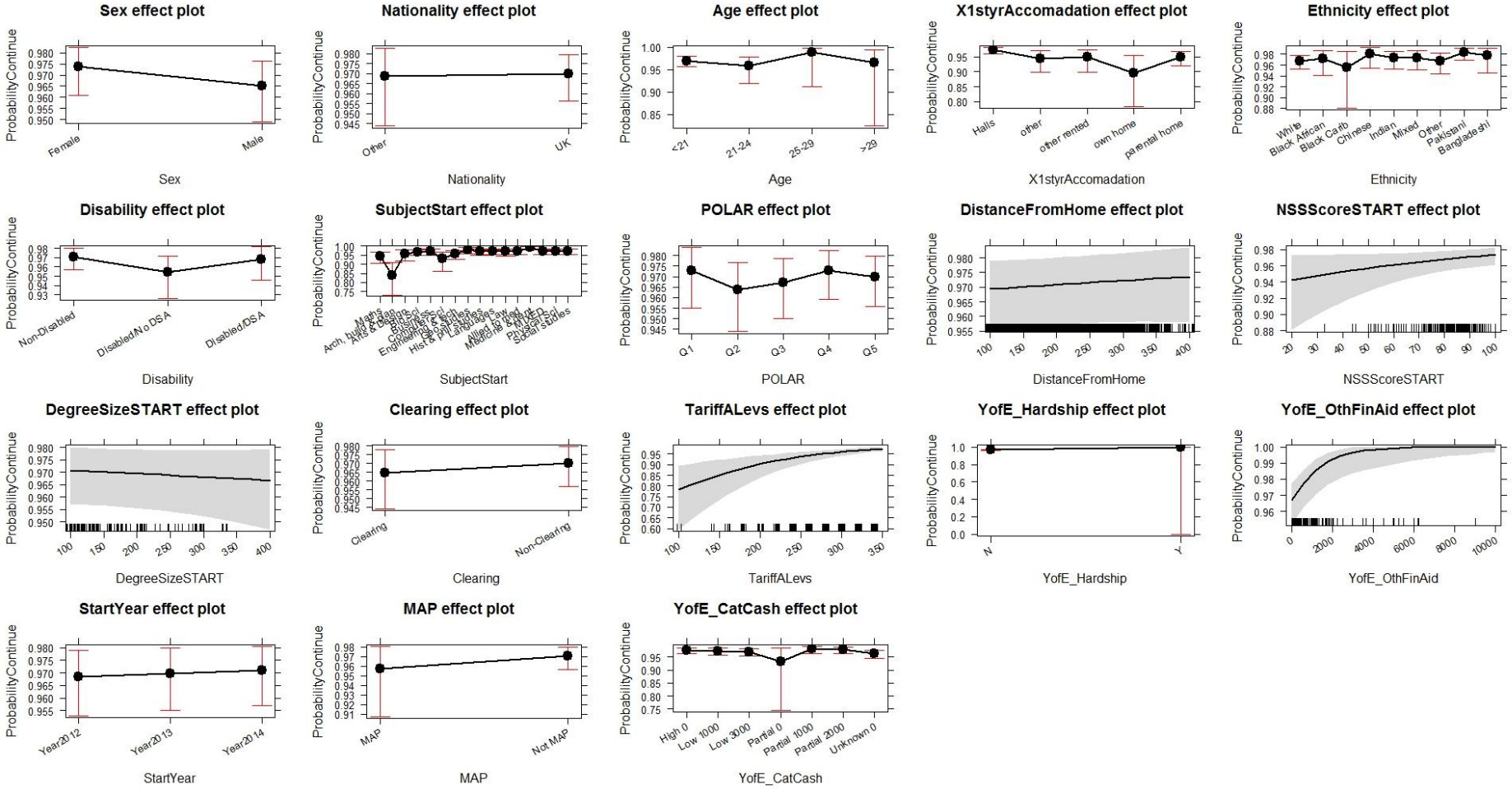
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 2.12E+00 | 6.56E-01 | 3.225 | 0.001262 | ** | 8.289585766 |
| Sex[T.Male] | -2.62E-01 | 9.70E-02 | -2.701 | 0.006918 | ** | 0.769434076 |
| Nationality[T.UK] | -3.69E-01 | 2.29E-01 | -1.612 | 0.106961 | | 0.69142541 |
| Age[T.21-24] | -1.34E-01 | 2.32E-01 | -0.578 | 0.56327 | | 0.874327727 |
| Age[T.25-29] | -4.92E-01 | 3.17E-01 | -1.555 | 0.119843 | | 0.611218973 |
| Age[T.>29] | -6.79E-01 | 3.31E-01 | -2.054 | 0.039949 | * | 0.506921054 |
| X1styrAccomadation[T.other] | -8.69E-01 | 2.43E-01 | -3.58 | 0.000344 | *** | 0.419286845 |
| X1styrAccomadation[T.other rented] | -4.62E-01 | 2.81E-01 | -1.646 | 0.099827 | . | 0.629770381 |
| X1styrAccomadation[T.own home] | -6.56E-01 | 3.08E-01 | -2.131 | 0.033094 | * | 0.519130491 |
| X1styrAccomadation[T.parental home] | -7.25E-01 | 1.70E-01 | -4.265 | 2.00E-05 | *** | 0.484276139 |
| Ethnicity[T.Black African] | 1.22E-01 | 2.70E-01 | 0.453 | 0.650613 | | 1.129980075 |
| Ethnicity[T.Black Carib] | -3.45E-02 | 4.87E-01 | -0.071 | 0.943427 | | 0.966059357 |
| Ethnicity[T.Chinese] | 9.23E-01 | 5.17E-01 | 1.784 | 0.074462 | . | 2.516577894 |
| Ethnicity[T.Indian] | 2.99E-01 | 2.42E-01 | 1.234 | 0.217301 | | 1.348374779 |
| Ethnicity[T.Mixed] | 1.15E-01 | 2.53E-01 | 0.455 | 0.648789 | | 1.121873438 |
| Ethnicity[T.Other] | 1.35E-02 | 2.13E-01 | 0.064 | 0.949286 | | 1.013611808 |
| Ethnicity[T.Pakistani] | 5.31E-01 | 2.40E-01 | 2.215 | 0.026785 | * | 1.699781987 |
| Ethnicity[T.Bangladeshi] | 5.58E-01 | 4.18E-01 | 1.335 | 0.181751 | | 1.746825254 |
| Disability[T.Disabled/No DSA] | -2.11E-01 | 1.82E-01 | -1.158 | 0.247016 | | 0.809936038 |
| Disability[T.Disabled/DSA] | -2.61E-02 | 1.95E-01 | -0.134 | 0.893683 | | 0.974286374 |
| SubjectStart[T.Arch, build & plan] | -6.18E-01 | 3.75E-01 | -1.649 | 0.099144 | . | 0.539237055 |
| SubjectStart[T.Arts & Design] | 5.28E-01 | 4.27E-01 | 1.238 | 0.215726 | | 1.695368294 |
| SubjectStart[T.Bio Sci] | 6.41E-01 | 2.73E-01 | 2.347 | 0.0189 | * | 1.897429357 |
| SubjectStart[T.Business ] | 5.47E-01 | 2.73E-01 | 2.007 | 0.044786 | * | 1.728233865 |
| SubjectStart[T.Computer Sci] | 1.36E-01 | 4.54E-01 | 0.3 | 0.7645 | | 1.145796468 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectStart[T.Engineering & tech] | 2.19E-01 | 2.71E-01 | 0.807 | 0.419837 | | 1.2447068 |
| SubjectStart[T.Geo studies] | 1.28E+00 | 4.09E-01 | 3.12 | 0.00181 | ** | 3.585865975 |
| SubjectStart[T.Hist & phil studies] | 7.65E-01 | 2.86E-01 | 2.672 | 0.00754 | ** | 2.149209285 |
| SubjectStart[T.Languages] | 6.23E-01 | 2.62E-01 | 2.378 | 0.01742 | * | 1.865259154 |
| SubjectStart[T.Law] | 4.35E-01 | 2.90E-01 | 1.501 | 0.133485 | | 1.545426617 |
| SubjectStart[T.Allied to med] | 5.05E-01 | 3.04E-01 | 1.659 | 0.097029 | . | 1.65698552 |
| SubjectStart[T.Medicine & dent] | 2.47E+00 | 5.18E-01 | 4.777 | 1.78E-06 | *** | 11.85796745 |
| SubjectStart[T.MIXED] | 6.87E-01 | 2.58E-01 | 2.664 | 0.007716 | ** | 1.988339762 |
| SubjectStart[T.Physical Sci] | 5.60E-01 | 2.92E-01 | 1.917 | 0.055244 | . | 1.7506725 |
| SubjectStart[T.Social studies] | 7.93E-01 | 2.78E-01 | 2.849 | 0.004383 | ** | 2.208911809 |
| POLAR[T.Q2] | -2.66E-02 | 1.84E-01 | -0.144 | 0.885183 | | 0.973750664 |
| POLAR[T.Q3] | 1.64E-01 | 1.83E-01 | 0.896 | 0.370411 | | 1.177978696 |
| POLAR[T.Q4] | 1.48E-01 | 1.79E-01 | 0.829 | 0.406947 | | 1.159744822 |
| POLAR[T.Q5] | 2.61E-01 | 1.76E-01 | 1.489 | 0.1366 | | 1.298617192 |
| DistanceFromHome | 3.89E-04 | 5.56E-04 | 0.701 | 0.483611 | | 1.000389476 |
| NSSScoreSTART | 9.75E-03 | 4.88E-03 | 1.998 | 0.045719 | * | 1.009793647 |
| DegreeSizeSTART | -1.56E-05 | 6.20E-04 | -0.025 | 0.979863 | | 0.99998436 |
| Clearing[T.Non-Clearing] | 3.31E-01 | 1.45E-01 | 2.284 | 0.022364 | * | 1.392359792 |
| EntryQual[T.A-Level <360] | -3.32E-01 | 1.35E-01 | -2.456 | 0.014057 | * | 0.717272109 |
| EntryQual[T.A-Level 400-439] | 1.82E-01 | 1.46E-01 | 1.245 | 0.21322 | | 1.199014537 |
| EntryQual[T.A-Level 440-479] | 3.85E-01 | 1.64E-01 | 2.352 | 0.018666 | * | 1.469614321 |
| EntryQual[T.Access] | -7.36E-01 | 2.89E-01 | -2.545 | 0.010917 | * | 0.478834621 |
| EntryQual[T.BTEC] | -1.53E+00 | 2.31E-01 | -6.622 | 3.54E-11 | *** | 0.21718625 |
| EntryQual[T.HE above Degree] | -5.99E-01 | 4.23E-01 | -1.414 | 0.15726 | | 0.549525555 |
| EntryQual[T.HE below Degree] | -9.79E-02 | 3.58E-01 | -0.274 | 0.784346 | | 0.906730506 |
| EntryQual[T.IB] | 4.18E-02 | 6.08E-01 | 0.069 | 0.945175 | | 1.042675494 |
| EntryQual[T.Other] | -5.17E-01 | 2.91E-01 | -1.778 | 0.075351 | . | 0.596545358 |
| YofE_Hardship[T.Y] | 5.77E-01 | 1.10E+00 | 0.527 | 0.598508 | | 1.779976212 |
| YofE_OthFinAid | 2.11E-04 | 1.90E-04 | 1.11 | 0.266919 | | 1.000210522 |
| StartYear[T.Year2013] | 1.03E-01 | 1.22E-01 | 0.846 | 0.397431 | | 1.10871313 |
| StartYear[T.Year2014] | 6.61E-02 | 1.21E-01 | 0.548 | 0.58373 | | 1.068344229 |
| MAP[T.Not MAP] | -3.86E-01 | 3.56E-01 | -1.083 | 0.278694 | | 0.680110496 |
| YofE_CatCash[T.Low 1000] | 4.82E-03 | 2.00E-01 | 0.024 | 0.980814 | | 1.004826611 |
| YofE_CatCash[T.Low 3000] | -2.07E-01 | 1.85E-01 | -1.121 | 0.262377 | | 0.812694507 |
| YofE_CatCash[T.Partial 0] | -1.01E-01 | 1.05E+00 | -0.096 | 0.923661 | | 0.904023431 |

| | | | | | | |
|---|---|---|---|---|---|---|
| YofE_CatCash[T.Partial 1000] | -6.39E-02 | 3.15E-01 | -0.203 | 0.83917 | | 0.938098805 |
| YofE_CatCash[T.Partial 2000] | 1.43E-01 | 2.34E-01 | 0.612 | 0.54074 | | 1.154191386 |
| YofE_CatCash[T.Unknown 0] | -3.61E-01 | 1.54E-01 | -2.34 | 0.0193 | * | 0.697118408 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4041  on 9575  degrees of freedom
Residual deviance: 3740  on 9513  degrees of freedom
  (4327 observations deleted due to missingness)
AIC: 3866

Number of Fisher Scoring iterations: 7
```

## Appendix 8 – Regression – Retention 2012-14 A-level Tariff (Bursary Cat)



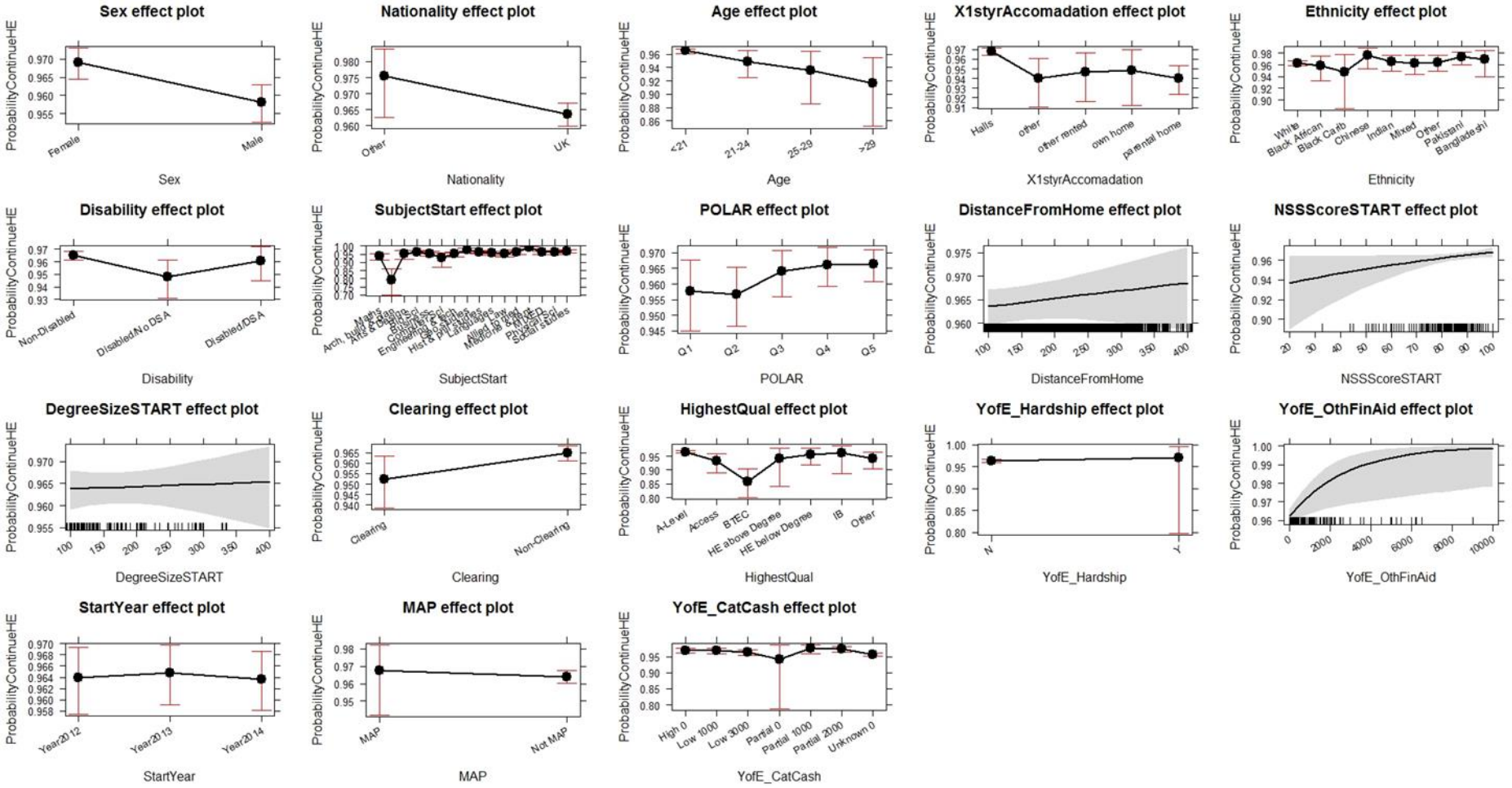
```
glm(formula = ProbabilityContinue ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subject
Start + POLAR + DistanceFromHome + NSSScoreSTART + DegreeSizeSTART + Clearing + TariffALevs + YofE_Hardship + YofE_
OthFinAid +  StartYear + MAP + YofE_CatCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.1541   0.1992   0.2477   0.3012   1.5173
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -1.41E+00 | 8.72E-01 | -1.613 | 0.106709 | | 0.244877 |
| Sex[T.Male] | -2.83E-01 | 1.01E-01 | -2.794 | 0.005206 | ** | 0.753444 |
| Nationality[T.UK] | 4.04E-02 | 2.52E-01 | 0.16 | 0.872495 | | 1.041269 |
| Age[T.21-24] | -3.53E-01 | 2.92E-01 | -1.209 | 0.226809 | | 0.702647 |
| Age[T.25-29] | 9.90E-01 | 1.07E+00 | 0.924 | 0.355587 | | 2.692311 |
| Age[T.>29] | -1.55E-01 | 8.85E-01 | -0.175 | 0.860721 | | 0.856158 |
| X1styrAccomadation[T.other] | -7.66E-01 | 2.82E-01 | -2.716 | 0.006609 | ** | 0.464915 |
| X1styrAccomadation[T.other rented] | -6.59E-01 | 3.30E-01 | -1.996 | 0.045918 | * | 0.517162 |
| X1styrAccomadation[T.own home] | -1.43E+00 | 4.13E-01 | -3.448 | 0.000564 | *** | 0.240508 |
| X1styrAccomadation[T.parental home] | -6.73E-01 | 1.77E-01 | -3.806 | 0.000141 | *** | 0.510023 |
| Ethnicity[T.Black African] | 1.24E-01 | 3.42E-01 | 0.362 | 0.71706 | | 1.131789 |
| Ethnicity[T.Black Carib] | -3.24E-01 | 5.25E-01 | -0.617 | 0.536989 | | 0.723395 |
| Ethnicity[T.Chinese] | 5.50E-01 | 4.32E-01 | 1.274 | 0.202821 | | 1.732733 |
| Ethnicity[T.Indian] | 1.96E-01 | 2.39E-01 | 0.819 | 0.412995 | | 1.216405 |
| Ethnicity[T.Mixed] | 2.20E-01 | 2.82E-01 | 0.78 | 0.435483 | | 1.245703 |
| Ethnicity[T.Other] | 2.23E-03 | 2.32E-01 | 0.01 | 0.992325 | | 1.002233 |
| Ethnicity[T.Pakistani] | 6.80E-01 | 2.87E-01 | 2.369 | 0.017834 | * | 1.97447 |
| Ethnicity[T.Bangladeshi] | 3.87E-01 | 4.46E-01 | 0.868 | 0.385366 | | 1.472262 |
| Disability[T.Disabled/No DSA] | -4.66E-01 | 1.82E-01 | -2.565 | 0.010327 | * | 0.627382 |
| Disability[T.Disabled/DSA] | -7.87E-02 | 2.13E-01 | -0.37 | 0.711357 | | 0.92428 |
| SubjectStart[T.Arch, build & plan] | -1.15E+00 | 3.59E-01 | -3.202 | 0.001366 | ** | 0.317271 |
| SubjectStart[T.Arts & Design] | 3.17E-01 | 3.83E-01 | 0.827 | 0.408028 | | 1.372316 |
| SubjectStart[T.Bio Sci] | 5.83E-01 | 2.66E-01 | 2.191 | 0.02842 | * | 1.790867 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectStart[T.Business ] | 6.67E-01 | 2.88E-01 | 2.318 | 0.020427 | * | 1.948383 |
| SubjectStart[T.Computer Sci] | -2.18E-01 | 3.90E-01 | -0.559 | 0.576248 | | 0.803965 |
| SubjectStart[T.Engineering & tech] | 2.49E-01 | 2.64E-01 | 0.943 | 0.345868 | | 1.282229 |
| SubjectStart[T.Geo studies] | 1.03E+00 | 3.87E-01 | 2.656 | 0.00791 | ** | 2.792675 |
| SubjectStart[T.Hist & phil studies] | 6.39E-01 | 2.81E-01 | 2.274 | 0.022966 | * | 1.893638 |
| SubjectStart[T.Languages] | 6.41E-01 | 2.58E-01 | 2.479 | 0.013172 | * | 1.897619 |
| SubjectStart[T.Law] | 6.23E-01 | 2.96E-01 | 2.107 | 0.035109 | * | 1.864513 |
| SubjectStart[T.Allied to med] | 7.40E-01 | 3.19E-01 | 2.321 | 0.020279 | * | 2.094888 |
| SubjectStart[T.Medicine & dent] | 1.79E+00 | 3.77E-01 | 4.751 | 2.02E-06 | *** | 5.989452 |
| SubjectStart[T.MIXED] | 6.42E-01 | 2.51E-01 | 2.555 | 0.010616 | * | 1.899898 |
| SubjectStart[T.Physical Sci] | 7.00E-01 | 2.69E-01 | 2.603 | 0.00924 | ** | 2.012746 |
| SubjectStart[T.Social studies] | 6.44E-01 | 2.74E-01 | 2.352 | 0.018654 | * | 1.904463 |
| POLAR[T.Q2] | -2.99E-01 | 2.25E-01 | -1.329 | 0.183707 | | 0.74193 |
| POLAR[T.Q3] | -1.97E-01 | 2.16E-01 | -0.912 | 0.361784 | | 0.821355 |
| POLAR[T.Q4] | 6.18E-03 | 2.16E-01 | 0.029 | 0.977124 | | 1.006199 |
| POLAR[T.Q5] | -1.03E-01 | 2.08E-01 | -0.493 | 0.622068 | | 0.902398 |
| DistanceFromHome | 5.14E-04 | 5.53E-04 | 0.929 | 0.353141 | | 1.000514 |
| NSSScoreSTART | 1.03E-02 | 5.36E-03 | 1.924 | 0.054395 | . | 1.010363 |
| DegreeSizeSTART | -4.54E-04 | 6.61E-04 | -0.686 | 0.492718 | | 0.999547 |
| Clearing[T.Non-Clearing] | 1.71E-01 | 1.61E-01 | 1.064 | 0.287271 | | 1.186965 |
| TariffALevs | 9.53E-03 | 1.79E-03 | 5.312 | 1.09E-07 | *** | 1.009575 |
| YofE_Hardship[T.Y] | 1.18E+01 | 2.86E+02 | 0.041 | 0.96726 | | 126753.6 |
| YofE_OthFinAid | 7.42E-04 | 2.62E-04 | 2.834 | 0.004604 | ** | 1.000743 |
| StartYear[T.Year2013] | 4.45E-02 | 1.25E-01 | 0.357 | 0.721248 | | 1.045515 |
| StartYear[T.Year2014] | 8.65E-02 | 1.25E-01 | 0.694 | 0.487948 | | 1.090373 |
| MAP[T.Not MAP] | 3.82E-01 | 3.89E-01 | 0.98 | 0.326907 | | 1.464626 |
| YofE_CatCash[T.Low 1000] | -6.23E-02 | 2.14E-01 | -0.291 | 0.771079 | | 0.939648 |
| YofE_CatCash[T.Low 3000] | -2.28E-01 | 1.86E-01 | -1.225 | 0.220453 | | 0.796124 |
| YofE_CatCash[T.Partial 0] | -1.04E+00 | 7.87E-01 | -1.326 | 0.184943 | | 0.352044 |
| YofE_CatCash[T.Partial 1000] | 3.46E-01 | 3.70E-01 | 0.935 | 0.349903 | | 1.413544 |
| YofE_CatCash[T.Partial 2000] | 9.38E-02 | 2.37E-01 | 0.395 | 0.692537 | | 1.098373 |
| YofE_CatCash[T.Unknown 0] | -4.18E-01 | 1.50E-01 | -2.794 | 0.005205 | ** | 0.658494 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 3926.5  on 12139  degrees of freedom
Residual deviance: 3689.8  on 12085  degrees of freedom
  (1763 observations deleted due to missingness)
AIC: 3799.8

Number of Fisher Scoring iterations: 13
```

## Appendix 9 – Regression – Retention HE 2012-14 Cat Entry Quals (Bursary Cat)



```
glm(formula = ProbabilityContinueHE ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctStart + POLAR + DistanceFromHome + NSSScoreSTART + DegreeSizeSTART + Clearing + HighestQual + YofE_Hardship + Yof
E_OthFinAid + StartYear + MAP + YofE_CatCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2138   0.2200   0.2672   0.3158   1.5535
```

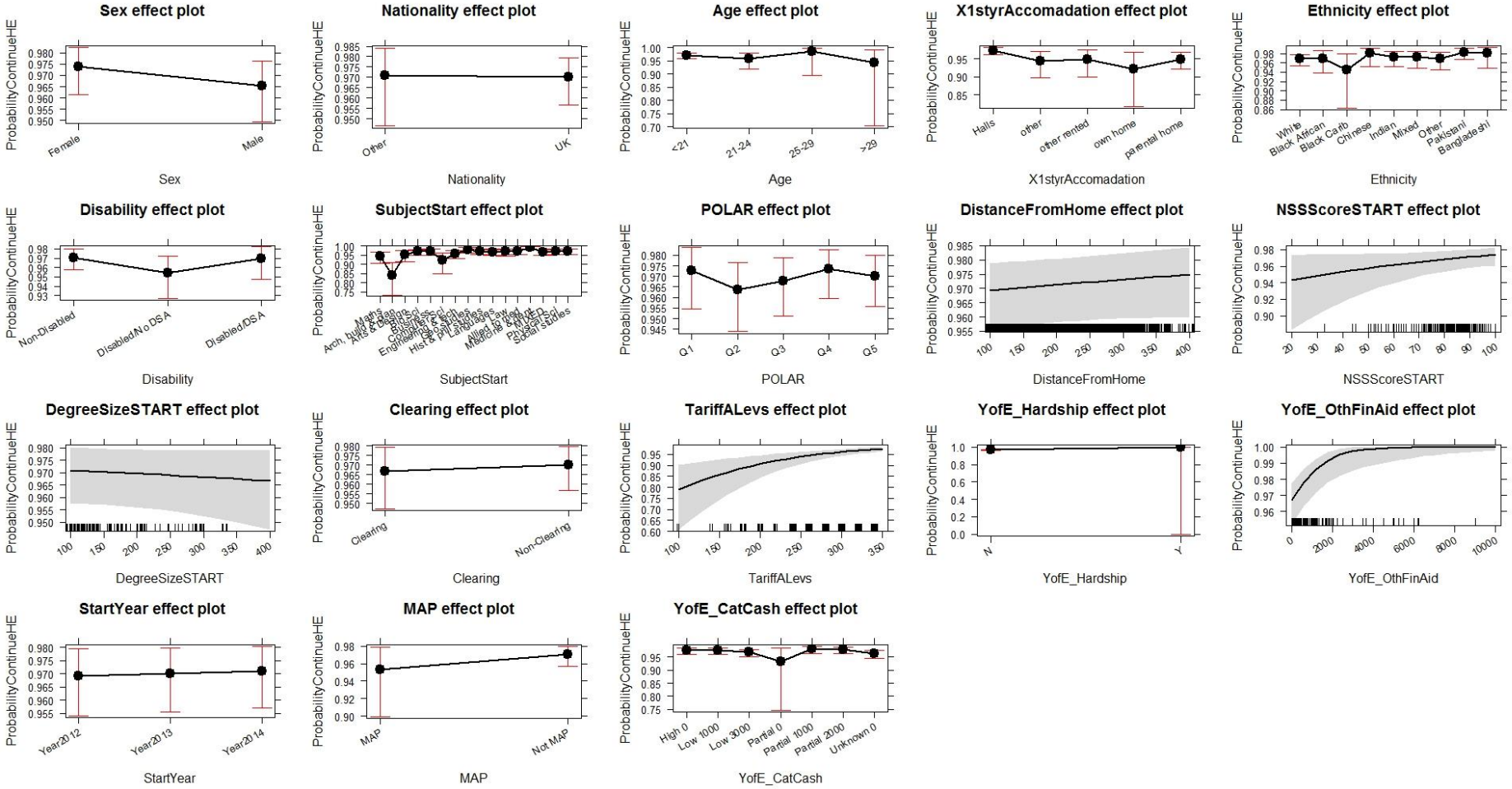
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 2.283883 | 0.6091028 | 3.75 | 0.000177 | *** | 9.814716078 |
| Sex[T.Male] | -0.31214 | 0.0900368 | -3.467 | 0.000527 | *** | 0.731879497 |
| Nationality[T.UK] | -0.4126 | 0.2233577 | -1.847 | 0.06471 | . | 0.661927729 |
| Age[T.21-24] | -0.40164 | 0.2083772 | -1.927 | 0.053923 | . | 0.669223228 |
| Age[T.25-29] | -0.64889 | 0.3198234 | -2.029 | 0.04247 | * | 0.522628182 |
| Age[T.>29] | -0.92281 | 0.3352073 | -2.753 | 0.005906 | ** | 0.397402642 |
| X1styrAccomadation[T.other] | -0.65221 | 0.2323844 | -2.807 | 0.005007 | ** | 0.520891975 |
| X1styrAccomadation[T.other rented] | -0.53367 | 0.2579844 | -2.069 | 0.038582 | * | 0.586448866 |
| X1styrAccomadation[T.own home] | -0.49909 | 0.3011672 | -1.657 | 0.097485 | . | 0.607085343 |
| X1styrAccomadation[T.parental home] | -0.6528 | 0.1520933 | -4.292 | 1.77E-05 | *** | 0.520587447 |
| Ethnicity[T.Black African] | -0.12264 | 0.2649171 | -0.463 | 0.643417 | | 0.88458462 |
| Ethnicity[T.Black Carib] | -0.35434 | 0.4449916 | -0.796 | 0.425865 | | 0.701635599 |
| Ethnicity[T.Chinese] | 0.489377 | 0.3735171 | 1.31 | 0.190133 | | 1.631298951 |
| Ethnicity[T.Indian] | 0.078618 | 0.2097741 | 0.375 | 0.707829 | | 1.081790674 |
| Ethnicity[T.Mixed] | 0.012063 | 0.2329543 | 0.052 | 0.958703 | | 1.012135748 |
| Ethnicity[T.Other] | 0.049686 | 0.2057945 | 0.241 | 0.809218 | | 1.050941049 |
| Ethnicity[T.Pakistani] | 0.347234 | 0.2232508 | 1.555 | 0.119862 | | 1.41514769 |
| Ethnicity[T.Bangladeshi] | 0.216087 | 0.3700832 | 0.584 | 0.559295 | | 1.241210732 |
| Disability[T.Disabled/No DSA] | -0.41292 | 0.1618106 | -2.552 | 0.010714 | * | 0.661712373 |
| Disability[T.Disabled/DSA] | -0.12825 | 0.1827477 | -0.702 | 0.482802 | | 0.879630804 |
| SubjectStart[T.Arch, build & plan] | -1.35503 | 0.32344 | -4.189 | 2.80E-05 | *** | 0.257940768 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectStart[T.Arts & Design] | 0.265627 | 0.3511072 | 0.757 | 0.449324 | | 1.304248875 |
| SubjectStart[T.Bio Sci] | 0.593333 | 0.2424839 | 2.447 | 0.014409 | * | 1.81001114 |
| SubjectStart[T.Business ] | 0.333216 | 0.2414266 | 1.38 | 0.167526 | | 1.395448683 |
| SubjectStart[T.Computer Sci] | -0.16338 | 0.3570299 | -0.458 | 0.647242 | | 0.849272057 |
| SubjectStart[T.Engineering & tech] | 0.273046 | 0.2371598 | 1.151 | 0.249603 | | 1.313960029 |
| SubjectStart[T.Geo studies] | 1.070087 | 0.3763117 | 2.844 | 0.00446 | ** | 2.915633732 |
| SubjectStart[T.Hist & phil studies] | 0.608875 | 0.2607753 | 2.335 | 0.01955 | * | 1.838362813 |
| SubjectStart[T.Languages] | 0.405627 | 0.2317884 | 1.75 | 0.08012 | . | 1.500243008 |
| SubjectStart[T.Law] | 0.319604 | 0.2537198 | 1.26 | 0.207787 | | 1.37658308 |
| SubjectStart[T.Allied to med] | 0.584272 | 0.2771472 | 2.108 | 0.035017 | * | 1.793684887 |
| SubjectStart[T.Medicine & dent] | 2.075655 | 0.3703627 | 5.604 | 2.09E-08 | *** | 7.969764946 |
| SubjectStart[T.MIXED] | 0.498329 | 0.2275628 | 2.19 | 0.028535 | * | 1.645968229 |
| SubjectStart[T.Physical Sci] | 0.573306 | 0.238824 | 2.401 | 0.016371 | * | 1.774123326 |
| SubjectStart[T.Social studies] | 0.709939 | 0.2509402 | 2.829 | 0.004668 | ** | 2.033866172 |
| POLAR[T.Q2] | -0.02077 | 0.1697822 | -0.122 | 0.902622 | | 0.979441468 |
| POLAR[T.Q3] | 0.171084 | 0.1684124 | 1.016 | 0.309694 | | 1.186590418 |
| POLAR[T.Q4] | 0.228851 | 0.1654733 | 1.383 | 0.166663 | | 1.257154206 |
| POLAR[T.Q5] | 0.237545 | 0.1611161 | 1.474 | 0.140382 | | 1.268132061 |
| DistanceFromHome | 0.000509 | 0.0005045 | 1.008 | 0.313408 | | 1.000508729 |
| NSSScoreSTART | 0.009049 | 0.0046609 | 1.941 | 0.05221 | . | 1.009089662 |
| DegreeSizeSTART | 0.000149 | 0.0005657 | 0.264 | 0.791948 | | 1.000149211 |
| Clearing[T.Non-Clearing] | 0.317302 | 0.1418082 | 2.238 | 0.025251 | * | 1.373417831 |
| HighestQual[T.Access] | -0.72921 | 0.2680822 | -2.72 | 0.006526 | ** | 0.482288354 |
| HighestQual[T.BTEC] | -1.52909 | 0.2179877 | -7.015 | 2.31E-12 | *** | 0.216733563 |
| HighestQual[T.HE above Degree] | -0.57339 | 0.5675549 | -1.01 | 0.312363 | | 0.56361285 |
| HighestQual[T.HE below Degree] | -0.23422 | 0.3530642 | -0.663 | 0.507083 | | 0.791189239 |
| HighestQual[T.IB] | -0.10772 | 0.6034764 | -0.179 | 0.858328 | | 0.897877261 |
| HighestQual[T.Other] | -0.56755 | 0.2791996 | -2.033 | 0.042074 | * | 0.566910577 |
| YofE_Hardship[T.Y] | 0.208953 | 1.08505 | 0.193 | 0.847292 | | 1.232387445 |

| | | | | | | |
|---|---|---|---|---|---|---|
| YofE_OthFinAid | 0.000363 | 0.0001575 | 2.303 | 0.021253 | * | 1.000362766 |
| StartYear[T.Year2013] | 0.027907 | 0.1112855 | 0.251 | 0.801989 | | 1.028300459 |
| StartYear[T.Year2014] | -0.00443 | 0.1098659 | -0.04 | 0.96786 | | 0.995583083 |
| MAP[T.Not MAP] | -0.11639 | 0.3207152 | -0.363 | 0.716684 | | 0.890132011 |
| YofE_CatCash[T.Low 1000] | -0.01058 | 0.1810616 | -0.058 | 0.953411 | | 0.989477453 |
| YofE_CatCash[T.Low 3000] | -0.1425 | 0.1660762 | -0.858 | 0.390864 | | 0.867185993 |
| YofE_CatCash[T.Partial 0] | -0.63546 | 0.7670562 | -0.828 | 0.407423 | | 0.52969278 |
| YofE_CatCash[T.Partial 1000] | 0.308873 | 0.3222921 | 0.958 | 0.337879 | | 1.361889944 |
| YofE_CatCash[T.Partial 2000] | 0.194436 | 0.2137935 | 0.909 | 0.36311 | | 1.214625137 |
| YofE_CatCash[T.Unknown 0] | -0.33403 | 0.1355747 | -2.464 | 0.013746 | * | 0.716030296 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4921.2  on 13298  degrees of freedom
Residual deviance: 4572.7  on 13239  degrees of freedom
  (604 observations deleted due to missingness)
AIC: 4692.7

Number of Fisher Scoring iterations: 7
```

# Appendix 10 – Regression – Retention HE 2012-14 A-Level Tariff (Bursary Cat)



```
glm(formula = ProbabilityContinueHE ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctStart + POLAR + DistanceFromHome + NSSScoreSTART + DegreeSizeSTART + Clearing + TariffALevs + YofE_Hardship + Yof
E_OthFinAid + StartYear + MAP + YofE_CatCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.1364   0.1988   0.2473   0.3002   1.3755
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -1.35E+00 | 8.80E-01 | -1.537 | 0.124347 | | 0.258464 |
| Sex[T.Male] | -2.88E-01 | 1.02E-01 | -2.828 | 0.004689 | ** | 0.749687 |
| Nationality[T.UK] | -2.43E-02 | 2.65E-01 | -0.092 | 0.926832 | | 0.975993 |
| Age[T.21-24] | -3.71E-01 | 2.97E-01 | -1.249 | 0.21183 | | 0.69032 |
| Age[T.25-29] | 7.76E-01 | 1.07E+00 | 0.726 | 0.467651 | | 2.172329 |
| Age[T.>29] | -6.97E-01 | 9.62E-01 | -0.724 | 0.468888 | | 0.498177 |
| X1styrAccomadation[T.other] | -7.69E-01 | 2.83E-01 | -2.714 | 0.006642 | ** | 0.463523 |
| X1styrAccomadation[T.other rented] | -6.67E-01 | 3.32E-01 | -2.006 | 0.044819 | * | 0.513503 |
| X1styrAccomadation[T.own home] | -1.13E+00 | 4.60E-01 | -2.459 | 0.013948 | * | 0.323033 |
| X1styrAccomadation[T.parental home] | -6.58E-01 | 1.78E-01 | -3.7 | 0.000216 | *** | 0.518145 |
| Ethnicity[T.Black African] | 4.67E-02 | 3.42E-01 | 0.136 | 0.891518 | | 1.047776 |
| Ethnicity[T.Black Carib] | -5.91E-01 | 4.75E-01 | -1.245 | 0.213098 | | 0.553552 |
| Ethnicity[T.Chinese] | 4.92E-01 | 4.31E-01 | 1.143 | 0.253014 | | 1.636075 |
| Ethnicity[T.Indian] | 1.67E-01 | 2.40E-01 | 0.697 | 0.485632 | | 1.181872 |
| Ethnicity[T.Mixed] | 1.29E-01 | 2.73E-01 | 0.473 | 0.636076 | | 1.138031 |
| Ethnicity[T.Other] | 3.47E-03 | 2.36E-01 | 0.015 | 0.988296 | | 1.003472 |
| Ethnicity[T.Pakistani] | 6.14E-01 | 2.88E-01 | 2.127 | 0.033386 | * | 1.847069 |
| Ethnicity[T.Bangladeshi] | 5.12E-01 | 4.82E-01 | 1.062 | 0.288346 | | 1.668792 |
| Disability[T.Disabled/No DSA] | -4.59E-01 | 1.84E-01 | -2.496 | 0.012548 | * | 0.631852 |
| Disability[T.Disabled/DSA] | -4.90E-02 | 2.16E-01 | -0.226 | 0.820859 | | 0.952181 |
| SubjectStart[T.Arch, build & plan] | -1.14E+00 | 3.62E-01 | -3.15 | 0.001635 | ** | 0.320139 |
| SubjectStart[T.Arts & Design] | 2.28E-01 | 3.75E-01 | 0.61 | 0.541855 | | 1.256588 |
| SubjectStart[T.Bio Sci] | 6.14E-01 | 2.67E-01 | 2.297 | 0.021616 | * | 1.847069 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectStart[T.Business ] | 6.53E-01 | 2.87E-01 | 2.271 | 0.023146 | * | 1.92072 |
| SubjectStart[T.Computer Sci] | -3.32E-01 | 3.79E-01 | -0.877 | 0.380594 | | 0.717487 |
| SubjectStart[T.Engineering & tech] | 2.96E-01 | 2.67E-01 | 1.111 | 0.266737 | | 1.344874 |
| SubjectStart[T.Geo studies] | 1.13E+00 | 4.01E-01 | 2.815 | 0.004885 | ** | 3.092562 |
| SubjectStart[T.Hist & phil studies] | 6.95E-01 | 2.85E-01 | 2.439 | 0.01472 | * | 2.003509 |
| SubjectStart[T.Languages] | 6.06E-01 | 2.58E-01 | 2.348 | 0.018891 | * | 1.832718 |
| SubjectStart[T.Law] | 6.25E-01 | 2.95E-01 | 2.117 | 0.034222 | * | 1.868993 |
| SubjectStart[T.Allied to med] | 7.40E-01 | 3.19E-01 | 2.32 | 0.020326 | * | 2.095936 |
| SubjectStart[T.Medicine & dent] | 1.81E+00 | 3.77E-01 | 4.792 | 1.65E-06 | *** | 6.079971 |
| SubjectStart[T.MIXED] | 5.93E-01 | 2.50E-01 | 2.374 | 0.017575 | * | 1.809409 |
| SubjectStart[T.Physical Sci] | 6.98E-01 | 2.69E-01 | 2.597 | 0.0094 | ** | 2.009528 |
| SubjectStart[T.Social studies] | 7.19E-01 | 2.78E-01 | 2.59 | 0.00961 | ** | 2.052585 |
| POLAR[T.Q2] | -2.90E-01 | 2.24E-01 | -1.294 | 0.195582 | | 0.748114 |
| POLAR[T.Q3] | -1.65E-01 | 2.16E-01 | -0.765 | 0.444241 | | 0.847555 |
| POLAR[T.Q4] | 2.67E-02 | 2.15E-01 | 0.124 | 0.901253 | | 1.02709 |
| POLAR[T.Q5] | -8.90E-02 | 2.08E-01 | -0.428 | 0.668988 | | 0.914864 |
| DistanceFromHome | 6.84E-04 | 5.56E-04 | 1.231 | 0.218363 | | 1.000684 |
| NSSScoreSTART | 1.01E-02 | 5.39E-03 | 1.867 | 0.061932 | . | 1.010111 |
| DegreeSizeSTART | -4.74E-04 | 6.64E-04 | -0.714 | 0.474989 | | 0.999526 |
| Clearing[T.Non-Clearing] | 1.10E-01 | 1.65E-01 | 0.67 | 0.502973 | | 1.116725 |
| TariffALevs | 9.31E-03 | 1.80E-03 | 5.159 | 2.48E-07 | *** | 1.009353 |
| YofE_Hardship[T.Y] | 1.20E+01 | 2.83E+02 | 0.042 | 0.966296 | | 154817.1 |
| YofE_OthFinAid | 8.01E-04 | 2.72E-04 | 2.948 | 0.003203 | ** | 1.000801 |
| StartYear[T.Year2013] | 2.74E-02 | 1.26E-01 | 0.218 | 0.827266 | | 1.02781 |
| StartYear[T.Year2014] | 5.81E-02 | 1.25E-01 | 0.464 | 0.642942 | | 1.0598 |
| MAP[T.Not MAP] | 4.79E-01 | 3.94E-01 | 1.218 | 0.223385 | | 1.614782 |
| YofE_CatCash[T.Low 1000] | 3.87E-02 | 2.16E-01 | 0.179 | 0.857844 | | 1.039469 |
| YofE_CatCash[T.Low 3000] | -2.01E-01 | 1.84E-01 | -1.091 | 0.275242 | | 0.817912 |
| YofE_CatCash[T.Partial 0] | -9.97E-01 | 7.88E-01 | -1.265 | 0.205812 | | 0.368985 |
| YofE_CatCash[T.Partial 1000] | 3.72E-01 | 3.70E-01 | 1.006 | 0.314253 | | 1.450633 |
| YofE_CatCash[T.Partial 2000] | 1.85E-01 | 2.39E-01 | 0.775 | 0.43828 | | 1.203579 |
| YofE_CatCash[T.Unknown 0] | -3.79E-01 | 1.48E-01 | -2.562 | 0.01042 | * | 0.684409 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 3889.3  on 12076  degrees of freedom
Residual deviance: 3658.6  on 12022  degrees of freedom
  (1826 observations deleted due to missingness)
AIC: 3768.6

Number of Fisher Scoring iterations: 13
```

## Appendix 11 – Regression – Completion 2009-10 Cat Entry Qual (Bursary Cat)

Note – Effects plots are not available for this model because of large confidence intervals across variables.

```
glm(formula = ProbabilityCompletion ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAv
erage + MAP + StartYear + BursaryAverageCashCat, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.5927   0.1316   0.1866   0.2571   1.0235
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 1.19E+00 | 1.71E+00 | 0.695 | 0.48725 | | 3.287081 |
| Sex[T.Male] | -5.25E-01 | 2.30E-01 | -2.28 | 0.02258 | * | 0.591851 |
| Nationality[T.UK] | 7.49E-01 | 4.43E-01 | 1.69 | 0.09094 | . | 2.115096 |
| Age[T.21-24] | -6.35E-01 | 5.26E-01 | -1.207 | 0.22727 | | 0.52983 |
| Age[T.25-29] | -8.09E-01 | 8.26E-01 | -0.98 | 0.32715 | | 0.445214 |
| Age[T.>29] | -8.59E-01 | 9.12E-01 | -0.942 | 0.34625 | | 0.423628 |
| X1styrAccomadation[T.other] | 4.94E-01 | 7.89E-01 | 0.626 | 0.53106 | | 1.639514 |
| X1styrAccomadation[T.other rented] | 1.74E-01 | 5.95E-01 | 0.292 | 0.77025 | | 1.18958 |
| X1styrAccomadation[T.own home] | -7.00E-01 | 7.59E-01 | -0.922 | 0.35672 | | 0.496685 |
| X1styrAccomadation[T.parental home] | 1.26E-01 | 3.72E-01 | 0.34 | 0.73388 | | 1.134623 |
| Ethnicity[T.Black African] | 8.12E-01 | 8.12E-01 | 1 | 0.31723 | | 2.253084 |
| Ethnicity[T.Black Carib] | -2.05E-01 | 1.06E+00 | -0.192 | 0.84763 | | 0.815055 |
| Ethnicity[T.Chinese] | 1.55E+00 | 1.06E+00 | 1.473 | 0.14086 | | 4.725626 |
| Ethnicity[T.Indian] | 1.35E+00 | 7.89E-01 | 1.715 | 0.08641 | . | 3.869015 |
| Ethnicity[T.Mixed] | -3.76E-01 | 5.27E-01 | -0.713 | 0.47573 | | 0.686602 |
| Ethnicity[T.Other] | 2.38E-01 | 5.33E-01 | 0.447 | 0.65481 | | 1.269217 |
| Ethnicity[T.Pakistani] | 2.39E-01 | 4.64E-01 | 0.514 | 0.60719 | | 1.269471 |
| Ethnicity[T.Bangladeshi] | 6.48E-01 | 1.07E+00 | 0.605 | 0.54521 | | 1.910949 |
| Ethnicity[T.Unknown] | 1.36E+01 | 8.15E+02 | 0.017 | 0.98666 | | 830680.1 |
| Disability[T.Disabled/No DSA] | -7.19E-01 | 5.70E-01 | -1.261 | 0.20725 | | 0.487385 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Disability[T.Disabled/DSA] | -3.93E-01 | 5.62E-01 | -0.699 | 0.48439 | | 0.675164 |
| SubjectEND[T.Arch, build & plan] | 8.18E-01 | 1.13E+00 | 0.724 | 0.46879 | | 2.266643 |
| SubjectEND[T.Arts & Design] | 1.08E+00 | 1.13E+00 | 0.956 | 0.33884 | | 2.941736 |
| SubjectEND[T.Bio Sci] | 1.42E+00 | 6.51E-01 | 2.185 | 0.02891 | * | 4.145403 |
| SubjectEND[T.Business ] | 4.26E-01 | 5.32E-01 | 0.801 | 0.42297 | | 1.531733 |
| SubjectEND[T.Computer Sci] | 1.63E+00 | 1.15E+00 | 1.419 | 0.15594 | | 5.103875 |
| SubjectEND[T.Engineering & tech] | 8.10E-02 | 5.26E-01 | 0.154 | 0.8777 | | 1.08436 |
| SubjectEND[T.Geo studies] | 1.91E+00 | 1.11E+00 | 1.73 | 0.08356 | . | 6.766608 |
| SubjectEND[T.Hist & phil studies] | 9.89E-01 | 6.26E-01 | 1.58 | 0.11418 | | 2.688545 |
| SubjectEND[T.Languages] | 6.71E-01 | 5.42E-01 | 1.237 | 0.21615 | | 1.955997 |
| SubjectEND[T.Law] | 6.55E-01 | 6.66E-01 | 0.983 | 0.32536 | | 1.92495 |
| SubjectEND[T.Allied to med] | 1.19E+00 | 6.80E-01 | 1.743 | 0.08129 | . | 3.273959 |
| SubjectEND[T.Medicine & dent] | -1.79E+00 | 5.58E-01 | -3.209 | 0.00133 | ** | 0.166793 |
| SubjectEND[T.MIXED] | 1.06E+00 | 5.88E-01 | 1.798 | 0.07216 | . | 2.880604 |
| SubjectEND[T.Physical Sci] | 1.66E-01 | 5.09E-01 | 0.327 | 0.74375 | | 1.180927 |
| SubjectEND[T.Social studies] | 7.79E-01 | 5.56E-01 | 1.401 | 0.16112 | | 2.179946 |
| POLAR[T.Q2] | -5.83E-02 | 3.97E-01 | -0.147 | 0.88334 | | 0.943367 |
| POLAR[T.Q3] | -2.32E-01 | 3.70E-01 | -0.626 | 0.53151 | | 0.793343 |
| POLAR[T.Q4] | 2.06E-01 | 3.84E-01 | 0.538 | 0.5909 | | 1.229245 |
| POLAR[T.Q5] | 3.61E-01 | 3.86E-01 | 0.934 | 0.35012 | | 1.43419 |
| DistanceFromHome | 1.46E-03 | 1.33E-03 | 1.099 | 0.27191 | | 1.001464 |
| NSSScoreEND | 1.76E-02 | 1.08E-02 | 1.628 | 0.10348 | | 1.017756 |
| DegreeSizeEND | 2.28E-04 | 1.17E-03 | 0.195 | 0.84523 | | 1.000228 |
| Clearing[T.Non-Clearing] | 6.05E-01 | 5.36E-01 | 1.129 | 0.25905 | | 1.830886 |
| EntryQual[T.A-Level <360] | 1.68E-03 | 4.01E-01 | 0.004 | 0.99666 | | 1.001678 |
| EntryQual[T.A-Level 400-439] | 1.17E-01 | 4.09E-01 | 0.288 | 0.77372 | | 1.124569 |
| EntryQual[T.A-Level 440-479] | 7.12E-02 | 4.19E-01 | 0.17 | 0.86506 | | 1.073796 |
| EntryQual[T.A-Level 480-520] | -4.19E-01 | 4.13E-01 | -1.016 | 0.30951 | | 0.657441 |
| EntryQual[T.A-Level >520] | -9.39E-02 | 4.04E-01 | -0.232 | 0.81632 | | 0.910356 |
| EntryQual[T.Access] | -2.45E-01 | 7.70E-01 | -0.318 | 0.75061 | | 0.783018 |
| EntryQual[T.BTEC] | -1.32E+00 | 8.54E-01 | -1.541 | 0.12328 | | 0.268206 |
| EntryQual[T.HE above Degree] | 1.67E+01 | 1.40E+03 | 0.012 | 0.99048 | | 17540096 |

| | | | | | | |
|---|---|---|---|---|---|---|
| EntryQual[T.HE below Degree] | 2.14E-01 | 1.24E+00 | 0.173 | 0.86294 | | 1.238375 |
| EntryQual[T.IB] | 1.36E+01 | 1.27E+03 | 0.011 | 0.99144 | | 839028.5 |
| EntryQual[T.Other] | -5.60E-01 | 7.75E-01 | -0.722 | 0.47031 | | 0.571438 |
| Hardship[T.Y] | 1.47E+01 | 8.54E+02 | 0.017 | 0.98625 | | 2470670 |
| FinancialAidYrAverage | 1.60E-05 | 2.45E-04 | 0.065 | 0.94789 | | 1.000016 |
| MAP[T.Not MAP] | -7.36E-01 | 1.12E+00 | -0.657 | 0.51103 | | 0.478835 |
| StartYear[T.Year2010] | -5.11E-01 | 2.33E-01 | -2.197 | 0.02803 | * | 0.599895 |
| BursaryAverageCashCat[T.Low, £1250] | 1.97E-02 | 3.28E-01 | 0.06 | 0.95194 | | 1.019936 |
| BursaryAverageCashCat[T.Low, £1250 - £3000] | -1.28E+00 | 6.16E-01 | -2.07 | 0.03848 | * | 0.279431 |
| BursaryAverageCashCat[T.Low, £3000] | 6.69E-01 | 5.06E-01 | 1.322 | 0.18602 | | 1.951894 |
| BursaryAverageCashCat[T.Low/Partial, £500 - £1000] | -1.19E-01 | 5.37E-01 | -0.221 | 0.82489 | | 0.888074 |
| BursaryAverageCashCat[T.Low/Partial, < £500] | -1.69E-01 | 6.58E-01 | -0.257 | 0.79751 | | 0.844678 |
| BursaryAverageCashCat[T.Low/Partial, > £1000] | 5.49E-01 | 7.97E-01 | 0.689 | 0.49111 | | 1.731174 |
| BursaryAverageCashCat[T.Mixed Low/Partial/High, < £500] | 1.03E+00 | 1.07E+00 | 0.968 | 0.33281 | | 2.806674 |
| BursaryAverageCashCat[T.Mixed Low/Partial/High, > £500] | 2.92E-01 | 7.65E-01 | 0.381 | 0.703 | | 1.338835 |
| BursaryAverageCashCat[T.Partial, £0] | 2.19E-01 | 4.90E-01 | 0.446 | 0.65563 | | 1.244458 |
| BursaryAverageCashCat[T.Partial/High, £0] | -2.88E-01 | 3.93E-01 | -0.733 | 0.46369 | | 0.749612 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 864.95  on 3242  degrees of freedom
Residual deviance: 759.12  on 3174  degrees of freedom
  (7437 observations deleted due to missingness)
AIC: 897.12

Number of Fisher Scoring iterations: 16
```

## Appendix 12 – Regression – Completion 2009-10 A-level Tariff (Bursary Cat)

Note – Effects plots are not available for this model because of large confidence intervals across variables.

```
glm(formula = ProbabilityCompletion ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + TariffALevs + Hardship + FinancialAidYr
Average + MAP + StartYear + BursaryAverageCashCat, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.4025   0.1220   0.1728   0.2413   0.9824
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -2.14E+00 | 2.18E+00 | -0.983 | 0.32569 | | 0.117302 |
| Sex[T.Male] | -6.39E-01 | 2.56E-01 | -2.496 | 0.01258 | * | 0.528084 |
| Nationality[T.UK] | 8.33E-01 | 5.40E-01 | 1.543 | 0.12282 | | 2.299749 |
| Age[T.21-24] | -1.99E-01 | 7.81E-01 | -0.254 | 0.79917 | | 0.819714 |
| Age[T.25-29] | -2.07E+00 | 1.30E+00 | -1.598 | 0.11007 | | 0.125934 |
| Age[T.>29] | 1.43E+01 | 3.46E+03 | 0.004 | 0.99671 | | 1591202 |
| X1styrAccomadation[T.other] | 5.86E-01 | 1.07E+00 | 0.549 | 0.58298 | | 1.796787 |
| X1styrAccomadation[T.other rented] | -5.74E-01 | 6.57E-01 | -0.873 | 0.38244 | | 0.563493 |
| X1styrAccomadation[T.own home] | 1.56E+01 | 1.63E+03 | 0.01 | 0.99237 | | 6137942 |
| X1styrAccomadation[T.parental home] | -8.37E-02 | 4.07E-01 | -0.206 | 0.83702 | | 0.919726 |
| Ethnicity[T.Black African] | 1.22E+00 | 1.08E+00 | 1.126 | 0.26036 | | 3.383802 |
| Ethnicity[T.Black Carib] | -2.72E-01 | 1.08E+00 | -0.251 | 0.80215 | | 0.762083 |
| Ethnicity[T.Chinese] | 1.54E+00 | 1.06E+00 | 1.448 | 0.14753 | | 4.659928 |
| Ethnicity[T.Indian] | 1.24E+00 | 7.93E-01 | 1.569 | 0.11671 | | 3.465996 |
| Ethnicity[T.Mixed] | -7.09E-02 | 6.53E-01 | -0.108 | 0.91362 | | 0.931592 |
| Ethnicity[T.Other] | 4.99E-01 | 6.59E-01 | 0.756 | 0.44943 | | 1.646415 |
| Ethnicity[T.Pakistani] | 5.26E-01 | 5.39E-01 | 0.976 | 0.32909 | | 1.691812 |
| Ethnicity[T.Bangladeshi] | 5.97E-01 | 1.10E+00 | 0.545 | 0.58583 | | 1.816297 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ethnicity[T.Unknown] | 1.49E+01 | 1.38E+03 | 0.011 | 0.99139 | | 2957929 |
| Disability[T.Disabled/No DSA] | -8.62E-01 | 5.71E-01 | -1.51 | 0.13096 | | 0.422486 |
| Disability[T.Disabled/DSA] | -1.68E-01 | 6.40E-01 | -0.262 | 0.79349 | | 0.845777 |
| SubjectEND[T.Arch, build & plan] | 1.61E+01 | 1.09E+03 | 0.015 | 0.98821 | | 9722954 |
| SubjectEND[T.Arts & Design] | 1.22E+00 | 1.13E+00 | 1.077 | 0.28134 | | 3.38042 |
| SubjectEND[T.Bio Sci] | 1.77E+00 | 7.18E-01 | 2.464 | 0.01374 | * | 5.864985 |
| SubjectEND[T.Business ] | 1.30E+00 | 6.76E-01 | 1.925 | 0.05424 | . | 3.672968 |
| SubjectEND[T.Computer Sci] | 1.60E+00 | 1.11E+00 | 1.437 | 0.15076 | | 4.953032 |
| SubjectEND[T.Engineering & tech] | 3.01E-01 | 5.41E-01 | 0.557 | 0.57762 | | 1.35148 |
| SubjectEND[T.Geo studies] | 1.92E+00 | 1.11E+00 | 1.727 | 0.08425 | . | 6.814141 |
| SubjectEND[T.Hist & phil studies] | 1.45E+00 | 7.28E-01 | 1.995 | 0.04605 | * | 4.26738 |
| SubjectEND[T.Languages] | 1.25E+00 | 5.86E-01 | 2.141 | 0.03231 | * | 3.504332 |
| SubjectEND[T.Law] | 4.53E-01 | 6.58E-01 | 0.687 | 0.49185 | | 1.572238 |
| SubjectEND[T.Allied to med] | 9.93E-01 | 6.76E-01 | 1.468 | 0.14217 | | 2.697971 |
| SubjectEND[T.Medicine & dent] | -1.53E+00 | 5.91E-01 | -2.587 | 0.00967 | ** | 0.216752 |
| SubjectEND[T.MIXED] | 1.15E+00 | 5.92E-01 | 1.943 | 0.05206 | . | 3.158193 |
| SubjectEND[T.Physical Sci] | 4.29E-01 | 5.24E-01 | 0.817 | 0.41382 | | 1.534953 |
| SubjectEND[T.Social studies] | 1.12E+00 | 5.96E-01 | 1.878 | 0.06031 | . | 3.061791 |
| POLAR[T.Q2] | 7.75E-02 | 4.30E-01 | 0.18 | 0.85706 | | 1.080604 |
| POLAR[T.Q3] | 8.75E-02 | 4.01E-01 | 0.218 | 0.8273 | | 1.091475 |
| POLAR[T.Q4] | 4.94E-01 | 4.16E-01 | 1.186 | 0.23563 | | 1.638203 |
| POLAR[T.Q5] | 6.43E-01 | 4.11E-01 | 1.564 | 0.11777 | | 1.902369 |
| DistanceFromHome | 3.13E-04 | 1.42E-03 | 0.221 | 0.82484 | | 1.000313 |
| NSSScoreEND | 2.22E-02 | 1.22E-02 | 1.821 | 0.06862 | . | 1.022418 |
| DegreeSizeEND | 2.10E-04 | 1.30E-03 | 0.162 | 0.87121 | | 1.00021 |
| Clearing[T.Non-Clearing] | 5.04E-01 | 5.63E-01 | 0.896 | 0.37043 | | 1.65566 |
| TariffALevs | 7.30E-03 | 3.91E-03 | 1.868 | 0.06178 | . | 1.007327 |
| Hardship[T.Y] | 1.56E+01 | 1.63E+03 | 0.01 | 0.99236 | | 6016402 |
| FinancialAidYrAverage | -1.34E-04 | 2.88E-04 | -0.463 | 0.64309 | | 0.999867 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MAP[T.Not MAP] | -6.34E-01 | 1.13E+00 | -0.562 | 0.57413 | | 0.530413 |
| StartYear[T.Year2010] | -4.04E-01 | 2.55E-01 | -1.581 | 0.11384 | | 0.667844 |
| BursaryAverageCashCat[T.Low, £1250] | 3.77E-01 | 3.51E-01 | 1.072 | 0.2837 | | 1.457467 |
| BursaryAverageCashCat[T.Low, £1250 - £3000] | -1.06E+00 | 7.00E-01 | -1.52 | 0.12849 | | 0.345073 |
| BursaryAverageCashCat[T.Low, £3000] | 4.84E-01 | 5.47E-01 | 0.885 | 0.3764 | | 1.621903 |
| BursaryAverageCashCat[T.Low/Partial, £500 - £1000] | -2.25E-01 | 5.33E-01 | -0.422 | 0.67302 | | 0.798436 |
| BursaryAverageCashCat[T.Low/Partial, < £500] | -1.26E-01 | 6.57E-01 | -0.192 | 0.84744 | | 0.88135 |
| BursaryAverageCashCat[T.Low/Partial, > £1000] | 3.92E-01 | 8.06E-01 | 0.487 | 0.62637 | | 1.480234 |
| BursaryAverageCashCat[T.Mixed Low/Partial/High, < £500] | 8.79E-01 | 1.05E+00 | 0.834 | 0.40431 | | 2.407768 |
| BursaryAverageCashCat[T.Mixed Low/Partial/High, > £500] | 2.14E-01 | 7.70E-01 | 0.278 | 0.78074 | | 1.238994 |
| BursaryAverageCashCat[T.Partial, £0] | 6.05E-01 | 5.73E-01 | 1.056 | 0.2909 | | 1.831802 |
| BursaryAverageCashCat[T.Partial/High, £0] | -2.94E-01 | 3.96E-01 | -0.742 | 0.45824 | | 0.745276 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 722.51  on 2984  degrees of freedom
Residual deviance: 633.10  on 2926  degrees of freedom
  (7695 observations deleted due to missingness)
AIC: 751.1

Number of Fisher Scoring iterations: 17
```

## Appendix 13 – Regression – Completion 2009-10 Cat Entry Qual (Bursary Cash)

Note – Effects plots are not available for this model because of large confidence intervals across variables.

```
glm(formula = ProbabilityCompletion ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAv
erage + MAP + StartYear + BursaryAverageCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.4858   0.1362   0.1897   0.2571   0.9729
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 1.31E+00 | 1.71E+00 | 0.764 | 0.44466 | | 3.698769 |
| Sex[T.Male] | -5.08E-01 | 2.28E-01 | -2.223 | 0.02621 | * | 0.601878 |
| Nationality[T.UK] | 7.62E-01 | 4.44E-01 | 1.715 | 0.08629 | . | 2.142986 |
| Age[T.21-24] | -6.58E-01 | 5.21E-01 | -1.263 | 0.20673 | | 0.517731 |
| Age[T.25-29] | -8.40E-01 | 8.20E-01 | -1.025 | 0.30552 | | 0.431711 |
| Age[T.>29] | -9.19E-01 | 9.11E-01 | -1.008 | 0.31322 | | 0.399117 |
| X1styrAccomadation[T.other] | 4.88E-01 | 7.86E-01 | 0.621 | 0.53469 | | 1.628729 |
| X1styrAccomadation[T.other rented] | 2.01E-01 | 5.87E-01 | 0.342 | 0.73212 | | 1.222503 |
| X1styrAccomadation[T.own home] | -6.73E-01 | 7.53E-01 | -0.894 | 0.37144 | | 0.510023 |
| X1styrAccomadation[T.parental home] | 6.32E-02 | 3.68E-01 | 0.172 | 0.86366 | | 1.065187 |
| Ethnicity[T.Black African] | 8.33E-01 | 8.14E-01 | 1.023 | 0.30622 | | 2.299059 |
| Ethnicity[T.Black Carib] | -1.95E-01 | 1.06E+00 | -0.183 | 0.8545 | | 0.822917 |
| Ethnicity[T.Chinese] | 1.49E+00 | 1.05E+00 | 1.42 | 0.15554 | | 4.437096 |
| Ethnicity[T.Indian] | 1.27E+00 | 7.59E-01 | 1.676 | 0.09366 | . | 3.567981 |
| Ethnicity[T.Mixed] | -4.06E-01 | 5.23E-01 | -0.776 | 0.4375 | | 0.666443 |
| Ethnicity[T.Other] | 2.49E-01 | 5.34E-01 | 0.465 | 0.6416 | | 1.282229 |
| Ethnicity[T.Pakistani] | 2.49E-01 | 4.62E-01 | 0.539 | 0.58974 | | 1.282742 |
| Ethnicity[T.Bangladeshi] | 7.16E-01 | 1.08E+00 | 0.666 | 0.50561 | | 2.045209 |
| Ethnicity[T.Unknown] | 1.38E+01 | 8.21E+02 | 0.017 | 0.98661 | | 955509.5 |
| Disability[T.Disabled/No DSA] | -7.35E-01 | 5.67E-01 | -1.297 | 0.19449 | | 0.479458 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Disability[T.Disabled/DSA] | -4.22E-01 | 5.57E-01 | -0.757 | 0.44885 | | 0.655734 |
| SubjectEND[T.Arch, build & plan] | 7.93E-01 | 1.13E+00 | 0.704 | 0.48163 | | 2.208912 |
| SubjectEND[T.Arts & Design] | 9.95E-01 | 1.11E+00 | 0.895 | 0.37068 | | 2.705806 |
| SubjectEND[T.Bio Sci] | 1.44E+00 | 6.48E-01 | 2.217 | 0.02665 | * | 4.208053 |
| SubjectEND[T.Business ] | 3.65E-01 | 5.27E-01 | 0.691 | 0.48938 | | 1.439794 |
| SubjectEND[T.Computer Sci] | 1.54E+00 | 1.14E+00 | 1.356 | 0.17494 | | 4.66459 |
| SubjectEND[T.Engineering & tech] | 3.58E-02 | 5.24E-01 | 0.068 | 0.94561 | | 1.036397 |
| SubjectEND[T.Geo studies] | 1.88E+00 | 1.10E+00 | 1.707 | 0.08777 | . | 6.553505 |
| SubjectEND[T.Hist & phil studies] | 9.41E-01 | 6.23E-01 | 1.511 | 0.13089 | | 2.562543 |
| SubjectEND[T.Languages] | 6.39E-01 | 5.37E-01 | 1.189 | 0.23447 | | 1.894017 |
| SubjectEND[T.Law] | 5.44E-01 | 6.58E-01 | 0.826 | 0.40858 | | 1.722023 |
| SubjectEND[T.Allied to med] | 1.11E+00 | 6.76E-01 | 1.641 | 0.10081 | | 3.028296 |
| SubjectEND[T.Medicine & dent] | -1.76E+00 | 5.53E-01 | -3.183 | 0.00146 | ** | 0.172217 |
| SubjectEND[T.MIXED] | 1.05E+00 | 5.86E-01 | 1.799 | 0.072 | . | 2.869105 |
| SubjectEND[T.Physical Sci] | 1.98E-01 | 5.06E-01 | 0.391 | 0.6957 | | 1.218719 |
| SubjectEND[T.Social studies] | 7.21E-01 | 5.52E-01 | 1.307 | 0.19126 | | 2.0569 |
| POLAR[T.Q2] | -2.86E-02 | 3.94E-01 | -0.072 | 0.94222 | | 0.971854 |
| POLAR[T.Q3] | -2.44E-01 | 3.68E-01 | -0.663 | 0.50705 | | 0.783331 |
| POLAR[T.Q4] | 2.03E-01 | 3.83E-01 | 0.529 | 0.59659 | | 1.22446 |
| POLAR[T.Q5] | 3.39E-01 | 3.85E-01 | 0.882 | 0.37791 | | 1.403543 |
| DistanceFromHome | 1.45E-03 | 1.33E-03 | 1.092 | 0.275 | | 1.001451 |
| NSSScoreEND | 1.56E-02 | 1.06E-02 | 1.472 | 0.14097 | | 1.015753 |
| DegreeSizeEND | 1.78E-04 | 1.14E-03 | 0.156 | 0.87612 | | 1.000178 |
| Clearing[T.Non-Clearing] | 6.33E-01 | 5.36E-01 | 1.181 | 0.23759 | | 1.884005 |
| EntryQual[T.A-Level <360] | -2.86E-02 | 4.00E-01 | -0.071 | 0.94307 | | 0.971854 |
| EntryQual[T.A-Level 400-439] | 1.08E-01 | 4.06E-01 | 0.267 | 0.7893 | | 1.114493 |
| EntryQual[T.A-Level 440-479] | 6.40E-02 | 4.16E-01 | 0.154 | 0.87755 | | 1.066135 |
| EntryQual[T.A-Level 480-520] | -3.85E-01 | 4.05E-01 | -0.949 | 0.34259 | | 0.680791 |
| EntryQual[T.A-Level >520] | -7.66E-02 | 3.93E-01 | -0.195 | 0.84543 | | 0.926251 |
| EntryQual[T.Access] | -2.82E-01 | 7.66E-01 | -0.368 | 0.71321 | | 0.754651 |
| EntryQual[T.BTEC] | -1.24E+00 | 8.44E-01 | -1.469 | 0.14192 | | 0.289384 |
| EntryQual[T.HE above Degree] | 1.68E+01 | 1.40E+03 | 0.012 | 0.99044 | | 18811896 |

| | | | | | | |
|---|---|---|---|---|---|---|
| EntryQual[T.HE below Degree] | 7.98E-02 | 1.23E+00 | 0.065 | 0.94842 | | 1.083081 |
| EntryQual[T.IB] | 1.36E+01 | 1.29E+03 | 0.011 | 0.99157 | | 782305 |
| EntryQual[T.Other] | -5.14E-01 | 7.76E-01 | -0.662 | 0.50789 | | 0.598278 |
| Hardship[T.Y] | 1.46E+01 | 8.49E+02 | 0.017 | 0.98625 | | 2280716 |
| FinancialAidYrAverage | -9.43E-06 | 2.47E-04 | -0.038 | 0.96948 | | 0.999991 |
| MAP[T.Not MAP] | -7.47E-01 | 1.13E+00 | -0.664 | 0.50645 | | 0.473644 |
| StartYear[T.Year2010] | -5.30E-01 | 2.32E-01 | -2.288 | 0.02214 | * | 0.588428 |
| BursaryAverageCash | 1.41E-04 | 1.30E-04 | 1.086 | 0.27744 | | 1.000141 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 864.95  on 3242  degrees of freedom
Residual deviance: 767.78  on 3183  degrees of freedom
  (7437 observations deleted due to missingness)
AIC: 887.78

Number of Fisher Scoring iterations: 16
```

## Appendix 14 – Regression – Completion 2009-10 A-levels Tariff (Bursary Cash)

Note – Effects plots are not available for this model because of large confidence intervals across variables.

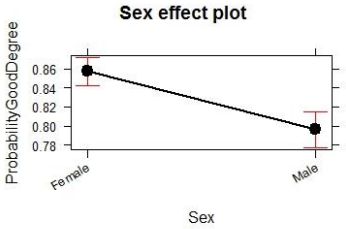
```
glm(formula = ProbabilityCompletion ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
CtEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + TariffALevs + Hardship + FinancialAidYr
Average + MAP + StartYear + BursaryAverageCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3677   0.1267   0.1784   0.2446   0.8858
```

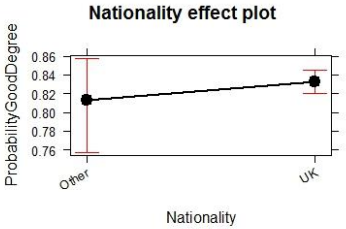
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -1.78E+00 | 2.14E+00 | -0.832 | 0.4056 | | 0.169145 |
| Sex[T.Male] | -6.43E-01 | 2.54E-01 | -2.53 | 0.01141 | * | 0.525555 |
| Nationality[T.UK] | 7.94E-01 | 5.35E-01 | 1.485 | 0.13752 | | 2.211785 |
| Age[T.21-24] | -2.84E-01 | 7.74E-01 | -0.366 | 0.71414 | | 0.753068 |
| Age[T.25-29] | -1.96E+00 | 1.30E+00 | -1.51 | 0.13102 | | 0.140718 |
| Age[T.>29] | 1.43E+01 | 3.47E+03 | 0.004 | 0.99672 | | 1607193 |
| X1styrAccomadation[T.other] | 5.80E-01 | 1.06E+00 | 0.545 | 0.58557 | | 1.786396 |
| X1styrAccomadation[T.other rented] | -4.31E-01 | 6.52E-01 | -0.661 | 0.50851 | | 0.649664 |
| X1styrAccomadation[T.own home] | 1.56E+01 | 1.65E+03 | 0.009 | 0.99246 | | 5956538 |
| X1styrAccomadation[T.parental home] | -1.17E-01 | 4.02E-01 | -0.291 | 0.77108 | | 0.889763 |
| Ethnicity[T.Black African] | 1.25E+00 | 1.08E+00 | 1.165 | 0.24384 | | 3.50083 |
| Ethnicity[T.Black Carib] | -2.10E-01 | 1.08E+00 | -0.195 | 0.84504 | | 0.810341 |
| Ethnicity[T.Chinese] | 1.53E+00 | 1.06E+00 | 1.443 | 0.14909 | | 4.613561 |
| Ethnicity[T.Indian] | 1.17E+00 | 7.69E-01 | 1.524 | 0.12763 | | 3.228443 |
| Ethnicity[T.Mixed] | -3.64E-02 | 6.55E-01 | -0.056 | 0.9557 | | 0.964283 |
| Ethnicity[T.Other] | 5.47E-01 | 6.56E-01 | 0.834 | 0.40452 | | 1.727543 |
| Ethnicity[T.Pakistani] | 5.85E-01 | 5.36E-01 | 1.092 | 0.2749 | | 1.79553 |
| Ethnicity[T.Bangladeshi] | 8.20E-01 | 1.09E+00 | 0.752 | 0.45219 | | 2.271408 |
| Ethnicity[T.Unknown] | 1.49E+01 | 1.40E+03 | 0.011 | 0.99154 | | 2899358 |
| Disability[T.Disabled/No DSA] | -8.89E-01 | 5.70E-01 | -1.559 | 0.11896 | | 0.411108 |
| Disability[T.Disabled/DSA] | -2.54E-01 | 6.23E-01 | -0.407 | 0.68416 | | 0.776002 |

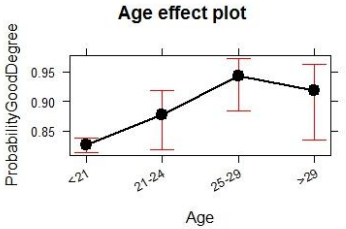
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Arch, build & plan] | 1.62E+01 | 1.09E+03 | 0.015 | 0.98815 | | 10532750 |
| SubjectEND[T.Arts & Design] | 1.16E+00 | 1.12E+00 | 1.039 | 0.299 | | 3.202719 |
| SubjectEND[T.Bio Sci] | 1.80E+00 | 7.15E-01 | 2.511 | 0.01203 | * | 6.019475 |
| SubjectEND[T.Business ] | 1.25E+00 | 6.62E-01 | 1.89 | 0.05874 | . | 3.493835 |
| SubjectEND[T.Computer Sci] | 1.59E+00 | 1.11E+00 | 1.435 | 0.15135 | | 4.898848 |
| SubjectEND[T.Engineering & tech] | 2.41E-01 | 5.37E-01 | 0.449 | 0.65358 | | 1.272394 |
| SubjectEND[T.Geo studies] | 1.92E+00 | 1.11E+00 | 1.729 | 0.08377 | . | 6.793729 |
| SubjectEND[T.Hist & phil studies] | 1.41E+00 | 7.24E-01 | 1.954 | 0.05069 | . | 4.112372 |
| SubjectEND[T.Languages] | 1.21E+00 | 5.80E-01 | 2.091 | 0.03656 | * | 3.360198 |
| SubjectEND[T.Law] | 3.30E-01 | 6.50E-01 | 0.507 | 0.61213 | | 1.390273 |
| SubjectEND[T.Allied to med] | 9.49E-01 | 6.73E-01 | 1.41 | 0.15863 | | 2.582609 |
| SubjectEND[T.Medicine & dent] | -1.55E+00 | 5.84E-01 | -2.657 | 0.00789 | ** | 0.211824 |
| SubjectEND[T.MIXED] | 1.16E+00 | 5.88E-01 | 1.963 | 0.04969 | * | 3.174023 |
| SubjectEND[T.Physical Sci] | 4.53E-01 | 5.22E-01 | 0.868 | 0.38542 | | 1.572395 |
| SubjectEND[T.Social studies] | 1.05E+00 | 5.91E-01 | 1.782 | 0.07481 | . | 2.863372 |
| POLAR[T.Q2] | 8.35E-02 | 4.27E-01 | 0.195 | 0.84511 | | 1.087031 |
| POLAR[T.Q3] | 3.87E-02 | 3.98E-01 | 0.097 | 0.92249 | | 1.039479 |
| POLAR[T.Q4] | 4.63E-01 | 4.13E-01 | 1.119 | 0.2631 | | 1.588039 |
| POLAR[T.Q5] | 6.21E-01 | 4.09E-01 | 1.517 | 0.1293 | | 1.860788 |
| DistanceFromHome | 2.53E-04 | 1.41E-03 | 0.179 | 0.8576 | | 1.000253 |
| NSSScoreEND | 1.99E-02 | 1.20E-02 | 1.655 | 0.09803 | . | 1.020048 |
| DegreeSizeEND | 1.86E-05 | 1.28E-03 | 0.014 | 0.98844 | | 1.000019 |
| Clearing[T.Non-Clearing] | 4.76E-01 | 5.61E-01 | 0.848 | 0.39632 | | 1.609623 |
| TariffALevs | 7.24E-03 | 3.86E-03 | 1.874 | 0.06092 | . | 1.007261 |
| Hardship[T.Y] | 1.57E+01 | 1.62E+03 | 0.01 | 0.99229 | | 6452641 |
| FinancialAidYrAverage | -1.32E-04 | 2.91E-04 | -0.452 | 0.65102 | | 0.999868 |
| MAP[T.Not MAP] | -5.95E-01 | 1.13E+00 | -0.525 | 0.59986 | | 0.551838 |
| StartYear[T.Year2010] | -4.19E-01 | 2.54E-01 | -1.65 | 0.09901 | . | 0.657836 |
| BursaryAverageCash | 1.54E-04 | 1.47E-04 | 1.043 | 0.29684 | | 1.000154 |

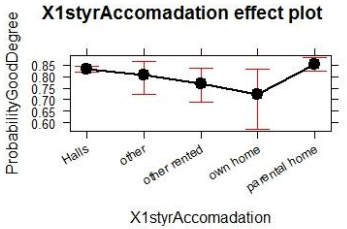
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 722.51  on 2984  degrees of freedom
Residual deviance: 640.45  on 2935  degrees of freedom
  (7695 observations deleted due to missingness)
AIC: 740.45

Number of Fisher Scoring iterations: 17
```

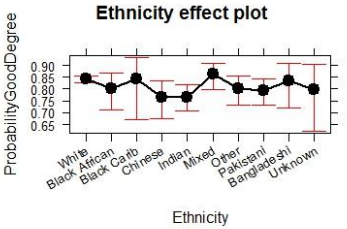
# Appendix 15 – Regression – Attainment 2009-11 Cat Entry Qual (Bursary Cat)

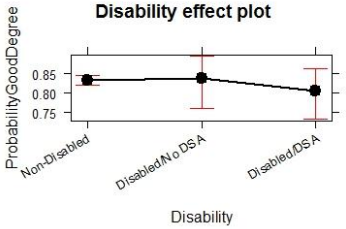


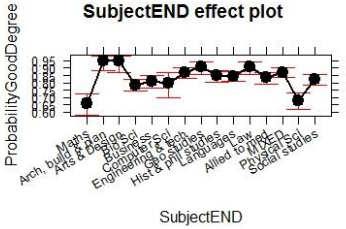



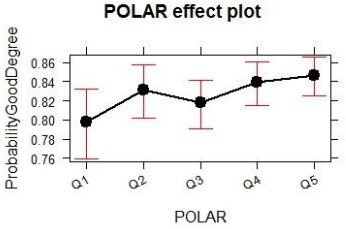



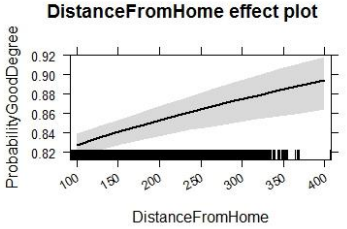



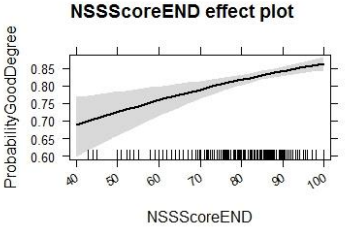



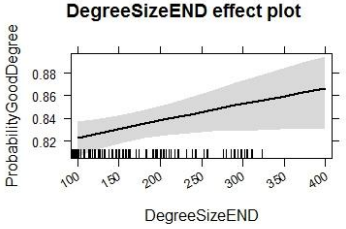



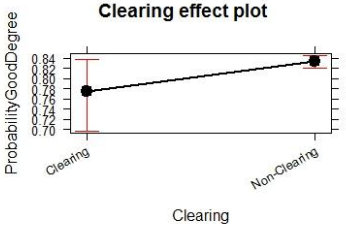



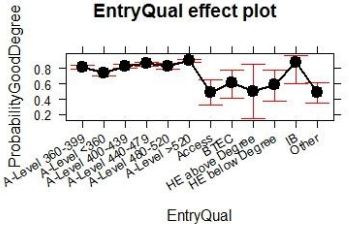



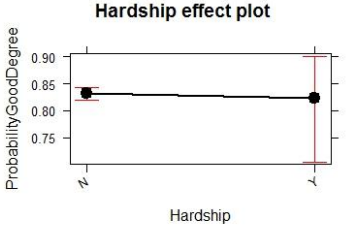



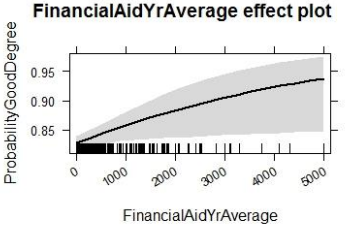



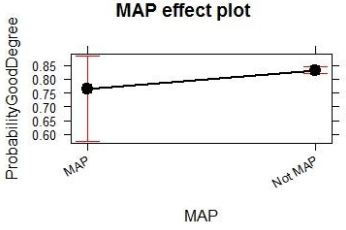



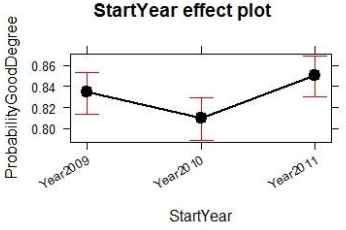



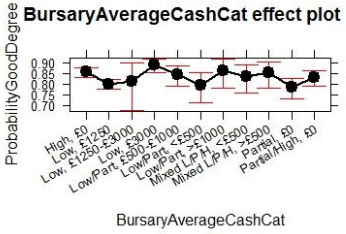



```
glm(formula = ProbabilityGoodDegree ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAv
erage + MAP + StartYear + BursaryAverageCashCat, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7537   0.3118   0.5136   0.6890   1.6765
```

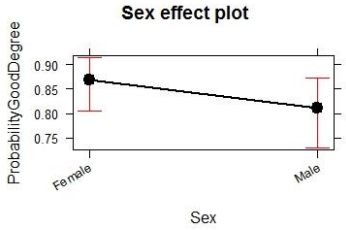
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -2.06076 | 0.697136 | -2.956 | 0.003116 | ** | 0.127358 |
| Sex[T.Male] | -0.4252 | 0.082698 | -5.142 | 2.72E-07 | *** | 0.653641 |
| Nationality[T.UK] | 0.139607 | 0.173253 | 0.806 | 0.420358 | | 1.149822 |
| Age[T.21-24] | 0.410427 | 0.240034 | 1.71 | 0.087289 | . | 1.507461 |
| Age[T.25-29] | 1.255549 | 0.402176 | 3.122 | 0.001797 | ** | 3.509763 |
| Age[T.>29] | 0.86392 | 0.417243 | 2.071 | 0.038401 | * | 2.372443 |
| X1styrAccomadation[T.other] | -0.18186 | 0.241153 | -0.754 | 0.450781 | | 0.833721 |
| X1styrAccomadation[T.other rented] | -0.39503 | 0.220096 | -1.795 | 0.072685 | . | 0.673661 |
| X1styrAccomadation[T.own home] | -0.64721 | 0.345989 | -1.871 | 0.061399 | . | 0.523504 |
| X1styrAccomadation[T.parental home] | 0.176302 | 0.134926 | 1.307 | 0.19133 | | 1.192798 |
| Ethnicity[T.Black African] | -0.28495 | 0.253727 | -1.123 | 0.261411 | | 0.752051 |
| Ethnicity[T.Black Carib] | -0.00243 | 0.490188 | -0.005 | 0.996045 | | 0.997573 |
| Ethnicity[T.Chinese] | -0.49677 | 0.235966 | -2.105 | 0.035271 | * | 0.608496 |
| Ethnicity[T.Indian] | -0.48815 | 0.166915 | -2.925 | 0.00345 | ** | 0.613764 |
| Ethnicity[T.Mixed] | 0.160354 | 0.236177 | 0.679 | 0.497164 | | 1.173927 |
| Ethnicity[T.Other] | -0.28591 | 0.198507 | -1.44 | 0.149777 | | 0.751328 |
| Ethnicity[T.Pakistani] | -0.3367 | 0.180906 | -1.861 | 0.062717 | . | 0.714123 |
| Ethnicity[T.Bangladeshi] | -0.04804 | 0.353441 | -0.136 | 0.891891 | | 0.953099 |
| Ethnicity[T.Unknown] | -0.30246 | 0.452354 | -0.669 | 0.503733 | | 0.739001 |
| Disability[T.Disabled/No DSA] | 0.042615 | 0.254383 | 0.168 | 0.866957 | | 1.043536 |
| Disability[T.Disabled/DSA] | -0.18415 | 0.21455 | -0.858 | 0.390729 | | 0.831813 |
| SubjectEND[T.Arch, build & plan] | 2.321266 | 0.525366 | 4.418 | 9.94E-06 | *** | 10.18857 |
| SubjectEND[T.Arts & Design] | 2.287753 | 0.549513 | 4.163 | 3.14E-05 | *** | 9.852773 |

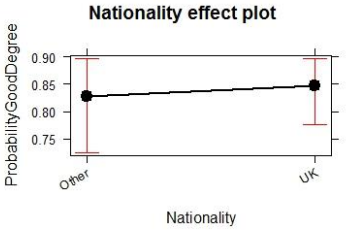
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Bio Sci] | 0.652361 | 0.199045 | 3.277 | 0.001047 | ** | 1.92007 |
| SubjectEND[T.Business ] | 0.794664 | 0.213168 | 3.728 | 0.000193 | *** | 2.213697 |
| SubjectEND[T.Computer Sci] | 0.719378 | 0.314616 | 2.287 | 0.022224 | * | 2.053155 |
| SubjectEND[T.Engineering & tech] | 1.241491 | 0.234352 | 5.298 | 1.17E-07 | *** | 3.46077 |
| SubjectEND[T.Geo studies] | 1.650349 | 0.323266 | 5.105 | 3.30E-07 | *** | 5.208797 |
| SubjectEND[T.Hist & phil studies] | 1.074178 | 0.23199 | 4.63 | 3.65E-06 | *** | 2.927585 |
| SubjectEND[T.Languages] | 1.040074 | 0.216318 | 4.808 | 1.52E-06 | *** | 2.829428 |
| SubjectEND[T.Law] | 1.630653 | 0.294774 | 5.532 | 3.17E-08 | *** | 5.107208 |
| SubjectEND[T.Allied to med] | 0.976113 | 0.225688 | 4.325 | 1.52E-05 | *** | 2.654119 |
| SubjectEND[T.MIXED] | 1.27661 | 0.216883 | 5.886 | 3.95E-09 | *** | 3.584469 |
| SubjectEND[T.Physical Sci] | 0.09627 | 0.202014 | 0.477 | 0.633684 | | 1.101056 |
| SubjectEND[T.Social studies] | 0.889347 | 0.21041 | 4.227 | 2.37E-05 | *** | 2.43354 |
| POLAR[T.Q2] | 0.222 | 0.149613 | 1.484 | 0.137853 | | 1.248571 |
| POLAR[T.Q3] | 0.126384 | 0.142744 | 0.885 | 0.375949 | | 1.134717 |
| POLAR[T.Q4] | 0.278622 | 0.14298 | 1.949 | 0.051334 | . | 1.321307 |
| POLAR[T.Q5] | 0.330283 | 0.140532 | 2.35 | 0.018761 | * | 1.391362 |
| DistanceFromHome | 0.001877 | 0.000471 | 3.988 | 6.65E-05 | *** | 1.001879 |
| NSSScoreEND | 0.017542 | 0.00442 | 3.969 | 7.21E-05 | *** | 1.017697 |
| DegreeSizeEND | 0.001119 | 0.000539 | 2.076 | 0.037933 | * | 1.001119 |
| Clearing[T.Non-Clearing] | 0.370134 | 0.20911 | 1.77 | 0.07672 | . | 1.447928 |
| EntryQual[T.A-Level <360] | -0.47279 | 0.129182 | -3.66 | 0.000252 | *** | 0.623264 |
| EntryQual[T.A-Level 400-439] | 0.086758 | 0.132668 | 0.654 | 0.513144 | | 1.090633 |
| EntryQual[T.A-Level 440-479] | 0.321285 | 0.143349 | 2.241 | 0.025008 | * | 1.378899 |
| EntryQual[T.A-Level 480-520] | 0.094393 | 0.155406 | 0.607 | 0.543586 | | 1.098992 |
| EntryQual[T.A-Level >520] | 0.748702 | 0.155422 | 4.817 | 1.46E-06 | *** | 2.114254 |
| EntryQual[T.Access] | -1.55899 | 0.364586 | -4.276 | 1.90E-05 | *** | 0.210348 |
| EntryQual[T.BTEC] | -1.07034 | 0.427346 | -2.505 | 0.012258 | * | 0.342892 |
| EntryQual[T.HE above Degree] | -1.52819 | 0.897898 | -1.702 | 0.088762 | . | 0.216928 |
| EntryQual[T.HE below Degree] | -1.13096 | 0.476679 | -2.373 | 0.017664 | * | 0.322724 |
| EntryQual[T.IB] | 0.454496 | 0.794545 | 0.572 | 0.567308 | | 1.57538 |
| EntryQual[T.Other] | -1.57702 | 0.29731 | -5.304 | 1.13E-07 | *** | 0.206589 |
| Hardship[T.Y] | -0.06127 | 0.34039 | -0.18 | 0.857146 | | 0.940566 |

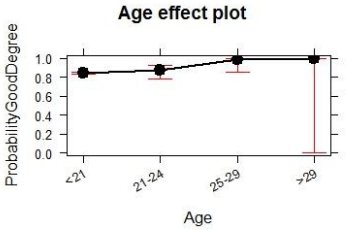
| | | | | | | |
|---|---|---|---|---|---|---|
| FinancialAidYrAverage | 0.000231 | 0.000105 | 2.203 | 0.027612 | * | 1.000231 |
| MAP[T.Not MAP] | 0.428108 | 0.443016 | 0.966 | 0.333869 | | 1.534351 |
| StartYear[T.Year2010] | -0.16842 | 0.095638 | -1.761 | 0.078235 | . | 0.844998 |
| StartYear[T.Year2011] | 0.121073 | 0.106237 | 1.14 | 0.254434 | | 1.128707 |
| BursaryAverageCashCat[T.Low, £1250] | -0.40162 | 0.119057 | -3.373 | 0.000743 | *** | 0.669237 |
| BursaryAverageCashCat[T.Low, £1250-£3000] | -0.31662 | 0.388 | -0.816 | 0.41448 | | 0.728606 |
| BursaryAverageCashCat[T.Low, £3000] | 0.297792 | 0.182689 | 1.63 | 0.103091 | | 1.346881 |
| BursaryAverageCashCat[T.Low/Part, £500-£1000] | -0.10956 | 0.20854 | -0.525 | 0.599328 | | 0.896229 |
| BursaryAverageCashCat[T.Low/Part, <£500] | -0.44666 | 0.242731 | -1.84 | 0.06575 | . | 0.639764 |
| BursaryAverageCashCat[T.Low/Part, >£1000] | 0.055902 | 0.301697 | 0.185 | 0.853 | | 1.057494 |
| BursaryAverageCashCat[T.Mixed L/P/H, <£500] | -0.17039 | 0.261798 | -0.651 | 0.515147 | | 0.843336 |
| BursaryAverageCashCat[T.Mixed L/P/H, >£500] | -0.03104 | 0.267077 | -0.116 | 0.907486 | | 0.96944 |
| BursaryAverageCashCat[T.Partial, £0] | -0.49898 | 0.169851 | -2.938 | 0.003306 | ** | 0.607147 |
| BursaryAverageCashCat[T.Partial/High, £0] | -0.20721 | 0.163792 | -1.265 | 0.205846 | | 0.81285 |

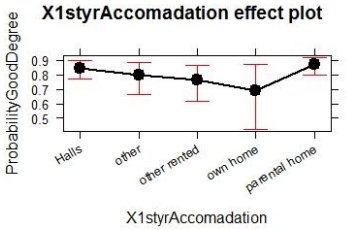
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4518.0  on 4544  degrees of freedom
Residual deviance: 4079.3  on 4476  degrees of freedom
  (10966 observations deleted due to missingness)
AIC: 4217.3

Number of Fisher Scoring iterations: 5
```

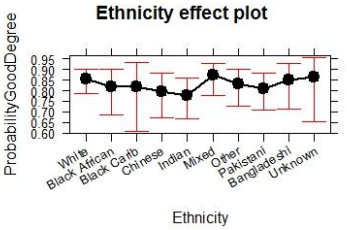
## Appendix 16 – Regression - Attainment 2009-11 A-level Tariff (Bursary Cat)

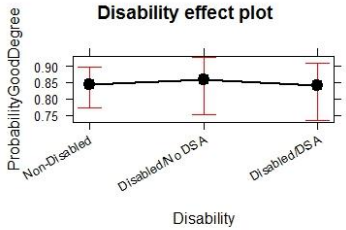


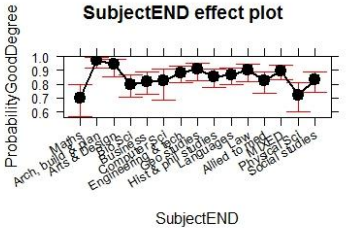



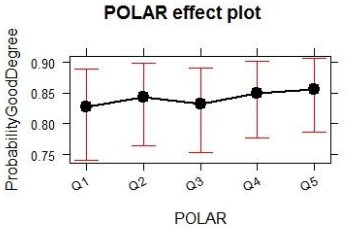



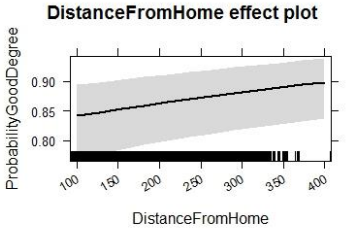



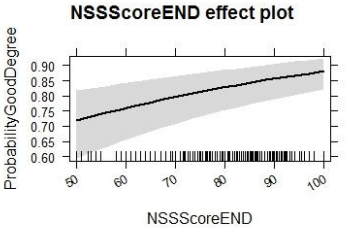



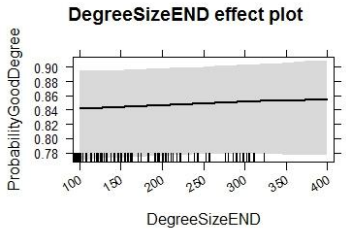



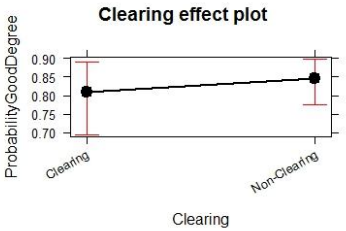



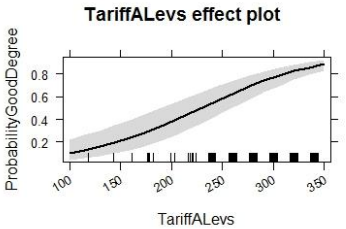



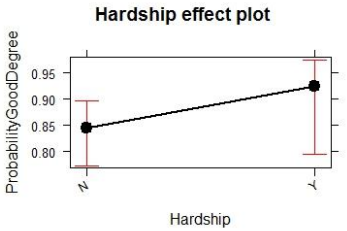



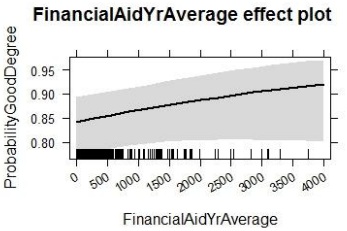



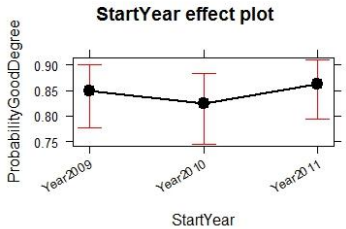



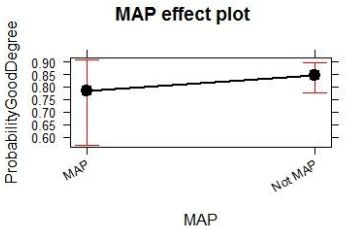



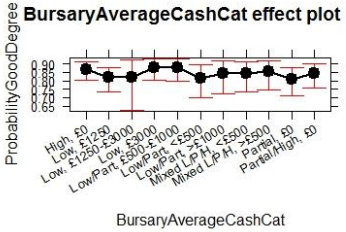



```
glm(formula = ProbabilityGoodDegree ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + TariffALevs + Hardship + FinancialAidYr
Average + StartYear + MAP + BursaryAverageCashCat, family = binomial(logit),
    data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5534   0.3172   0.4913   0.6672   2.7056
```

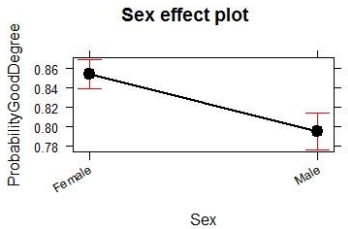
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -7.28E+00 | 9.23E-01 | -7.89 | 3.02E-15 | *** | 0.000689 |
| Sex[T.Male] | -4.30E-01 | 8.79E-02 | -4.894 | 9.90E-07 | *** | 0.650314 |
| Nationality[T.UK] | 1.42E-01 | 2.03E-01 | 0.703 | 0.481904 | | 1.153038 |
| Age[T.21-24] | 2.46E-01 | 3.22E-01 | 0.764 | 0.444913 | | 1.278772 |
| Age[T.25-29] | 2.39E+00 | 1.19E+00 | 2.002 | 0.045328 | * | 10.86993 |
| Age[T.>29] | 1.35E+01 | 2.43E+02 | 0.055 | 0.955747 | | 700815.5 |
| X1styrAccomadation[T.other] | -3.32E-01 | 2.70E-01 | -1.228 | 0.219501 | | 0.717846 |
| X1styrAccomadation[T.other rented] | -5.23E-01 | 2.68E-01 | -1.954 | 0.050643 | . | 0.592858 |
| X1styrAccomadation[T.own home] | -8.88E-01 | 5.23E-01 | -1.698 | 0.08947 | . | 0.411601 |
| X1styrAccomadation[T.parental home] | 1.91E-01 | 1.44E-01 | 1.329 | 0.183861 | | 1.210217 |
| Ethnicity[T.Black African] | -2.66E-01 | 2.91E-01 | -0.915 | 0.360044 | | 0.766516 |
| Ethnicity[T.Black Carib] | -2.43E-01 | 5.07E-01 | -0.48 | 0.63134 | | 0.784036 |
| Ethnicity[T.Chinese] | -4.06E-01 | 2.40E-01 | -1.695 | 0.090068 | . | 0.666377 |
| Ethnicity[T.Indian] | -4.99E-01 | 1.75E-01 | -2.849 | 0.004381 | ** | 0.607016 |
| Ethnicity[T.Mixed] | 1.59E-01 | 2.60E-01 | 0.61 | 0.541706 | | 1.171752 |
| Ethnicity[T.Other] | -1.58E-01 | 2.25E-01 | -0.701 | 0.483433 | | 0.854191 |
| Ethnicity[T.Pakistani] | -3.03E-01 | 1.94E-01 | -1.56 | 0.11869 | | 0.738599 |
| Ethnicity[T.Bangladeshi] | -1.63E-02 | 3.70E-01 | -0.044 | 0.964799 | | 0.983812 |
| Ethnicity[T.Unknown] | 9.73E-02 | 5.82E-01 | 0.167 | 0.867123 | | 1.10218 |
| Disability[T.Disabled/No DSA] | 1.20E-01 | 2.82E-01 | 0.423 | 0.672033 | | 1.126933 |

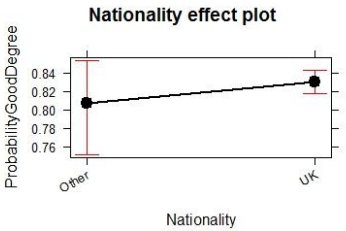
| | | | | | | |
|---|---|---|---|---|---|---|
| Disability[T.Disabled/DSA] | -3.99E-02 | 2.35E-01 | -0.169 | 0.865455 | | 0.960905 |
| SubjectEND[T.Arch, build & plan] | 2.94E+00 | 6.51E-01 | 4.508 | 6.53E-06 | *** | 18.8215 |
| SubjectEND[T.Arts & Design] | 2.04E+00 | 5.52E-01 | 3.695 | 0.00022 | *** | 7.690609 |
| SubjectEND[T.Bio Sci] | 5.57E-01 | 2.02E-01 | 2.758 | 0.005823 | ** | 1.74473 |
| SubjectEND[T.Business ] | 6.88E-01 | 2.24E-01 | 3.074 | 0.002114 | ** | 1.99013 |
| SubjectEND[T.Computer Sci] | 7.12E-01 | 3.38E-01 | 2.105 | 0.035311 | * | 2.037452 |
| SubjectEND[T.Engineering & tech] | 1.20E+00 | 2.45E-01 | 4.87 | 1.11E-06 | *** | 3.303558 |
| SubjectEND[T.Geo studies] | 1.47E+00 | 3.37E-01 | 4.357 | 1.32E-05 | *** | 4.349235 |
| SubjectEND[T.Hist & phil studies] | 9.65E-01 | 2.42E-01 | 3.996 | 6.44E-05 | *** | 2.62505 |
| SubjectEND[T.Languages] | 1.08E+00 | 2.24E-01 | 4.805 | 1.55E-06 | *** | 2.932924 |
| SubjectEND[T.Law] | 1.39E+00 | 3.09E-01 | 4.503 | 6.68E-06 | *** | 4.018867 |
| SubjectEND[T.Allied to med] | 7.37E-01 | 2.31E-01 | 3.187 | 0.001437 | ** | 2.090075 |
| SubjectEND[T.MIXED] | 1.35E+00 | 2.27E-01 | 5.924 | 3.15E-09 | *** | 3.838187 |
| SubjectEND[T.Physical Sci] | 1.19E-01 | 2.06E-01 | 0.577 | 0.564107 | | 1.126145 |
| SubjectEND[T.Social studies] | 7.65E-01 | 2.17E-01 | 3.532 | 0.000413 | *** | 2.148779 |
| POLAR[T.Q2] | 1.13E-01 | 1.64E-01 | 0.685 | 0.493463 | | 1.119184 |
| POLAR[T.Q3] | 4.10E-02 | 1.56E-01 | 0.263 | 0.792775 | | 1.0418 |
| POLAR[T.Q4] | 1.66E-01 | 1.55E-01 | 1.067 | 0.285946 | | 1.180219 |
| POLAR[T.Q5] | 2.19E-01 | 1.52E-01 | 1.446 | 0.148303 | | 1.24508 |
| DistanceFromHome | 1.70E-03 | 4.98E-04 | 3.408 | 0.000654 | *** | 1.001696 |
| NSSScoreEND | 2.11E-02 | 4.74E-03 | 4.458 | 8.28E-06 | *** | 1.021334 |
| DegreeSizeEND | 3.46E-04 | 5.79E-04 | 0.598 | 0.54982 | | 1.000346 |
| Clearing[T.Non-Clearing] | 2.55E-01 | 2.23E-01 | 1.144 | 0.25248 | | 1.290462 |
| TariffALevs | 1.68E-02 | 1.79E-03 | 9.368 | < 2e-16 | *** | 1.016891 |
| Hardship[T.Y] | 8.07E-01 | 5.37E-01 | 1.502 | 0.133039 | | 2.241847 |
| FinancialAidYrAverage | 1.95E-04 | 1.25E-04 | 1.562 | 0.118373 | | 1.000195 |
| StartYear[T.Year2010] | -1.78E-01 | 1.02E-01 | -1.752 | 0.079738 | . | 0.836775 |
| StartYear[T.Year2011] | 1.04E-01 | 1.13E-01 | 0.916 | 0.359777 | | 1.109157 |
| MAP[T.Not MAP] | 4.14E-01 | 4.62E-01 | 0.896 | 0.370477 | | 1.512252 |

| | | | | | | |
|---|---|---|---|---|---|---|
| BursaryAverageCashCat[T.Low, £1250] | -3.88E-01 | 1.23E-01 | -3.161 | 0.001572 | ** | 0.678141 |
| BursaryAverageCashCat[T.Low, £1250-£3000] | -3.88E-01 | 4.66E-01 | -0.833 | 0.405025 | | 0.678616 |
| BursaryAverageCashCat[T.Low, £3000] | 9.21E-02 | 1.99E-01 | 0.463 | 0.643595 | | 1.096453 |
| BursaryAverageCashCat[T.Low/Part, £500-£1000] | 8.79E-02 | 2.27E-01 | 0.387 | 0.698995 | | 1.091857 |
| BursaryAverageCashCat[T.Low/Part, <£500] | -4.11E-01 | 2.54E-01 | -1.619 | 0.105513 | | 0.663252 |
| BursaryAverageCashCat[T.Low/Part, >£1000] | -1.90E-01 | 3.13E-01 | -0.607 | 0.544148 | | 0.827207 |
| BursaryAverageCashCat[T.Mixed L/P/H, <£500] | -2.07E-01 | 2.73E-01 | -0.757 | 0.448793 | | 0.813345 |
| BursaryAverageCashCat[T.Mixed L/P/H, >£500] | -1.33E-01 | 2.77E-01 | -0.48 | 0.63146 | | 0.875553 |
| BursaryAverageCashCat[T.Partial, £0] | -4.45E-01 | 1.77E-01 | -2.519 | 0.011765 | * | 0.640632 |
| BursaryAverageCashCat[T.Partial/High, £0] | -2.16E-01 | 1.69E-01 | -1.282 | 0.199687 | | 0.805494 |

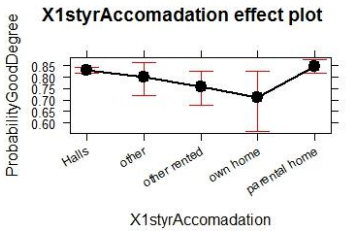
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)
    Null deviance: 4014.7  on 4194  degrees of freedom
Residual deviance: 3626.6  on 4136  degrees of freedom
  (11316 observations deleted due to missingness)
AIC: 3744.6

Number of Fisher Scoring iterations: 12
```

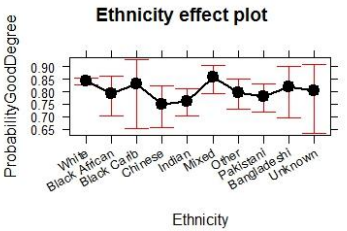
## Appendix 17 – Regression - Attainment 2010-11 Cat Entry Quals (Bursary Cash)

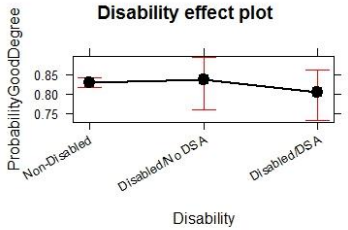


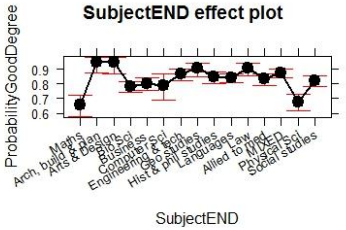



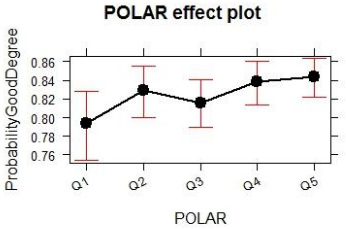


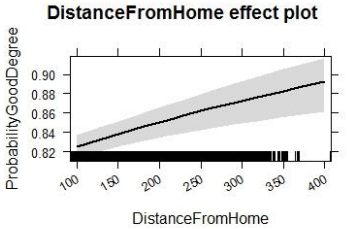


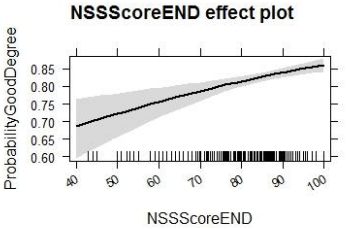



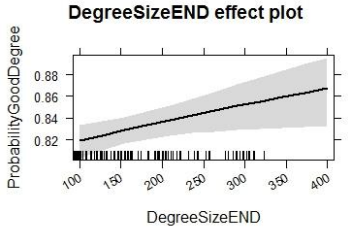



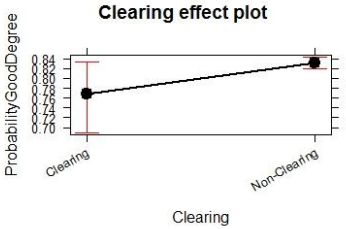



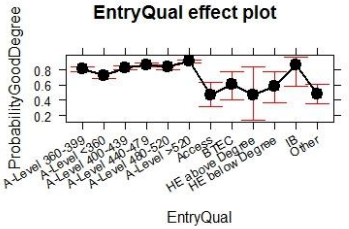



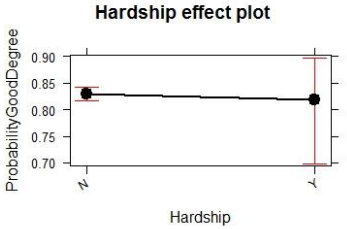



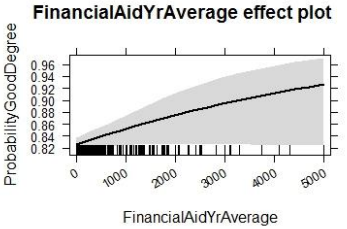



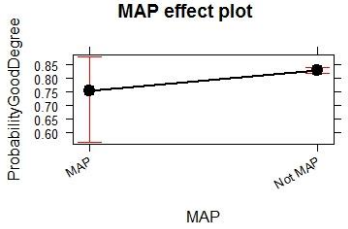



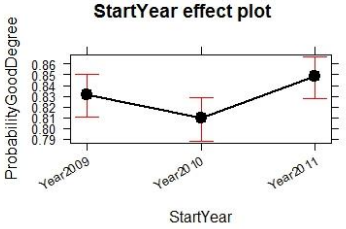



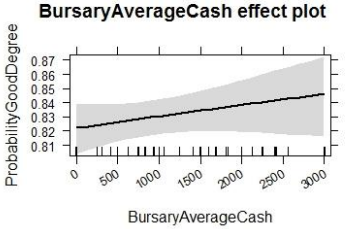



```
glm(formula = ProbabilityGoodDegree ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAv
erage + MAP + StartYear + BursaryAverageCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7767   0.3253   0.5221   0.6864   1.7782
```

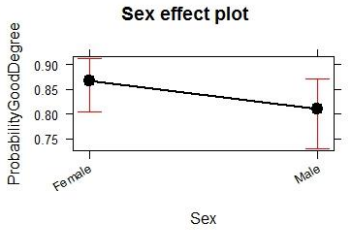
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -2.46E+00 | 6.89E-01 | -3.575 | 0.00035 | *** | 0.085264 |
| Sex[T.Male] | -4.11E-01 | 8.24E-02 | -4.99 | 6.04E-07 | *** | 0.663053 |
| Nationality[T.UK] | 1.57E-01 | 1.73E-01 | 0.906 | 0.365076 | | 1.169996 |
| Age[T.>29] | 7.63E-01 | 4.17E-01 | 1.832 | 0.066999 | . | 2.144486 |
| Age[T.21-24] | 3.51E-01 | 2.38E-01 | 1.477 | 0.139676 | | 1.421056 |
| Age[T.25-29] | 1.14E+00 | 3.99E-01 | 2.855 | 0.0043 | ** | 3.126768 |
| X1styrAccomadation[T.other] | -1.94E-01 | 2.40E-01 | -0.81 | 0.417834 | | 0.823329 |
| X1styrAccomadation[T.other rented] | -4.39E-01 | 2.20E-01 | -1.997 | 0.045834 | * | 0.644745 |
| X1styrAccomadation[T.own home] | -6.81E-01 | 3.45E-01 | -1.972 | 0.048586 | * | 0.506009 |
| X1styrAccomadation[T.parental home] | 1.38E-01 | 1.34E-01 | 1.029 | 0.303321 | | 1.147976 |
| Ethnicity[T.Black African] | -3.24E-01 | 2.53E-01 | -1.279 | 0.200985 | | 0.72325 |
| Ethnicity[T.Black Carib] | -7.71E-02 | 4.88E-01 | -0.158 | 0.87452 | | 0.925844 |
| Ethnicity[T.Chinese] | -5.66E-01 | 2.34E-01 | -2.419 | 0.015576 | * | 0.567849 |
| Ethnicity[T.Indian] | -5.01E-01 | 1.66E-01 | -3.026 | 0.002481 | ** | 0.605985 |
| Ethnicity[T.Mixed] | 1.20E-01 | 2.35E-01 | 0.512 | 0.608443 | | 1.127948 |
| Ethnicity[T.Other] | -3.02E-01 | 1.98E-01 | -1.523 | 0.127766 | | 0.739338 |
| Ethnicity[T.Pakistani] | -4.02E-01 | 1.79E-01 | -2.245 | 0.024744 | * | 0.668847 |
| Ethnicity[T.Bangladeshi] | -1.52E-01 | 3.52E-01 | -0.432 | 0.665739 | | 0.858731 |
| Ethnicity[T.Unknown] | -2.54E-01 | 4.47E-01 | -0.568 | 0.570028 | | 0.775925 |
| Disability[T.Disabled/No DSA] | 5.21E-02 | 2.54E-01 | 0.205 | 0.837194 | | 1.053513 |
| Disability[T.Disabled/DSA] | -1.71E-01 | 2.14E-01 | -0.801 | 0.422879 | | 0.842485 |
| SubjectEND[T.Arch, build & plan] | 2.26E+00 | 5.23E-01 | 4.321 | 1.55E-05 | *** | 9.573511 |
| SubjectEND[T.Arts & Design] | 2.29E+00 | 5.49E-01 | 4.176 | 2.97E-05 | *** | 9.904607 |

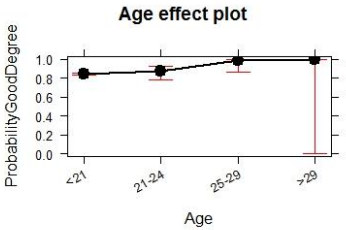
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Bio Sci] | 6.48E-01 | 1.98E-01 | 3.27 | 0.001074 | ** | 1.910949 |
| SubjectEND[T.Business ] | 7.82E-01 | 2.12E-01 | 3.684 | 0.00023 | *** | 2.185621 |
| SubjectEND[T.Computer Sci] | 6.94E-01 | 3.14E-01 | 2.209 | 0.027186 | * | 2.002307 |
| SubjectEND[T.Engineering & tech] | 1.24E+00 | 2.34E-01 | 5.315 | 1.07E-07 | *** | 3.459071 |
| SubjectEND[T.Geo studies] | 1.65E+00 | 3.22E-01 | 5.108 | 3.26E-07 | *** | 5.191382 |
| SubjectEND[T.Hist & phil studies] | 1.08E+00 | 2.31E-01 | 4.661 | 3.14E-06 | *** | 2.938796 |
| SubjectEND[T.Languages] | 1.04E+00 | 2.15E-01 | 4.813 | 1.48E-06 | *** | 2.820742 |
| SubjectEND[T.Law] | 1.66E+00 | 2.94E-01 | 5.65 | 1.61E-08 | *** | 5.254054 |
| SubjectEND[T.Allied to med] | 9.69E-01 | 2.25E-01 | 4.317 | 1.58E-05 | *** | 2.636099 |
| SubjectEND[T.MIXED] | 1.29E+00 | 2.16E-01 | 5.965 | 2.45E-09 | *** | 3.625528 |
| SubjectEND[T.Physical Sci] | 9.00E-02 | 2.01E-01 | 0.448 | 0.654289 | | 1.094152 |
| SubjectEND[T.Social studies] | 8.92E-01 | 2.09E-01 | 4.259 | 2.05E-05 | *** | 2.439517 |
| POLAR[T.Q2] | 2.35E-01 | 1.49E-01 | 1.578 | 0.114497 | | 1.264909 |
| POLAR[T.Q3] | 1.43E-01 | 1.42E-01 | 1.005 | 0.314698 | | 1.15373 |
| POLAR[T.Q4] | 2.98E-01 | 1.43E-01 | 2.092 | 0.036443 | * | 1.347431 |
| POLAR[T.Q5] | 3.39E-01 | 1.40E-01 | 2.419 | 0.015545 | * | 1.403964 |
| DistanceFromHome | 1.86E-03 | 4.68E-04 | 3.963 | 7.41E-05 | *** | 1.001858 |
| NSSScoreEND | 1.75E-02 | 4.39E-03 | 3.992 | 6.55E-05 | *** | 1.017685 |
| DegreeSizeEND | 1.22E-03 | 5.36E-04 | 2.269 | 0.023241 | * | 1.001218 |
| Clearing[T.Non-Clearing] | 3.93E-01 | 2.09E-01 | 1.884 | 0.059578 | . | 1.48127 |
| EntryQual[T.A-Level <360] | -4.81E-01 | 1.29E-01 | -3.738 | 0.000186 | *** | 0.618165 |
| EntryQual[T.A-Level 400-439] | 1.45E-01 | 1.31E-01 | 1.106 | 0.26872 | | 1.156271 |
| EntryQual[T.A-Level 440-479] | 4.08E-01 | 1.42E-01 | 2.881 | 0.00397 | ** | 1.503055 |
| EntryQual[T.A-Level 480-520] | 2.27E-01 | 1.52E-01 | 1.488 | 0.136763 | | 1.254579 |
| EntryQual[T.A-Level >520] | 9.08E-01 | 1.51E-01 | 6.013 | 1.82E-09 | *** | 2.479607 |
| EntryQual[T.Access] | -1.55E+00 | 3.63E-01 | -4.27 | 1.95E-05 | *** | 0.212248 |
| EntryQual[T.BTEC] | -9.88E-01 | 4.27E-01 | -2.311 | 0.020816 | * | 0.372507 |
| EntryQual[T.HE above Degree] | -1.55E+00 | 8.95E-01 | -1.73 | 0.083621 | . | 0.212673 |
| EntryQual[T.HE below Degree] | -1.09E+00 | 4.74E-01 | -2.304 | 0.02123 | * | 0.335209 |
| EntryQual[T.IB] | 4.57E-01 | 7.95E-01 | 0.575 | 0.565288 | | 1.579961 |
| EntryQual[T.Other] | -1.51E+00 | 2.96E-01 | -5.106 | 3.28E-07 | *** | 0.221131 |
| Hardship[T.Y] | -8.17E-02 | 3.39E-01 | -0.241 | 0.809631 | | 0.921539 |

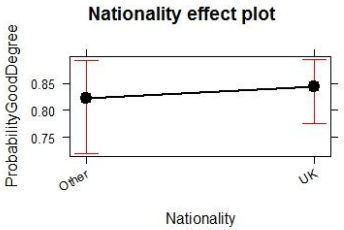
| | | | | | | |
|---|---|---|---|---|---|---|
| FinancialAidYrAverage | 1.96E-04 | 1.04E-04 | 1.893 | 0.05833 | . | 1.000196 |
| MAP[T.Not MAP] | 4.55E-01 | 4.41E-01 | 1.032 | 0.301937 | | 1.575701 |
| StartYear[T.Year2010] | -1.51E-01 | 9.51E-02 | -1.59 | 0.111826 | | 0.85959 |
| StartYear[T.Year2011] | 1.24E-01 | 1.06E-01 | 1.171 | 0.241412 | | 1.131676 |
| BursaryAverageCash | 5.83E-05 | 4.77E-05 | 1.22 | 0.222422 | | 1.000058 |

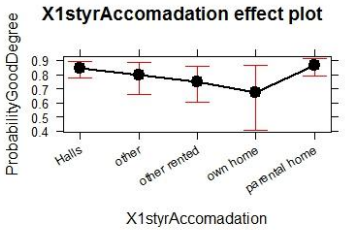
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)
    Null deviance: 4518.0  on 4544  degrees of freedom
Residual deviance: 4108.1  on 4485  degrees of freedom
  (10966 observations deleted due to missingness)
AIC: 4228.1

Number of Fisher Scoring iterations: 5
```

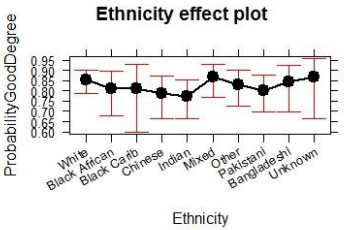
## Appendix 18 – Regression - Attainment 2009-11 Tariff A-levels (Bursary Cash)

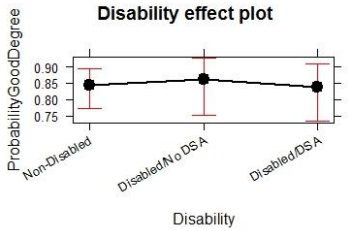


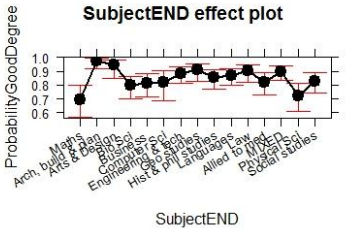



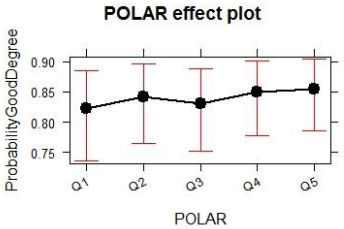



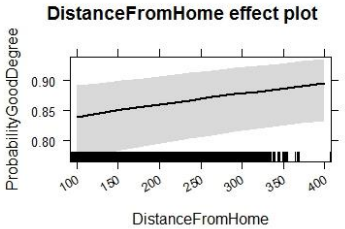



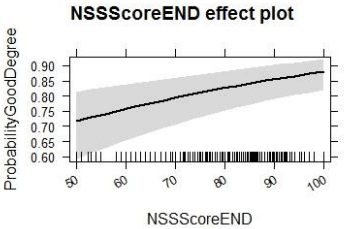



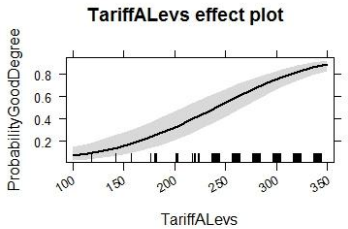



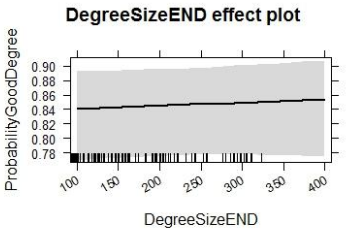



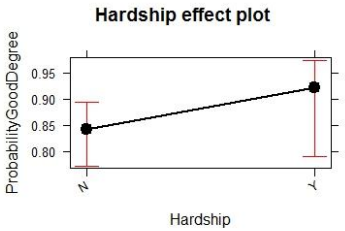



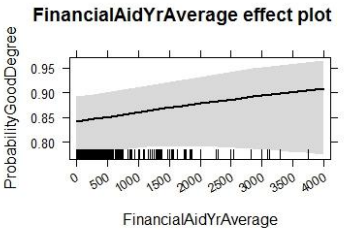



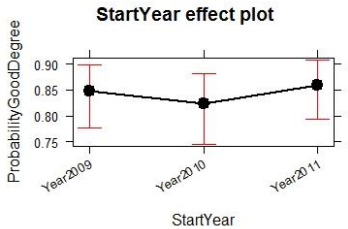



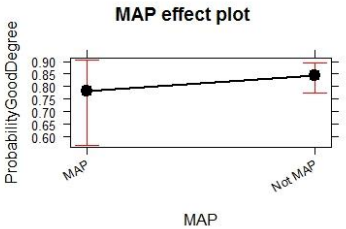



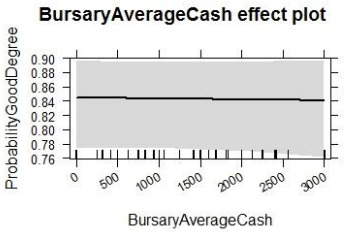




```
glm(formula = ProbabilityGoodDegree ~ Sex + Age + Nationality + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + TariffALevs + DegreeSizeEND + Clearing + Hardship + FinancialAidYr
Average + StartYear + MAP + BursaryAverageCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5374   0.3278   0.5017   0.6639   2.8189
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -8.10E+00 | 8.85E-01 | -9.155 | < 2e-16 | *** | 0.000302 |
| Sex[T.Male] | -4.20E-01 | 8.77E-02 | -4.791 | 1.66E-06 | *** | 0.657047 |
| Age[T.21-24] | 2.64E-01 | 3.22E-01 | 0.82 | 0.41209 | | 1.302649 |
| Age[T.25-29] | 2.51E+00 | 1.21E+00 | 2.086 | 0.03698 | * | 12.3419 |
| Age[T.>29] | 1.35E+01 | 2.37E+02 | 0.057 | 0.95454 | | 736747.1 |
| Nationality[T.UK] | 1.66E-01 | 2.02E-01 | 0.822 | 0.41094 | | 1.180455 |
| X1styrAccomadation[T.other] | -3.40E-01 | 2.69E-01 | -1.264 | 0.20634 | | 0.711913 |
| X1styrAccomadation[T.other rented] | -5.82E-01 | 2.66E-01 | -2.189 | 0.02862 | * | 0.558724 |
| X1styrAccomadation[T.own home] | -9.56E-01 | 5.22E-01 | -1.832 | 0.06693 | . | 0.384351 |
| X1styrAccomadation[T.parental home] | 1.54E-01 | 1.43E-01 | 1.079 | 0.28064 | | 1.166141 |
| Ethnicity[T.Black African] | -3.08E-01 | 2.90E-01 | -1.061 | 0.28866 | | 0.734989 |
| Ethnicity[T.Black Carib] | -2.86E-01 | 5.05E-01 | -0.566 | 0.57159 | | 0.751338 |
| Ethnicity[T.Chinese] | -4.48E-01 | 2.38E-01 | -1.885 | 0.05939 | . | 0.639032 |
| Ethnicity[T.Indian] | -5.26E-01 | 1.74E-01 | -3.024 | 0.00249 | ** | 0.590905 |
| Ethnicity[T.Mixed] | 1.20E-01 | 2.59E-01 | 0.463 | 0.64345 | | 1.127159 |
| Ethnicity[T.Other] | -1.73E-01 | 2.24E-01 | -0.77 | 0.44102 | | 0.841306 |
| Ethnicity[T.Pakistani] | -3.56E-01 | 1.93E-01 | -1.849 | 0.06449 | . | 0.700192 |
| Ethnicity[T.Bangladeshi] | -7.99E-02 | 3.69E-01 | -0.217 | 0.82859 | | 0.923181 |
| Ethnicity[T.Unknown] | 1.41E-01 | 5.78E-01 | 0.244 | 0.80717 | | 1.151425 |
| Disability[T.Disabled/No DSA] | 1.38E-01 | 2.81E-01 | 0.492 | 0.62277 | | 1.148435 |
| Disability[T.Disabled/DSA] | -3.09E-02 | 2.36E-01 | -0.131 | 0.89562 | | 0.969582 |
| SubjectEND[T.Arch, build & plan] | 2.93E+00 | 6.50E-01 | 4.502 | 6.72E-06 | *** | 18.69021 |
| SubjectEND[T.Arts & Design] | 1.99E+00 | 5.51E-01 | 3.616 | 0.0003 | *** | 7.322853 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Bio Sci] | 5.31E-01 | 2.00E-01 | 2.649 | 0.00806 | ** | 1.700462 |
| SubjectEND[T.Business ] | 6.48E-01 | 2.23E-01 | 2.913 | 0.00358 | ** | 1.912478 |
| SubjectEND[T.Computer Sci] | 6.96E-01 | 3.37E-01 | 2.064 | 0.03899 | * | 2.005112 |
| SubjectEND[T.Engineering & tech] | 1.19E+00 | 2.45E-01 | 4.878 | 1.07E-06 | *** | 3.296957 |
| SubjectEND[T.Geo studies] | 1.46E+00 | 3.37E-01 | 4.344 | 1.40E-05 | *** | 4.323218 |
| SubjectEND[T.Hist & phil studies] | 9.57E-01 | 2.41E-01 | 3.975 | 7.03E-05 | *** | 2.604134 |
| SubjectEND[T.Languages] | 1.07E+00 | 2.23E-01 | 4.788 | 1.68E-06 | *** | 2.909555 |
| SubjectEND[T.Law] | 1.39E+00 | 3.07E-01 | 4.522 | 6.13E-06 | *** | 4.01485 |
| SubjectEND[T.Allied to med] | 7.09E-01 | 2.30E-01 | 3.089 | 0.00201 | ** | 2.032161 |
| SubjectEND[T.MIXED] | 1.35E+00 | 2.26E-01 | 5.96 | 2.52E-09 | *** | 3.849718 |
| SubjectEND[T.Physical Sci] | 1.19E-01 | 2.04E-01 | 0.583 | 0.55977 | | 1.126595 |
| SubjectEND[T.Social studies] | 7.52E-01 | 2.15E-01 | 3.497 | 0.00047 | *** | 2.121663 |
| POLAR[T.Q2] | 1.40E-01 | 1.64E-01 | 0.854 | 0.39335 | | 1.149814 |
| POLAR[T.Q3] | 6.02E-02 | 1.55E-01 | 0.388 | 0.69796 | | 1.062081 |
| POLAR[T.Q4] | 1.96E-01 | 1.55E-01 | 1.267 | 0.20521 | | 1.216527 |
| POLAR[T.Q5] | 2.39E-01 | 1.51E-01 | 1.578 | 0.11448 | | 1.269471 |
| DistanceFromHome | 1.62E-03 | 4.95E-04 | 3.261 | 0.00111 | ** | 1.001616 |
| NSSScoreEND | 2.12E-02 | 4.71E-03 | 4.498 | 6.86E-06 | *** | 1.021406 |
| TariffALevs | 1.86E-02 | 1.66E-03 | 11.248 | < 2e-16 | *** | 1.018805 |
| DegreeSizeEND | 3.25E-04 | 5.77E-04 | 0.564 | 0.57297 | | 1.000325 |
| Clearing[T.Non-Clearing] | 2.42E-01 | 2.22E-01 | 1.087 | 0.27713 | | 1.273412 |
| Hardship[T.Y] | 7.96E-01 | 5.37E-01 | 1.481 | 0.13851 | | 2.21577 |
| FinancialAidYrAverage | 1.56E-04 | 1.24E-04 | 1.256 | 0.20896 | | 1.000156 |
| StartYear[T.Year2010] | -1.71E-01 | 1.01E-01 | -1.684 | 0.09226 | . | 0.843159 |
| StartYear[T.Year2011] | 1.02E-01 | 1.13E-01 | 0.909 | 0.36343 | | 1.107827 |
| MAP[T.Not MAP] | 4.17E-01 | 4.59E-01 | 0.909 | 0.36328 | | 1.51801 |
| BursaryAverageCash | -9.51E-06 | 5.20E-05 | -0.183 | 0.85476 | | 0.99999 |

---

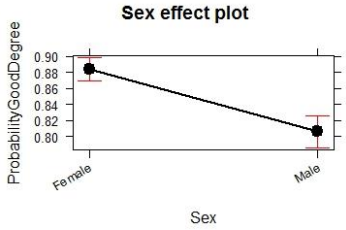
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

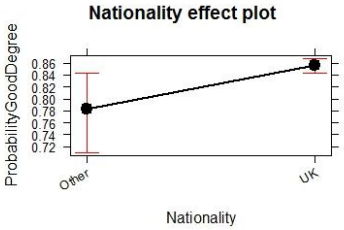
(Dispersion parameter for binomial family taken to be 1)

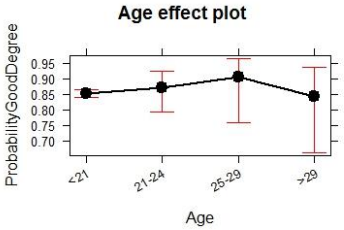
    Null deviance: 4014.7  on 4194  degrees of freedom

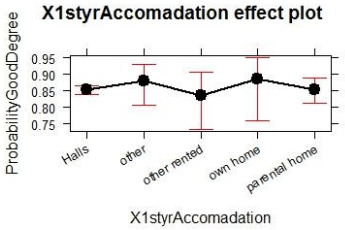
```
Residual deviance: 3645.9  on 4145  degrees of freedom
  (11316 observations deleted due to missingness)
AIC: 3745.9

Number of Fisher Scoring iterations: 12
```

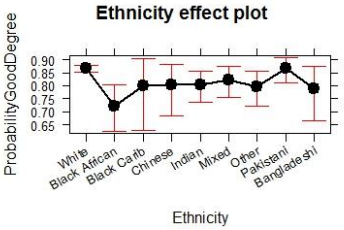
## Appendix 19 – Regression - Attainment 2012-13 Cat Entry Qual (Bursary cat)

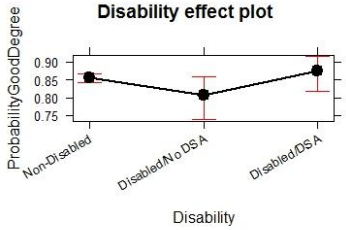


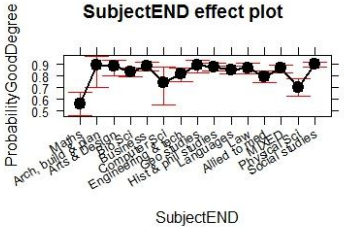



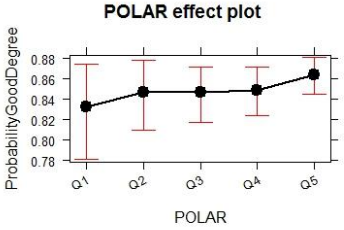



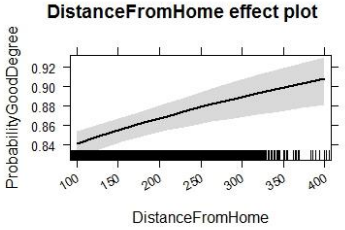



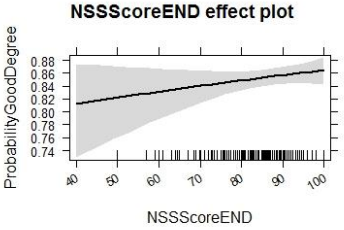



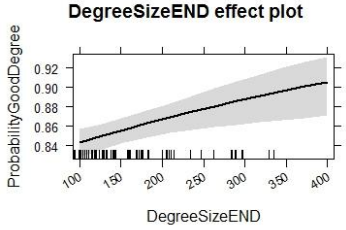



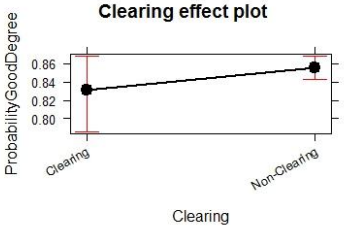



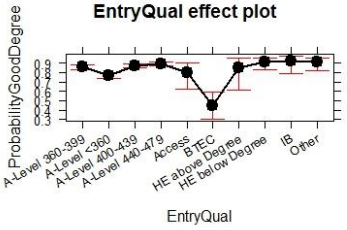



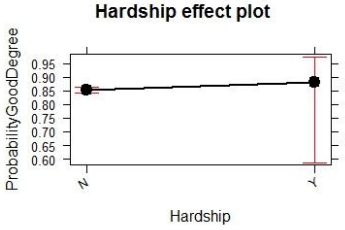



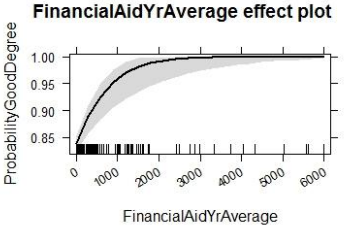



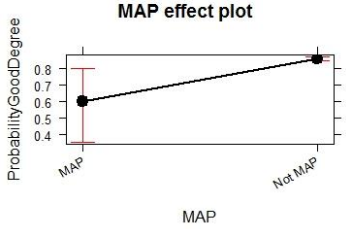



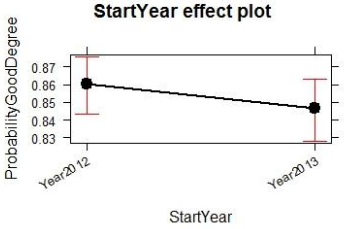



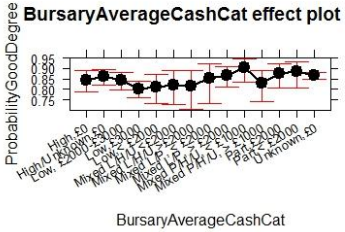



```
glm(formula = ProbabilityGoodDegree ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAv
erage + MAP + StartYear + BursaryAverageCashCat, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.7781   0.3373   0.4781   0.6225   1.9769
```

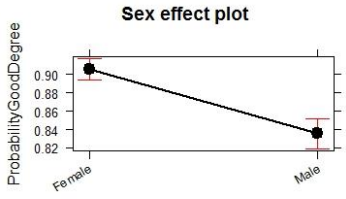
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -2.79722 | 0.8164 | -3.426 | 0.000612 | *** | 0.06098 |
| Sex[T.Male] | -0.60743 | 0.093891 | -6.47 | 9.83E-11 | *** | 0.544746 |
| Nationality[T.UK] | 0.499413 | 0.205077 | 2.435 | 0.014882 | * | 1.647754 |
| Age[T.21-24] | 0.169949 | 0.297226 | 0.572 | 0.56747 | | 1.185244 |
| Age[T.25-29] | 0.494566 | 0.570032 | 0.868 | 0.385608 | | 1.639786 |
| Age[T.>29] | -0.08019 | 0.519309 | -0.154 | 0.877283 | | 0.922942 |
| X1styrAccomadation[T.other] | 0.243758 | 0.301563 | 0.808 | 0.41891 | | 1.276035 |
| X1styrAccomadation[T.other rented] | -0.12322 | 0.324082 | -0.38 | 0.703779 | | 0.884066 |
| X1styrAccomadation[T.own home] | 0.29415 | 0.465513 | 0.632 | 0.527464 | | 1.341985 |
| X1styrAccomadation[T.parental home] | 0.013083 | 0.172666 | 0.076 | 0.939603 | | 1.013169 |
| Ethnicity[T.Black African] | -0.90375 | 0.241256 | -3.746 | 0.00018 | *** | 0.405049 |
| Ethnicity[T.Black Carib] | -0.47157 | 0.44925 | -1.05 | 0.293866 | | 0.624023 |
| Ethnicity[T.Chinese] | -0.46574 | 0.31973 | -1.457 | 0.145209 | | 0.627671 |
| Ethnicity[T.Indian] | -0.45391 | 0.199978 | -2.27 | 0.023221 | * | 0.635141 |
| Ethnicity[T.Mixed] | -0.33384 | 0.217097 | -1.538 | 0.124109 | | 0.716167 |
| Ethnicity[T.Other] | -0.49786 | 0.217026 | -2.294 | 0.021789 | * | 0.607828 |
| Ethnicity[T.Pakistani] | 0.008445 | 0.220869 | 0.038 | 0.969499 | | 1.008481 |
| Ethnicity[T.Bangladeshi] | -0.55374 | 0.327902 | -1.689 | 0.091268 | . | 0.574795 |
| Disability[T.Disabled/No DSA] | -0.34918 | 0.201409 | -1.734 | 0.082969 | . | 0.705263 |
| Disability[T.Disabled/DSA] | 0.164488 | 0.227013 | 0.725 | 0.468713 | | 1.17879 |
| SubjectEND[T.Arch, build & plan] | 1.887682 | 0.696176 | 2.712 | 0.006698 | ** | 6.604043 |
| SubjectEND[T.Arts & Design] | 1.803926 | 0.393495 | 4.584 | 4.55E-06 | *** | 6.073446 |
| SubjectEND[T.Bio Sci] | 1.376306 | 0.247725 | 5.556 | 2.76E-08 | *** | 3.960245 |

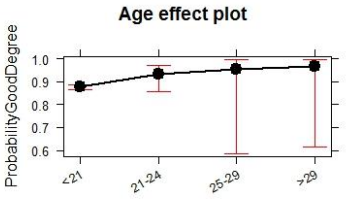
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Business ] | 1.828426 | 0.268785 | 6.803 | 1.03E-11 | *** | 6.22408 |
| SubjectEND[T.Computer Sci] | 0.836295 | 0.483175 | 1.731 | 0.083482 | . | 2.307801 |
| SubjectEND[T.Engineering & tech] | 1.262539 | 0.288272 | 4.38 | 1.19E-05 | *** | 3.534385 |
| SubjectEND[T.Geo studies] | 1.884809 | 0.351458 | 5.363 | 8.19E-08 | *** | 6.585096 |
| SubjectEND[T.Hist & phil studies] | 1.753262 | 0.267602 | 6.552 | 5.69E-11 | *** | 5.773404 |
| SubjectEND[T.Languages] | 1.514744 | 0.251733 | 6.017 | 1.77E-09 | *** | 4.548254 |
| SubjectEND[T.Law] | 1.665131 | 0.283073 | 5.882 | 4.05E-09 | *** | 5.286368 |
| SubjectEND[T.Allied to med] | 1.120254 | 0.273239 | 4.1 | 4.13E-05 | *** | 3.065632 |
| SubjectEND[T.MIXED] | 1.632358 | 0.255286 | 6.394 | 1.61E-10 | *** | 5.115921 |
| SubjectEND[T.Physical Sci] | 0.622338 | 0.268551 | 2.317 | 0.020482 | * | 1.863279 |
| SubjectEND[T.Social studies] | 1.960095 | 0.257209 | 7.621 | 2.52E-14 | *** | 7.099999 |
| POLAR[T.Q2] | 0.107901 | 0.207415 | 0.52 | 0.602913 | | 1.113937 |
| POLAR[T.Q3] | 0.103493 | 0.19371 | 0.534 | 0.593157 | | 1.109038 |
| POLAR[T.Q4] | 0.123614 | 0.190617 | 0.648 | 0.516667 | | 1.131579 |
| POLAR[T.Q5] | 0.241959 | 0.188274 | 1.285 | 0.198742 | | 1.273741 |
| DistanceFromHome | 0.002091 | 0.000527 | 3.97 | 7.18E-05 | *** | 1.002093 |
| NSSScoreEND | 0.006507 | 0.005216 | 1.248 | 0.212159 | | 1.006528 |
| DegreeSizeEND | 0.001921 | 0.00065 | 2.955 | 0.003124 | ** | 1.001923 |
| Clearing[T.Non-Clearing] | 0.187306 | 0.154781 | 1.21 | 0.226227 | | 1.205997 |
| EntryQual[T.A-Level <360] | -0.61136 | 0.128104 | -4.772 | 1.82E-06 | *** | 0.542611 |
| EntryQual[T.A-Level 400-439] | 0.107199 | 0.12917 | 0.83 | 0.406593 | | 1.113155 |
| EntryQual[T.A-Level 440-479] | 0.330902 | 0.143436 | 2.307 | 0.021056 | * | 1.392223 |
| EntryQual[T.Access] | -0.41493 | 0.466812 | -0.889 | 0.374082 | | 0.660388 |
| EntryQual[T.BTEC] | -2.02753 | 0.330038 | -6.143 | 8.08E-10 | *** | 0.13166 |
| EntryQual[T.HE above Degree] | -0.07854 | 0.65435 | -0.12 | 0.904466 | | 0.924469 |
| EntryQual[T.HE below Degree] | 0.574466 | 0.410303 | 1.4 | 0.161483 | | 1.776182 |
| EntryQual[T.IB] | 0.71919 | 0.630341 | 1.141 | 0.253889 | | 2.052769 |
| EntryQual[T.Other] | 0.528562 | 0.417086 | 1.267 | 0.205057 | | 1.69649 |
| Hardship[T.Y] | 0.241993 | 0.844002 | 0.287 | 0.774326 | | 1.273785 |
| FinancialAidYrAverage | 0.001525 | 0.000454 | 3.358 | 0.000786 | *** | 1.001527 |
| MAP[T.Not MAP] | 1.40988 | 0.532826 | 2.646 | 0.008144 | ** | 4.095463 |
| StartYear[T.Year2013] | -0.11156 | 0.094791 | -1.177 | 0.239226 | | 0.894436 |

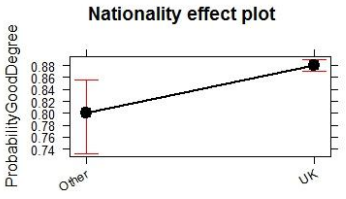
| | | | | | | |
|---|---|---|---|---|---|---|
| BursaryAverageCashCat[T.High/Unknown,£0] | 0.135877 | 0.248581 | 0.547 | 0.584648 | | 1.145541 |
| BursaryAverageCashCat[T.Low, £2000-£3000] | 0.004183 | 0.260264 | 0.016 | 0.987177 | | 1.004192 |
| BursaryAverageCashCat[T.Low,£3000] | -0.28617 | 0.230515 | -1.241 | 0.214451 | | 0.751138 |
| BursaryAverageCashCat[T.Low,< £2000] | -0.23729 | 0.305934 | -0.776 | 0.437976 | | 0.788765 |
| BursaryAverageCashCat[T.Mixed L/H/U,<£2000] | -0.16173 | 0.342193 | -0.473 | 0.636474 | | 0.850669 |
| BursaryAverageCashCat[T.Mixed L/H/U,>£2000] | -0.2094 | 0.362039 | -0.578 | 0.562999 | | 0.81107 |
| BursaryAverageCashCat[T.Mixed L/P, < £2000] | 0.054821 | 0.425469 | 0.129 | 0.897478 | | 1.056351 |
| BursaryAverageCashCat[T.Mixed L/P, > £2000] | 0.197075 | 0.286434 | 0.688 | 0.491434 | | 1.217835 |
| BursaryAverageCashCat[T.Mixed P/H/U, < £1000] | 0.557941 | 0.369274 | 1.511 | 0.130811 | | 1.747071 |
| BursaryAverageCashCat[T.Mixed P/H/U, > £1000] | -0.10013 | 0.328592 | -0.305 | 0.760583 | | 0.904723 |
| BursaryAverageCashCat[T.Part,£2000] | 0.274328 | 0.33699 | 0.814 | 0.415614 | | 1.315647 |
| BursaryAverageCashCat[T.Part,< £2000] | 0.33782 | 0.364175 | 0.928 | 0.353599 | | 1.401888 |
| BursaryAverageCashCat[T.Unknown,£0] | 0.179104 | 0.209374 | 0.855 | 0.392317 | | 1.196145 |

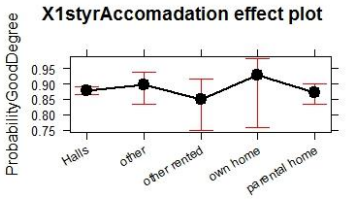
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 3621.7  on 3907  degrees of freedom
Residual deviance: 3249.4  on 3840  degrees of freedom
  (4978 observations deleted due to missingness)
AIC: 3385.4

Number of Fisher Scoring iterations: 6
```

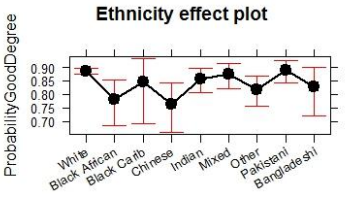
## Appendix 20 – Regression - Attainment 2012-13 A-level Tariff (Bursary Cat)

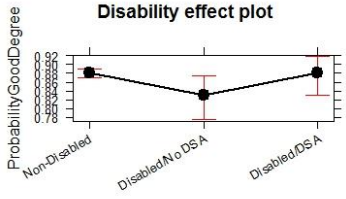


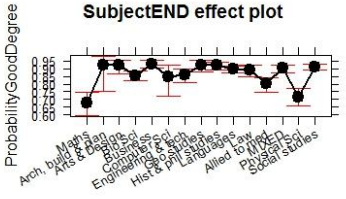



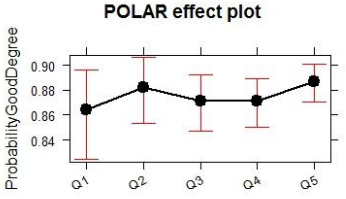



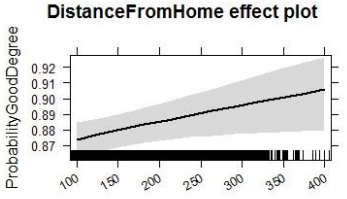



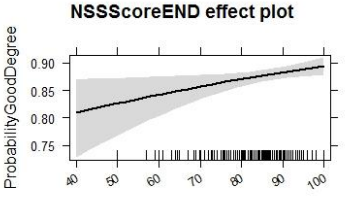



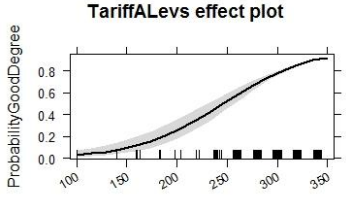



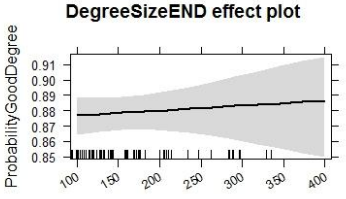



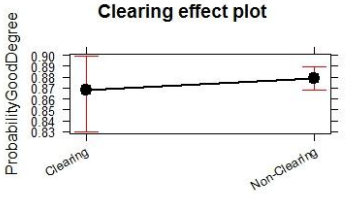



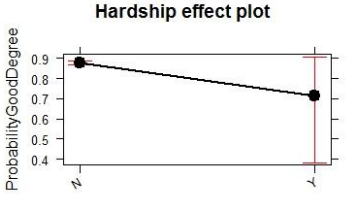



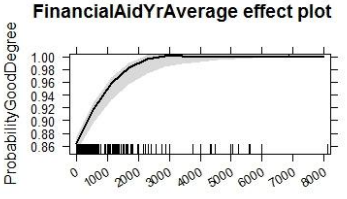



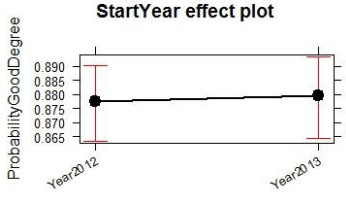



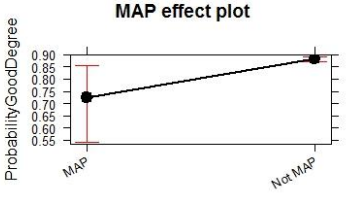



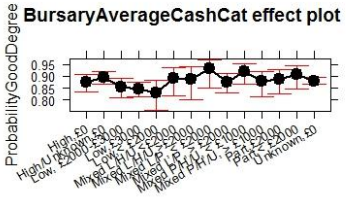



```
glm(formula = ProbabilityGoodDegree ~ Sex + Age + Nationality + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + TariffALevs + DegreeSizeEND + Clearing + Hardship + FinancialAidYr
Average + StartYear + MAP + BursaryAverageCashCat, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3564   0.2975   0.4387   0.5942   1.6668
```

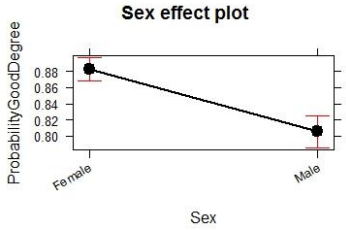
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -9.78442 | 0.909409 | -10.759 | < 2e-16 | *** | 5.63225E-05 |
| Sex[T.Male] | -0.63547 | 0.088735 | -7.161 | 7.98E-13 | *** | 0.52968759 |
| Age[T.21-24] | 0.689581 | 0.445735 | 1.547 | 0.12185 | | 1.992880341 |
| Age[T.25-29] | 1.073295 | 1.378706 | 0.778 | 0.43629 | | 2.925001812 |
| Age[T.>29] | 1.343699 | 1.452487 | 0.925 | 0.35491 | | 3.833196307 |
| Nationality[T.UK] | 0.608258 | 0.201131 | 3.024 | 0.00249 | ** | 1.83722724 |
| X1styrAccomadation[T.other] | 0.190952 | 0.29485 | 0.648 | 0.51723 | | 1.21040123 |
| X1styrAccomadation[T.other rented] | -0.24151 | 0.337813 | -0.715 | 0.47466 | | 0.785441735 |
| X1styrAccomadation[T.own home] | 0.612816 | 0.747658 | 0.82 | 0.41242 | | 1.845621911 |
| X1styrAccomadation[T.parental home] | -0.07682 | 0.159386 | -0.482 | 0.62982 | | 0.926056251 |
| Ethnicity[T.Black African] | -0.77985 | 0.261623 | -2.981 | 0.00287 | ** | 0.458473952 |
| Ethnicity[T.Black Carib] | -0.33559 | 0.465954 | -0.72 | 0.47139 | | 0.714918235 |
| Ethnicity[T.Chinese] | -0.88464 | 0.270615 | -3.269 | 0.00108 | ** | 0.412864098 |
| Ethnicity[T.Indian] | -0.26461 | 0.187812 | -1.409 | 0.15886 | | 0.767505833 |
| Ethnicity[T.Mixed] | -0.09228 | 0.223204 | -0.413 | 0.67928 | | 0.911847607 |
| Ethnicity[T.Other] | -0.54919 | 0.201733 | -2.722 | 0.00648 | ** | 0.577415193 |
| Ethnicity[T.Pakistani] | 0.032894 | 0.216364 | 0.152 | 0.87916 | | 1.033441402 |
| Ethnicity[T.Bangladeshi] | -0.48848 | 0.322465 | -1.515 | 0.12981 | | 0.613558049 |
| Disability[T.Disabled/No DSA] | -0.40262 | 0.187047 | -2.152 | 0.03136 | * | 0.668568112 |
| Disability[T.Disabled/DSA] | 0.008431 | 0.212353 | 0.04 | 0.96833 | | 1.008467044 |
| SubjectEND[T.Arch, build & plan] | 1.723352 | 0.714079 | 2.413 | 0.0158 | * | 5.603276971 |
| SubjectEND[T.Arts & Design] | 1.730463 | 0.3639 | 4.755 | 1.98E-06 | *** | 5.643266136 |
| SubjectEND[T.Bio Sci] | 1.036988 | 0.218168 | 4.753 | 2.00E-06 | *** | 2.82070908 |

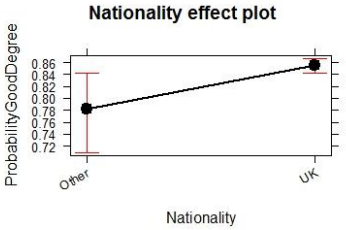
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Business ] | 1.872109 | 0.26049 | 7.187 | 6.63E-13 | *** | 6.501994006 |
| SubjectEND[T.Computer Sci] | 0.97377 | 0.425393 | 2.289 | 0.02207 | * | 2.647909339 |
| SubjectEND[T.Engineering & tech] | 1.055372 | 0.254616 | 4.145 | 3.40E-05 | *** | 2.873044589 |
| SubjectEND[T.Geo studies] | 1.775062 | 0.33269 | 5.335 | 9.53E-08 | *** | 5.900649325 |
| SubjectEND[T.Hist & phil studies] | 1.707514 | 0.246795 | 6.919 | 4.56E-12 | *** | 5.515235205 |
| SubjectEND[T.Languages] | 1.435209 | 0.227499 | 6.309 | 2.81E-10 | *** | 4.200523246 |
| SubjectEND[T.Law] | 1.341942 | 0.247602 | 5.42 | 5.97E-08 | *** | 3.826468825 |
| SubjectEND[T.Allied to med] | 0.650496 | 0.240894 | 2.7 | 0.00693 | ** | 1.91649079 |
| SubjectEND[T.MIXED] | 1.483414 | 0.230228 | 6.443 | 1.17E-10 | *** | 4.407969268 |
| SubjectEND[T.Physical Sci] | 0.19139 | 0.211745 | 0.904 | 0.36606 | | 1.210931866 |
| SubjectEND[T.Social studies] | 1.614122 | 0.229809 | 7.024 | 2.16E-12 | *** | 5.02347638 |
| POLAR[T.Q2] | 0.162686 | 0.19315 | 0.842 | 0.39963 | | 1.176667276 |
| POLAR[T.Q3] | 0.061773 | 0.178673 | 0.346 | 0.72954 | | 1.063720959 |
| POLAR[T.Q4] | 0.06097 | 0.175222 | 0.348 | 0.72787 | | 1.062867453 |
| POLAR[T.Q5] | 0.204784 | 0.17303 | 1.184 | 0.2366 | | 1.227259825 |
| DistanceFromHome | 0.001089 | 0.000484 | 2.249 | 0.02454 | * | 1.001089693 |
| NSSScoreEND | 0.011646 | 0.005068 | 2.298 | 0.02157 | * | 1.01171418 |
| TariffALevs | 0.023391 | 0.001898 | 12.324 | < 2e-16 | *** | 1.023666715 |
| DegreeSizeEND | 0.00031 | 0.000621 | 0.5 | 0.61723 | | 1.000310248 |
| Clearing[T.Non-Clearing] | 0.097714 | 0.157032 | 0.622 | 0.53378 | | 1.102647162 |
| Hardship[T.Y] | -1.07759 | 0.706245 | -1.526 | 0.12706 | | 0.340414189 |
| FinancialAidYrAverage | 0.001408 | 0.000339 | 4.149 | 3.34E-05 | *** | 1.001408892 |
| StartYear[T.Year2013] | 0.021424 | 0.090359 | 0.237 | 0.81258 | | 1.021654835 |
| MAP[T.Not MAP] | 1.039296 | 0.427398 | 2.432 | 0.01503 | * | 2.827224533 |
| BursaryAverageCashCat[T.High/Unknown,£0] | 0.1904 | 0.223007 | 0.854 | 0.39323 | | 1.209733031 |
| BursaryAverageCashCat[T.Low, £2000-£3000] | -0.17865 | 0.239859 | -0.745 | 0.45638 | | 0.836395828 |
| BursaryAverageCashCat[T.Low,£3000] | -0.24882 | 0.209961 | -1.185 | 0.23599 | | 0.779723663 |
| BursaryAverageCashCat[T.Low,< £2000] | -0.36977 | 0.286039 | -1.293 | 0.19611 | | 0.690894323 |
| BursaryAverageCashCat[T.Mixed L/H/U,<£2000] | 0.142916 | 0.344784 | 0.415 | 0.6785 | | 1.153632431 |
| BursaryAverageCashCat[T.Mixed L/H/U,>£2000] | 0.132348 | 0.386333 | 0.343 | 0.73192 | | 1.141505951 |
| BursaryAverageCashCat[T.Mixed L/P, < £2000] | 0.656787 | 0.473926 | 1.386 | 0.16579 | | 1.928586401 |
| BursaryAverageCashCat[T.Mixed L/P, > £2000] | 0.015027 | 0.262468 | 0.057 | 0.95435 | | 1.015140067 |

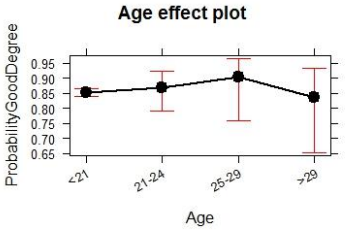
| | | | | | | |
|---|---|---|---|---|---|---|
| BursaryAverageCashCat[T.Mixed P/H/U, < £1000] | 0.493111 | 0.338585 | 1.456 | 0.14529 | | 1.637402263 |
| BursaryAverageCashCat[T.Mixed P/H/U, > £1000] | 0.021416 | 0.304196 | 0.07 | 0.94387 | | 1.02164656 |
| BursaryAverageCashCat[T.Part,£2000] | 0.10342 | 0.304626 | 0.339 | 0.73423 | | 1.108957406 |
| BursaryAverageCashCat[T.Part,< £2000] | 0.3205 | 0.335173 | 0.956 | 0.33896 | | 1.377815949 |
| BursaryAverageCashCat[T.Unknown,£0] | 0.052763 | 0.188016 | 0.281 | 0.77899 | | 1.054180197 |

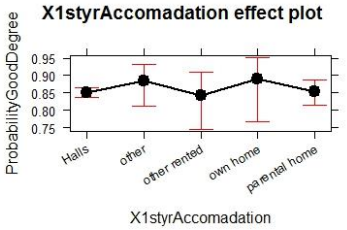
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4204.1  on 4898  degrees of freedom
Residual deviance: 3723.9  on 4839  degrees of freedom
  (3987 observations deleted due to missingness)
AIC: 3843.9

Number of Fisher Scoring iterations: 6
```

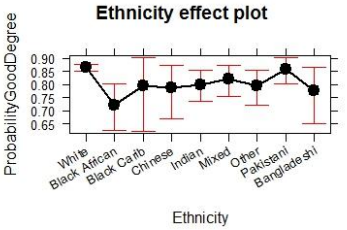
## Appendix 21 – Regression - Attainment 2012-13 Cat Entry Qual (Bursary Cash)

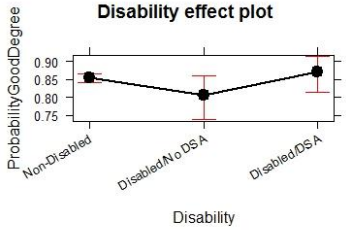


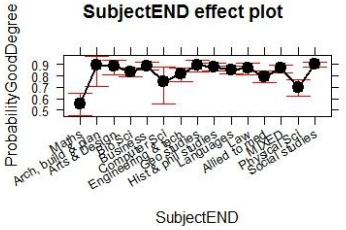



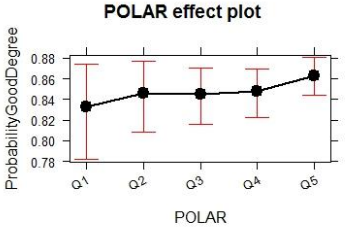



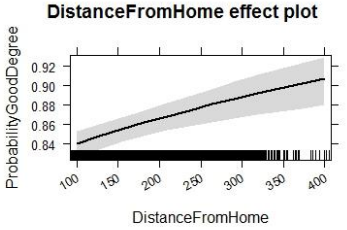



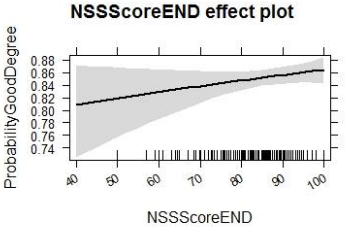



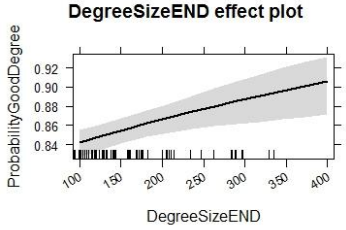



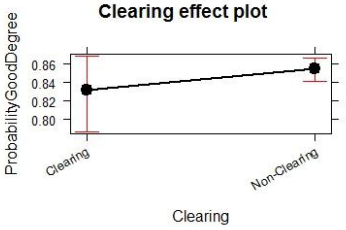



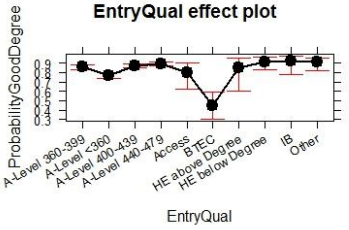



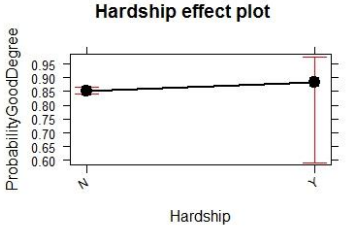



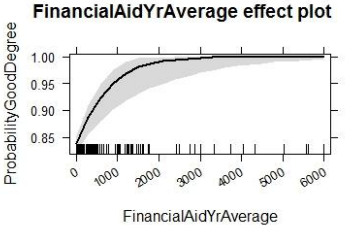



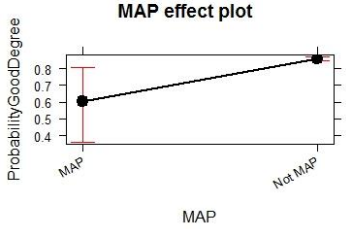



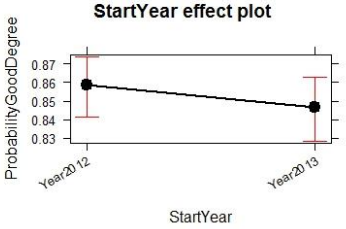



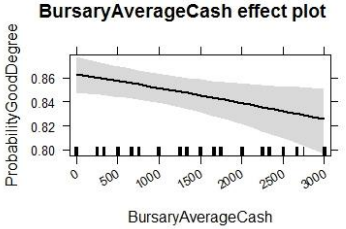



```
glm(formula = ProbabilityGoodDegree ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAv
erage +MAP + StartYear + BursaryAverageCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.7158   0.3452   0.4817   0.6265   1.9061
```

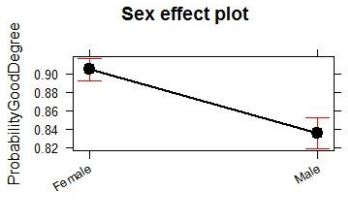
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -2.64E+00 | 7.98E-01 | -3.311 | 0.000931 | *** | 0.071361 |
| Sex[T.Male] | -5.97E-01 | 9.32E-02 | -6.41 | 1.46E-10 | *** | 0.550461 |
| Nationality[T.UK] | 4.99E-01 | 2.05E-01 | 2.439 | 0.014736 | * | 1.646415 |
| Age[T.21-24] | 1.45E-01 | 2.95E-01 | 0.494 | 0.62155 | | 1.156502 |
| Age[T.25-29] | 4.97E-01 | 5.63E-01 | 0.881 | 0.378176 | | 1.642961 |
| Age[T.>29] | -1.22E-01 | 5.16E-01 | -0.237 | 0.812382 | | 0.884794 |
| X1styrAccomadation[T.other] | 2.91E-01 | 2.98E-01 | 0.977 | 0.328581 | | 1.337765 |
| X1styrAccomadation[T.other rented] | -6.06E-02 | 3.18E-01 | -0.191 | 0.84872 | | 0.941237 |
| X1styrAccomadation[T.own home] | 3.44E-01 | 4.61E-01 | 0.746 | 0.455633 | | 1.410015 |
| X1styrAccomadation[T.parental home] | 3.08E-02 | 1.60E-01 | 0.192 | 0.84788 | | 1.031228 |
| Ethnicity[T.Black African] | -9.07E-01 | 2.40E-01 | -3.784 | 0.000154 | *** | 0.403814 |
| Ethnicity[T.Black Carib] | -5.05E-01 | 4.48E-01 | -1.126 | 0.260022 | | 0.603566 |
| Ethnicity[T.Chinese] | -5.38E-01 | 3.18E-01 | -1.691 | 0.090746 | . | 0.583681 |
| Ethnicity[T.Indian] | -4.72E-01 | 1.97E-01 | -2.394 | 0.016677 | * | 0.623754 |
| Ethnicity[T.Mixed] | -3.38E-01 | 2.16E-01 | -1.566 | 0.117399 | | 0.712981 |
| Ethnicity[T.Other] | -5.03E-01 | 2.16E-01 | -2.332 | 0.019679 | * | 0.604774 |
| Ethnicity[T.Pakistani] | -4.71E-02 | 2.16E-01 | -0.218 | 0.827523 | | 0.954002 |
| Ethnicity[T.Bangladeshi] | -6.15E-01 | 3.26E-01 | -1.889 | 0.058937 | . | 0.540695 |
| Disability[T.Disabled/No DSA] | -3.43E-01 | 2.01E-01 | -1.708 | 0.087597 | . | 0.709638 |
| Disability[T.Disabled/DSA] | 1.48E-01 | 2.27E-01 | 0.654 | 0.513293 | | 1.159745 |
| SubjectEND[T.Arch, build & plan] | 1.94E+00 | 6.93E-01 | 2.796 | 0.005173 | ** | 6.944847 |
| SubjectEND[T.Arts & Design] | 1.83E+00 | 3.92E-01 | 4.652 | 3.29E-06 | *** | 6.202795 |
| SubjectEND[T.Bio Sci] | 1.40E+00 | 2.47E-01 | 5.663 | 1.49E-08 | *** | 4.047098 |

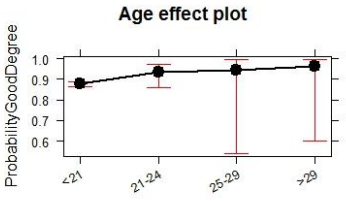
| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Business ] | 1.86E+00 | 2.68E-01 | 6.947 | 3.73E-12 | *** | 6.423737 |
| SubjectEND[T.Computer Sci] | 8.79E-01 | 4.84E-01 | 1.817 | 0.069168 | . | 2.407768 |
| SubjectEND[T.Engineering & tech] | 1.26E+00 | 2.86E-01 | 4.421 | 9.83E-06 | *** | 3.539551 |
| SubjectEND[T.Geo studies] | 1.92E+00 | 3.51E-01 | 5.471 | 4.48E-08 | *** | 6.80733 |
| SubjectEND[T.Hist & phil studies] | 1.76E+00 | 2.66E-01 | 6.611 | 3.81E-11 | *** | 5.818253 |
| SubjectEND[T.Languages] | 1.53E+00 | 2.50E-01 | 6.122 | 9.23E-10 | *** | 4.632052 |
| SubjectEND[T.Law] | 1.66E+00 | 2.81E-01 | 5.907 | 3.49E-09 | *** | 5.26984 |
| SubjectEND[T.Allied to med] | 1.14E+00 | 2.72E-01 | 4.178 | 2.94E-05 | *** | 3.117402 |
| SubjectEND[T.MIXED] | 1.65E+00 | 2.54E-01 | 6.49 | 8.56E-11 | *** | 5.201775 |
| SubjectEND[T.Physical Sci] | 6.21E-01 | 2.67E-01 | 2.323 | 0.020155 | * | 1.860416 |
| SubjectEND[T.Social studies] | 1.98E+00 | 2.56E-01 | 7.713 | 1.23E-14 | *** | 7.20662 |
| POLAR[T.Q2] | 9.58E-02 | 2.07E-01 | 0.464 | 0.642817 | | 1.100583 |
| POLAR[T.Q3] | 8.46E-02 | 1.93E-01 | 0.439 | 0.660917 | | 1.088303 |
| POLAR[T.Q4] | 1.07E-01 | 1.90E-01 | 0.565 | 0.571899 | | 1.113268 |
| POLAR[T.Q5] | 2.34E-01 | 1.87E-01 | 1.251 | 0.210955 | | 1.26415 |
| DistanceFromHome | 2.07E-03 | 5.21E-04 | 3.971 | 7.17E-05 | *** | 1.002072 |
| NSSScoreEND | 6.89E-03 | 5.20E-03 | 1.324 | 0.18548 | | 1.00691 |
| DegreeSizeEND | 1.96E-03 | 6.49E-04 | 3.021 | 0.002522 | ** | 1.001961 |
| Clearing[T.Non-Clearing] | 1.74E-01 | 1.54E-01 | 1.13 | 0.258585 | | 1.189937 |
| EntryQual[T.A-Level <360] | -6.08E-01 | 1.28E-01 | -4.764 | 1.89E-06 | *** | 0.544711 |
| EntryQual[T.A-Level 400-439] | 1.01E-01 | 1.29E-01 | 0.788 | 0.430803 | | 1.106609 |
| EntryQual[T.A-Level 440-479] | 3.35E-01 | 1.43E-01 | 2.345 | 0.019041 | * | 1.397661 |
| EntryQual[T.Access] | -4.26E-01 | 4.66E-01 | -0.914 | 0.360558 | | 0.653247 |
| EntryQual[T.BTEC] | -2.02E+00 | 3.29E-01 | -6.159 | 7.34E-10 | *** | 0.132258 |
| EntryQual[T.HE above Degree] | -9.09E-02 | 6.60E-01 | -0.138 | 0.890423 | | 0.913136 |
| EntryQual[T.HE below Degree] | 5.86E-01 | 4.10E-01 | 1.429 | 0.152928 | | 1.796967 |
| EntryQual[T.IB] | 7.02E-01 | 6.27E-01 | 1.118 | 0.263434 | | 2.016977 |
| EntryQual[T.Other] | 4.97E-01 | 4.15E-01 | 1.198 | 0.230751 | | 1.643947 |
| Hardship[T.Y] | 2.64E-01 | 8.41E-01 | 0.315 | 0.753125 | | 1.302649 |
| FinancialAidYrAverage | 1.48E-03 | 4.51E-04 | 3.278 | 0.001044 | ** | 1.001478 |
| MAP[T.Not MAP] | 1.38E+00 | 5.29E-01 | 2.606 | 0.009148 | ** | 3.970929 |
| StartYear[T.Year2013] | -9.47E-02 | 9.26E-02 | -1.023 | 0.306261 | | 0.909637 |

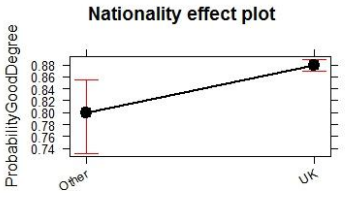
| | | | | | | |
|---|---|---|---|---|---|---|
| BursaryAverageCash | -9.65E-05 | 4.16E-05 | -2.321 | 0.020264 | * | 0.999903 |

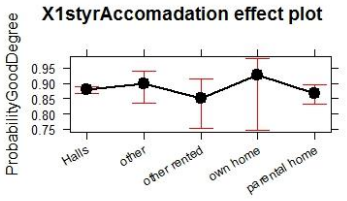
```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 3621.7  on 3907  degrees of freedom
Residual deviance: 3261.6  on 3852  degrees of freedom
  (4978 observations deleted due to missingness)
AIC: 3373.6

Number of Fisher Scoring iterations: 6
```

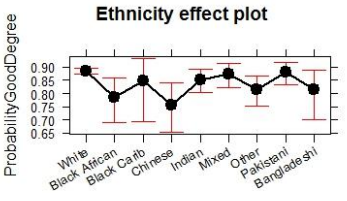
## Appendix 22 – Regression – Attainment 2012-13 A-level Tariff (Bursary Cash)

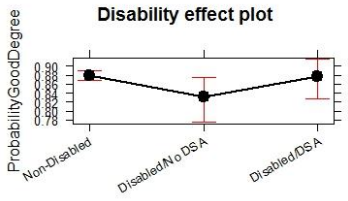


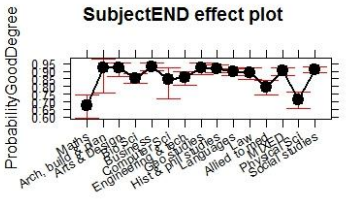



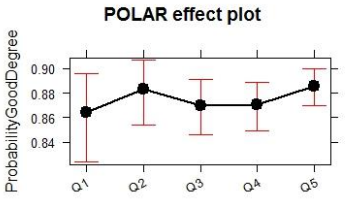



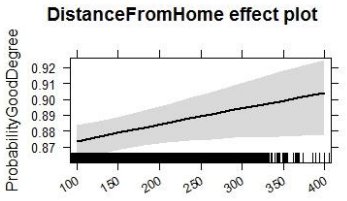



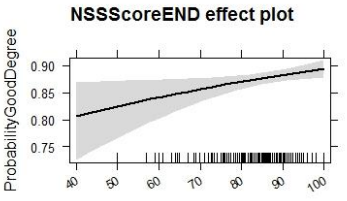



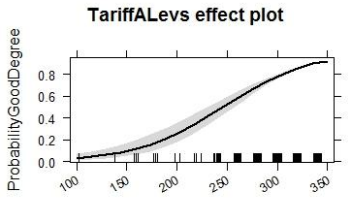



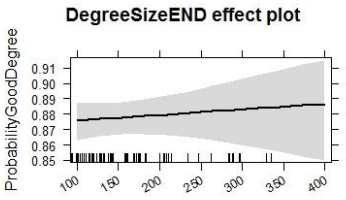



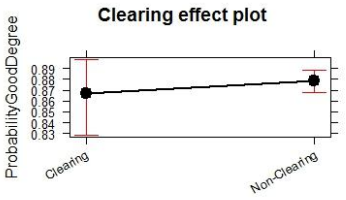



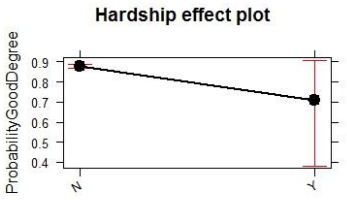



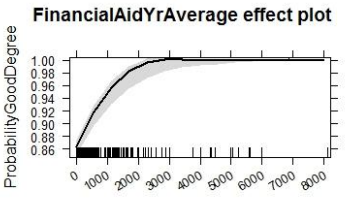



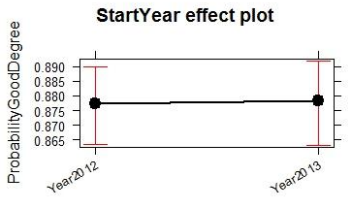



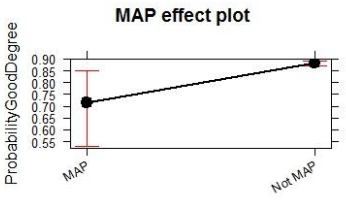



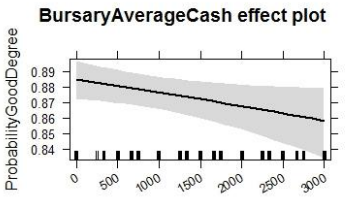



```
glm(formula = ProbabilityGoodDegree ~ Sex + Age + Nationality + X1styrAccomadation + Ethnicity + Disability + Subje
ctEND + POLAR + DistanceFromHome + NSSScoreEND + TariffALevs + DegreeSizeEND + Clearing + Hardship + FinancialAidYr
Average + StartYear + MAP + BursaryAverageCash, family = binomial(logit), data = Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3418   0.2991   0.4417   0.5951   1.8257
```

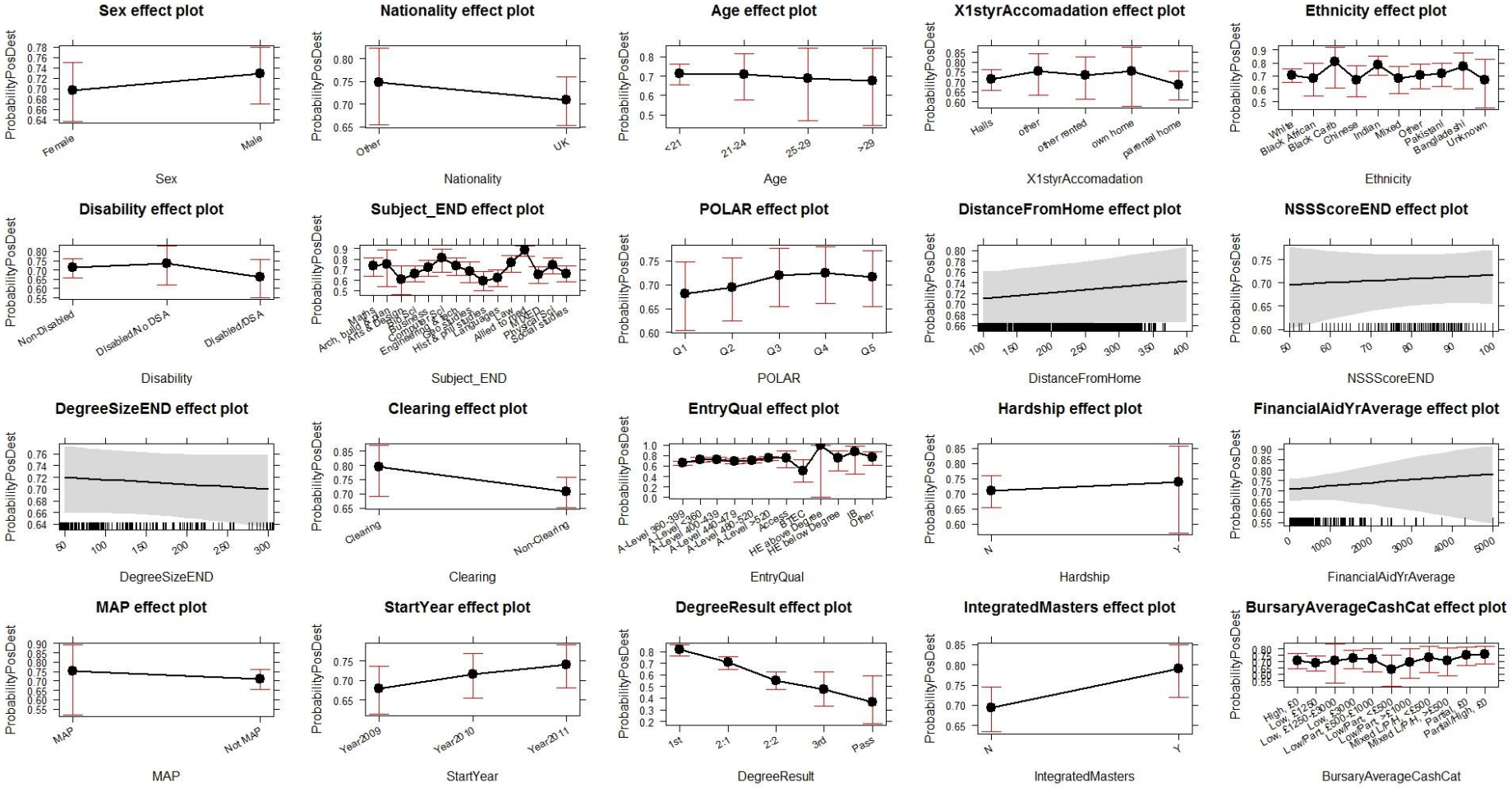
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | -9.69E+00 | 8.95E-01 | -10.829 | < 2e-16 | *** | 6.1838E-05 |
| Sex[T.Male] | -6.25E-01 | 8.83E-02 | -7.082 | 1.42E-12 | *** | 0.53526143 |
| Age[T.21-24] | 7.13E-01 | 4.45E-01 | 1.604 | 0.108788 | | 2.03969441 |
| Age[T.25-29] | 9.04E-01 | 1.38E+00 | 0.653 | 0.513627 | | 2.47020218 |
| Age[T.>29] | 1.26E+00 | 1.44E+00 | 0.88 | 0.379038 | | 3.53955141 |
| Nationality[T.UK] | 6.08E-01 | 2.00E-01 | 3.033 | 0.002419 | ** | 1.83657055 |
| X1styrAccomadation[T.other] | 2.02E-01 | 2.93E-01 | 0.688 | 0.491262 | | 1.22360326 |
| X1styrAccomadation[T.other rented] | -2.28E-01 | 3.31E-01 | -0.69 | 0.490413 | | 0.79612426 |
| X1styrAccomadation[T.own home] | 5.47E-01 | 7.42E-01 | 0.738 | 0.460574 | | 1.72875241 |
| X1styrAccomadation[T.parental home] | -1.06E-01 | 1.47E-01 | -0.723 | 0.469558 | | 0.89924478 |
| Ethnicity[T.Black African] | -7.57E-01 | 2.60E-01 | -2.918 | 0.003528 | ** | 0.46897773 |
| Ethnicity[T.Black Carib] | -3.36E-01 | 4.66E-01 | -0.721 | 0.470825 | | 0.71462311 |
| Ethnicity[T.Chinese] | -9.14E-01 | 2.68E-01 | -3.416 | 0.000635 | *** | 0.40083717 |
| Ethnicity[T.Indian] | -3.03E-01 | 1.85E-01 | -1.637 | 0.101683 | | 0.73874683 |
| Ethnicity[T.Mixed] | -1.04E-01 | 2.23E-01 | -0.469 | 0.639143 | | 0.90086488 |
| Ethnicity[T.Other] | -5.63E-01 | 2.00E-01 | -2.81 | 0.004957 | ** | 0.56955496 |
| Ethnicity[T.Pakistani] | -4.32E-02 | 2.11E-01 | -0.204 | 0.838062 | | 0.95771025 |
| Ethnicity[T.Bangladeshi] | -5.82E-01 | 3.20E-01 | -1.818 | 0.069073 | . | 0.55872381 |
| Disability[T.Disabled/No DSA] | -3.97E-01 | 1.87E-01 | -2.129 | 0.033294 | * | 0.67219957 |
| Disability[T.Disabled/DSA] | -1.75E-02 | 2.11E-01 | -0.083 | 0.934027 | | 0.98267189 |
| SubjectEND[T.Arch, build & plan] | 1.77E+00 | 7.11E-01 | 2.484 | 0.013007 | * | 5.84741685 |
| SubjectEND[T.Arts & Design] | 1.75E+00 | 3.63E-01 | 4.81 | 1.51E-06 | *** | 5.74310497 |
| SubjectEND[T.Bio Sci] | 1.06E+00 | 2.17E-01 | 4.864 | 1.15E-06 | *** | 2.88060402 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Business ] | 1.89E+00 | 2.60E-01 | 7.269 | 3.63E-13 | *** | 6.61936868 |
| SubjectEND[T.Computer Sci] | 1.00E+00 | 4.24E-01 | 2.369 | 0.017823 | * | 2.72917673 |
| SubjectEND[T.Engineering & tech] | 1.07E+00 | 2.53E-01 | 4.238 | 2.25E-05 | *** | 2.91829634 |
| SubjectEND[T.Geo studies] | 1.79E+00 | 3.32E-01 | 5.39 | 7.05E-08 | *** | 5.98945247 |
| SubjectEND[T.Hist & phil studies] | 1.69E+00 | 2.46E-01 | 6.888 | 5.65E-12 | *** | 5.43576356 |
| SubjectEND[T.Languages] | 1.45E+00 | 2.27E-01 | 6.393 | 1.63E-10 | *** | 4.25885353 |
| SubjectEND[T.Law] | 1.35E+00 | 2.46E-01 | 5.477 | 4.34E-08 | *** | 3.85742553 |
| SubjectEND[T.Allied to med] | 6.49E-01 | 2.40E-01 | 2.704 | 0.006853 | ** | 1.91324356 |
| SubjectEND[T.MIXED] | 1.49E+00 | 2.29E-01 | 6.513 | 7.36E-11 | *** | 4.45042679 |
| SubjectEND[T.Physical Sci] | 1.91E-01 | 2.11E-01 | 0.907 | 0.364391 | | 1.21094373 |
| SubjectEND[T.Social studies] | 1.62E+00 | 2.29E-01 | 7.05 | 1.78E-12 | *** | 5.02788792 |
| POLAR[T.Q2] | 1.71E-01 | 1.93E-01 | 0.888 | 0.374767 | | 1.18637211 |
| POLAR[T.Q3] | 5.23E-02 | 1.78E-01 | 0.294 | 0.769012 | | 1.05368127 |
| POLAR[T.Q4] | 5.47E-02 | 1.75E-01 | 0.313 | 0.754219 | | 1.05620258 |
| POLAR[T.Q5] | 2.00E-01 | 1.72E-01 | 1.159 | 0.246276 | | 1.2211585 |
| DistanceFromHome | 1.03E-03 | 4.80E-04 | 2.153 | 0.031331 | * | 1.00103353 |
| NSSScoreEND | 1.18E-02 | 5.05E-03 | 2.329 | 0.01988 | * | 1.01182942 |
| TariffALevs | 2.33E-02 | 1.89E-03 | 12.303 | < 2e-16 | *** | 1.02354286 |
| DegreeSizeEND | 3.40E-04 | 6.20E-04 | 0.548 | 0.583581 | | 1.00033966 |
| Clearing[T.Non-Clearing] | 1.02E-01 | 1.56E-01 | 0.65 | 0.515582 | | 1.10705131 |
| Hardship[T.Y] | -1.08E+00 | 7.06E-01 | -1.523 | 0.127856 | | 0.34129776 |
| FinancialAidYrAverage | 1.39E-03 | 3.40E-04 | 4.083 | 4.45E-05 | *** | 1.00138696 |
| StartYear[T.Year2013] | 1.07E-02 | 8.79E-02 | 0.122 | 0.902812 | | 1.01078777 |
| MAP[T.Not MAP] | 1.08E+00 | 4.27E-01 | 2.525 | 0.011566 | * | 2.94173634 |
| BursaryAverageCash | -7.99E-05 | 3.87E-05 | -2.066 | 0.038811 | * | 0.99992007 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4204.1  on 4898  degrees of freedom
Residual deviance: 3737.1  on 4851  degrees of freedom
```

```
  (3987 observations deleted due to missingness)
AIC: 3833.1

Number of Fisher Scoring iterations: 6
```

## Appendix 23 – Regression - Employment 2009-11 Cat Entry Qual (Bursary Cat)



```
glm(formula = ProbabilityPosDest ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subject_
END + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAver
age + MAP + StartYear + DegreeResult + IntegratedMasters + BursaryAverageCashCat, family = binomial(logit), data =
Bursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.3471  -1.1803   0.6191   0.9023   1.6877
```

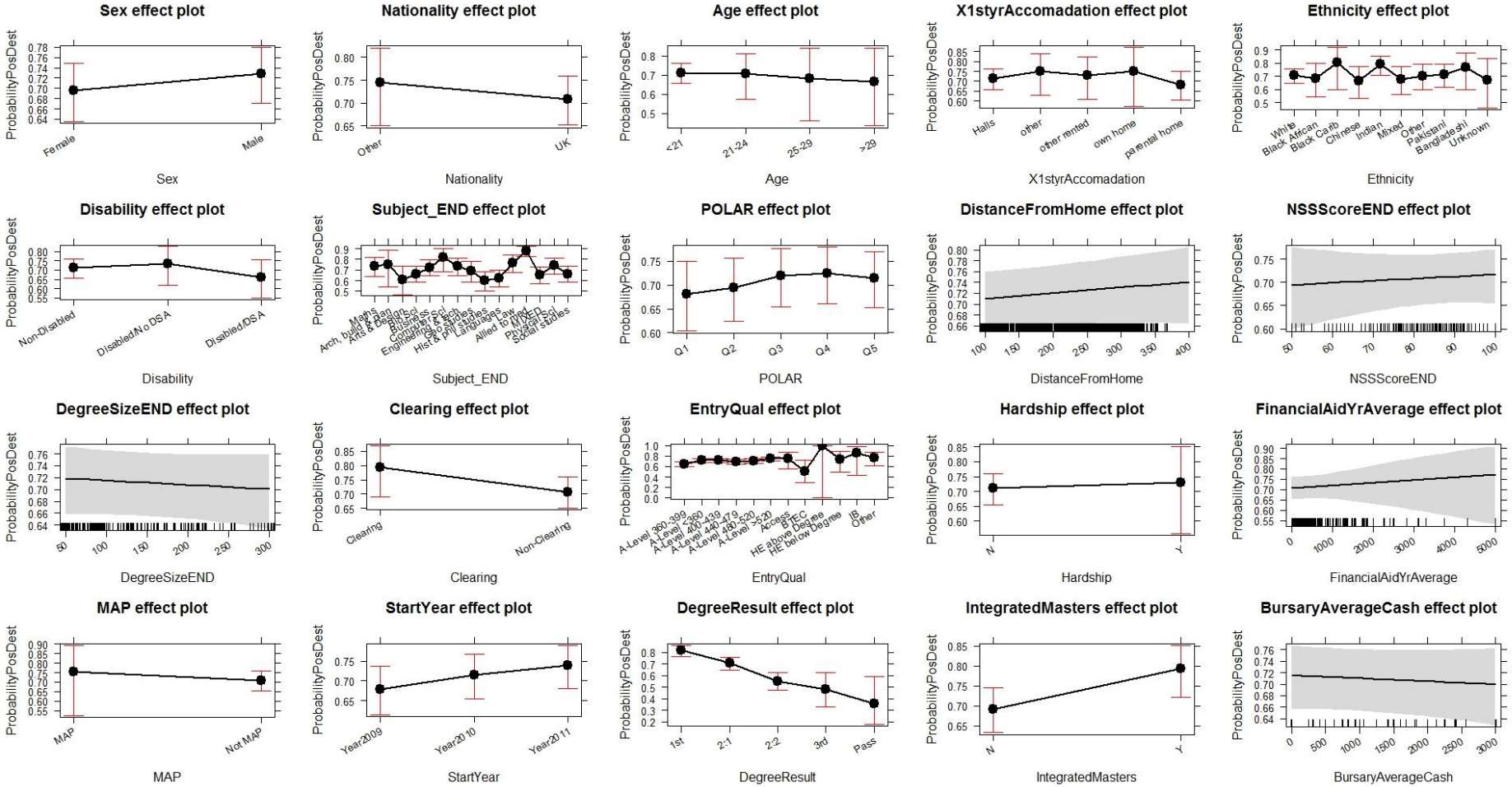
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 1.55E+00 | 7.87E-01 | 1.967 | 0.049151 | * | 4.702057 |
| Sex[T.Male] | 1.57E-01 | 8.36E-02 | 1.876 | 0.060643 | . | 1.169645 |
| Nationality[T.UK] | -2.00E-01 | 1.98E-01 | -1.008 | 0.313433 | | 0.818731 |
| Age[T.21-24] | -1.17E-02 | 2.78E-01 | -0.042 | 0.966501 | | 0.988388 |
| Age[T.25-29] | -1.13E-01 | 4.57E-01 | -0.248 | 0.804043 | | 0.892883 |
| Age[T.>29] | -1.71E-01 | 4.80E-01 | -0.356 | 0.721971 | | 0.842906 |
| X1styrAccomadation[T.other] | 2.05E-01 | 2.64E-01 | 0.778 | 0.436477 | | 1.227771 |
| X1styrAccomadation[T.other rented] | 1.10E-01 | 2.60E-01 | 0.421 | 0.67353 | | 1.11572 |
| X1styrAccomadation[T.own home] | 2.17E-01 | 4.03E-01 | 0.54 | 0.589405 | | 1.242717 |
| X1styrAccomadation[T.parental home] | -1.25E-01 | 1.39E-01 | -0.903 | 0.366336 | | 0.882232 |
| Ethnicity[T.Black African] | -1.08E-01 | 2.83E-01 | -0.383 | 0.701847 | | 0.897448 |
| Ethnicity[T.Black Carib] | 5.74E-01 | 4.99E-01 | 1.151 | 0.249751 | | 1.775177 |
| Ethnicity[T.Chinese] | -1.73E-01 | 2.59E-01 | -0.669 | 0.503192 | | 0.840801 |
| Ethnicity[T.Indian] | 4.41E-01 | 1.93E-01 | 2.283 | 0.022454 | * | 1.554416 |
| Ethnicity[T.Mixed] | -1.32E-01 | 2.24E-01 | -0.589 | 0.555829 | | 0.876692 |
| Ethnicity[T.Other] | -9.74E-03 | 2.11E-01 | -0.046 | 0.963099 | | 0.990304 |
| Ethnicity[T.Pakistani] | 4.51E-02 | 1.96E-01 | 0.231 | 0.817586 | | 1.046132 |
| Ethnicity[T.Bangladeshi] | 3.36E-01 | 3.90E-01 | 0.862 | 0.388678 | | 1.399759 |
| Ethnicity[T.Unknown] | -1.80E-01 | 4.43E-01 | -0.406 | 0.684438 | | 0.835437 |
| Disability[T.Disabled/No DSA] | 1.23E-01 | 2.52E-01 | 0.485 | 0.627409 | | 1.130319 |
| Disability[T.Disabled/DSA] | -2.37E-01 | 2.08E-01 | -1.143 | 0.252975 | | 0.788834 |
| Subject_END[T.Arch, build & plan] | 6.14E-02 | 5.12E-01 | 0.12 | 0.904612 | | 1.063303 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Subject_END[T.Arts & Design] | -5.89E-01 | 3.40E-01 | -1.734 | 0.082959 | . | 0.554993 |
| Subject_END[T.Bio Sci] | -3.49E-01 | 2.23E-01 | -1.566 | 0.117351 | | 0.705605 |
| Subject_END[T.Business ] | -7.85E-02 | 2.41E-01 | -0.326 | 0.74446 | | 0.924511 |
| Subject_END[T.Computer Sci] | 4.32E-01 | 3.87E-01 | 1.116 | 0.264237 | | 1.539719 |
| Subject_END[T.Engineering & tech] | 8.66E-03 | 2.70E-01 | 0.032 | 0.974377 | | 1.008698 |
| Subject_END[T.Geo studies] | -2.49E-01 | 2.82E-01 | -0.881 | 0.378209 | | 0.779658 |
| Subject_END[T.Hist & phil studies] | -6.40E-01 | 2.44E-01 | -2.625 | 0.008677 | ** | 0.527503 |
| Subject_END[T.Languages] | -5.18E-01 | 2.38E-01 | -2.173 | 0.02976 | * | 0.595711 |
| Subject_END[T.Law] | 1.52E-01 | 2.66E-01 | 0.571 | 0.568204 | | 1.163695 |
| Subject_END[T.Allied to med] | 1.00E+00 | 2.88E-01 | 3.473 | 0.000514 | *** | 2.718282 |
| Subject_END[T.MIXED] | -3.92E-01 | 2.35E-01 | -1.669 | 0.095128 | . | 0.676042 |
| Subject_END[T.Physical Sci] | 3.99E-02 | 2.51E-01 | 0.159 | 0.873465 | | 1.040707 |
| Subject_END[T.Social studies] | -3.57E-01 | 2.35E-01 | -1.519 | 0.128807 | | 0.699982 |
| POLAR[T.Q2] | 6.35E-02 | 1.50E-01 | 0.422 | 0.67311 | | 1.065517 |
| POLAR[T.Q3] | 1.82E-01 | 1.47E-01 | 1.24 | 0.215089 | | 1.199734 |
| POLAR[T.Q4] | 2.09E-01 | 1.45E-01 | 1.445 | 0.14857 | | 1.232322 |
| POLAR[T.Q5] | 1.70E-01 | 1.40E-01 | 1.215 | 0.22425 | | 1.184949 |
| DistanceFromHome | 5.45E-04 | 4.63E-04 | 1.177 | 0.239167 | | 1.000545 |
| NSSScoreEND | 1.99E-03 | 4.71E-03 | 0.422 | 0.673018 | | 1.001988 |
| DegreeSizeEND | -3.91E-04 | 5.47E-04 | -0.713 | 0.475548 | | 0.99961 |
| Clearing[T.Non-Clearing] | -4.68E-01 | 2.52E-01 | -1.858 | 0.063232 | . | 0.626441 |
| EntryQual[T.A-Level <360] | 3.26E-01 | 1.40E-01 | 2.334 | 0.019603 | * | 1.385415 |
| EntryQual[T.A-Level 400-439] | 3.29E-01 | 1.34E-01 | 2.459 | 0.013914 | * | 1.389578 |
| EntryQual[T.A-Level 440-479] | 1.67E-01 | 1.36E-01 | 1.223 | 0.221349 | | 1.1814 |
| EntryQual[T.A-Level 480-520] | 2.33E-01 | 1.52E-01 | 1.532 | 0.125413 | | 1.262508 |
| EntryQual[T.A-Level >520] | 4.43E-01 | 1.40E-01 | 3.153 | 0.001616 | ** | 1.55675 |
| EntryQual[T.Access] | 5.14E-01 | 4.65E-01 | 1.106 | 0.268911 | | 1.672133 |
| EntryQual[T.BTEC] | -5.86E-01 | 4.90E-01 | -1.196 | 0.231887 | | 0.55666 |
| EntryQual[T.HE above Degree] | 1.23E+01 | 2.11E+02 | 0.058 | 0.953391 | | 226386.7 |
| EntryQual[T.HE below Degree] | 4.38E-01 | 5.52E-01 | 0.794 | 0.427432 | | 1.550225 |
| EntryQual[T.IB] | 1.30E+00 | 1.10E+00 | 1.179 | 0.238223 | | 3.661965 |
| EntryQual[T.Other] | 5.68E-01 | 3.75E-01 | 1.516 | 0.129439 | | 1.765264 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Hardship[T.Y] | 1.45E-01 | 3.67E-01 | 0.395 | 0.692975 | | 1.15604 |
| FinancialAidYrAverage | 7.86E-05 | 1.13E-04 | 0.697 | 0.485544 | | 1.000079 |
| MAP[T.Not MAP] | -2.05E-01 | 5.09E-01 | -0.402 | 0.687427 | | 0.81481 |
| StartYear[T.Year2010] | 1.74E-01 | 9.72E-02 | 1.792 | 0.073183 | . | 1.190175 |
| StartYear[T.Year2011] | 3.04E-01 | 1.05E-01 | 2.905 | 0.003667 | ** | 1.355811 |
| DegreeResult[T.2:1] | -6.15E-01 | 1.13E-01 | -5.466 | 4.61E-08 | *** | 0.540857 |
| DegreeResult[T.2:2] | -1.29E+00 | 1.42E-01 | -9.08 | < 2e-16 | *** | 0.275271 |
| DegreeResult[T.3rd] | -1.60E+00 | 3.04E-01 | -5.268 | 1.38E-07 | *** | 0.201292 |
| DegreeResult[T.Pass] | -2.06E+00 | 4.79E-01 | -4.308 | 1.65E-05 | *** | 0.127072 |
| IntegratedMasters[T.Y] | 5.18E-01 | 1.74E-01 | 2.972 | 0.002963 | ** | 1.678835 |
| BursaryAverageCashCat[T.Low, £1250] | -8.77E-02 | 1.13E-01 | -0.775 | 0.438244 | | 0.916045 |
| BursaryAverageCashCat[T.Low, £1250-£3000] | 5.31E-03 | 3.74E-01 | 0.014 | 0.988673 | | 1.005326 |
| BursaryAverageCashCat[T.Low, £3000] | 7.69E-02 | 1.56E-01 | 0.492 | 0.622963 | | 1.079891 |
| BursaryAverageCashCat[T.Low/Part, £500-£1000] | 6.28E-02 | 2.08E-01 | 0.302 | 0.762393 | | 1.064782 |
| BursaryAverageCashCat[T.Low/Part, <£500] | -3.18E-01 | 2.55E-01 | -1.251 | 0.210942 | | 0.727312 |
| BursaryAverageCashCat[T.Low/Part, >£1000] | -5.05E-02 | 2.61E-01 | -0.193 | 0.846673 | | 0.950744 |
| BursaryAverageCashCat[T.Mixed L/P/H, <£500] | 1.06E-01 | 2.53E-01 | 0.421 | 0.673886 | | 1.112267 |
| BursaryAverageCashCat[T.Mixed L/P/H, >£500] | 8.72E-03 | 2.53E-01 | 0.034 | 0.972529 | | 1.008759 |
| BursaryAverageCashCat[T.Partial, £0] | 2.15E-01 | 1.70E-01 | 1.27 | 0.204243 | | 1.240234 |
| BursaryAverageCashCat[T.Partial/High, £0] | 2.53E-01 | 1.61E-01 | 1.573 | 0.115764 | | 1.28827 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4205.4  on 3370  degrees of freedom
Residual deviance: 3830.3  on 3297  degrees of freedom
  (12140 observations deleted due to missingness)
AIC: 3978.3

Number of Fisher Scoring iterations: 11
```

# Appendix 24 – Regression - Employment 2009-11 Cat Entry Qual (Bursary Cash)



```
glm(formula = ProbabilityPosDest ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + Subject_
END + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAver
age + MAP + StartYear + DegreeResult + IntegratedMasters + BursaryAverageCash,
family = binomial(logit), data = Bursary)

Deviance Residuals:
   Min      1Q  Median      3Q     Max
-2.360  -1.186   0.628   0.907   1.674
```

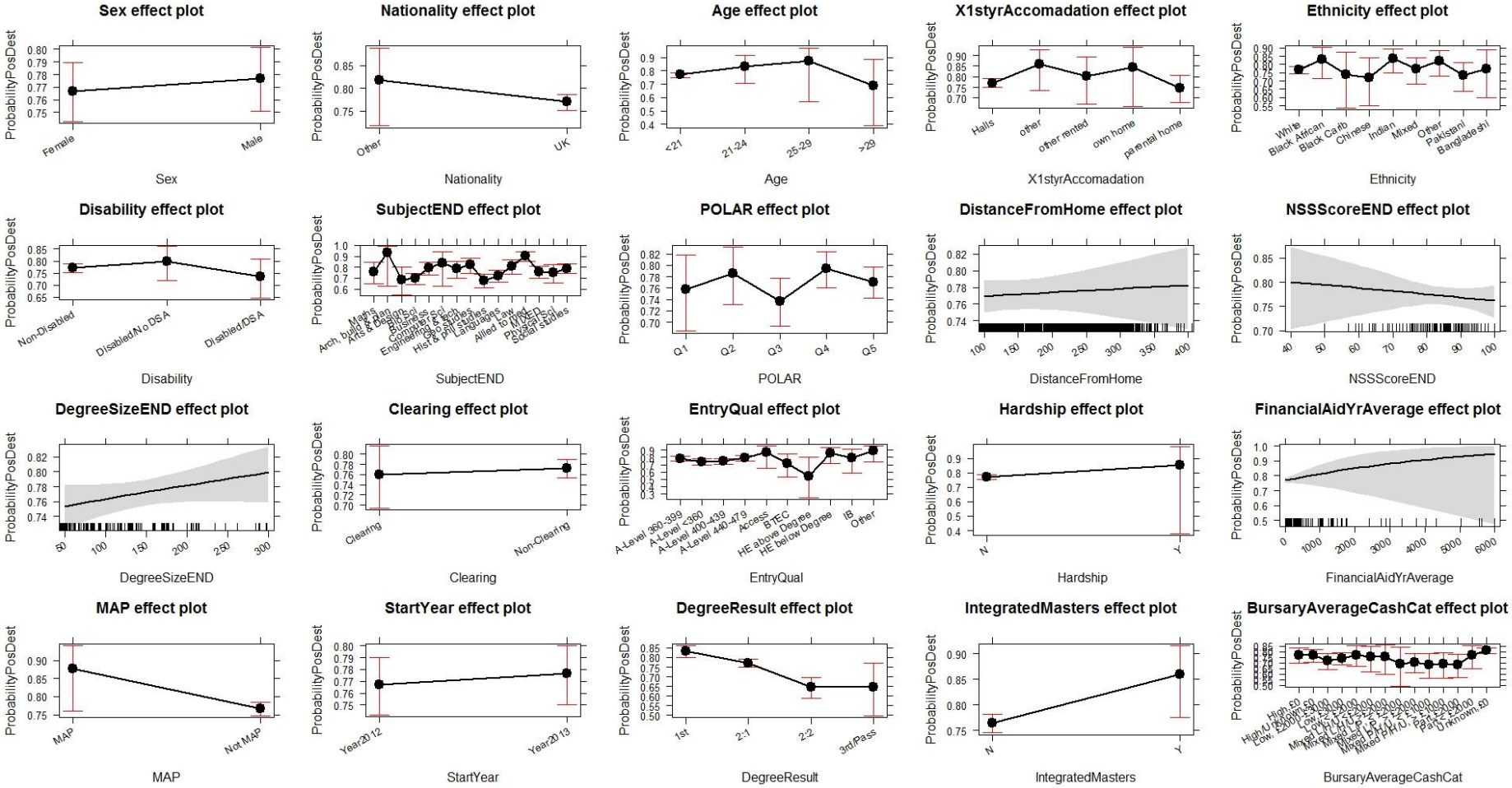
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 1.55E+00 | 7.80E-01 | 1.988 | 0.046831 | * | 4.71147 |
| Sex[T.Male] | 1.61E-01 | 8.34E-02 | 1.93 | 0.053569 | . | 1.174685 |
| Nationality[T.UK] | -1.81E-01 | 1.98E-01 | -0.916 | 0.359518 | | 0.834185 |
| Age[T.21-24] | -2.46E-02 | 2.78E-01 | -0.089 | 0.929435 | | 0.97572 |
| Age[T.25-29] | -1.46E-01 | 4.55E-01 | -0.32 | 0.748907 | | 0.864503 |
| Age[T.>29] | -2.11E-01 | 4.80E-01 | -0.441 | 0.659478 | | 0.80945 |
| X1styrAccomadation[T.other] | 1.87E-01 | 2.64E-01 | 0.711 | 0.477196 | | 1.20611 |
| X1styrAccomadation[T.other rented] | 8.72E-02 | 2.60E-01 | 0.336 | 0.736895 | | 1.091126 |
| X1styrAccomadation[T.own home] | 1.94E-01 | 4.02E-01 | 0.482 | 0.630152 | | 1.213489 |
| X1styrAccomadation[T.parental home] | -1.50E-01 | 1.38E-01 | -1.084 | 0.278218 | | 0.861138 |
| Ethnicity[T.Black African] | -1.06E-01 | 2.82E-01 | -0.375 | 0.707939 | | 0.899874 |
| Ethnicity[T.Black Carib] | 5.34E-01 | 4.98E-01 | 1.072 | 0.283637 | | 1.705571 |
| Ethnicity[T.Chinese] | -1.95E-01 | 2.58E-01 | -0.754 | 0.450677 | | 0.823164 |
| Ethnicity[T.Indian] | 4.55E-01 | 1.93E-01 | 2.36 | 0.018267 | * | 1.575858 |
| Ethnicity[T.Mixed] | -1.35E-01 | 2.22E-01 | -0.606 | 0.544623 | | 0.873978 |
| Ethnicity[T.Other] | -1.91E-02 | 2.10E-01 | -0.091 | 0.927549 | | 0.981052 |
| Ethnicity[T.Pakistani] | 2.92E-02 | 1.94E-01 | 0.15 | 0.880371 | | 1.029661 |
| Ethnicity[T.Bangladeshi] | 3.15E-01 | 3.89E-01 | 0.811 | 0.41728 | | 1.370533 |
| Ethnicity[T.Unknown] | -1.49E-01 | 4.41E-01 | -0.337 | 0.736008 | | 0.861828 |
| Disability[T.Disabled/No DSA] | 1.19E-01 | 2.51E-01 | 0.473 | 0.636017 | | 1.126145 |
| Disability[T.Disabled/DSA] | -2.43E-01 | 2.07E-01 | -1.176 | 0.239669 | | 0.78435 |
| Subject_END[T.Arch, build & plan] | 5.19E-02 | 5.11E-01 | 0.101 | 0.919169 | | 1.053239 |
| Subject_END[T.Arts & Design] | -5.97E-01 | 3.38E-01 | -1.766 | 0.077457 | . | 0.55035 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Subject_END[T.Bio Sci] | -3.56E-01 | 2.22E-01 | -1.606 | 0.108315 | | 0.700192 |
| Subject_END[T.Business ] | -7.24E-02 | 2.40E-01 | -0.301 | 0.763062 | | 0.930187 |
| Subject_END[T.Computer Sci] | 4.50E-01 | 3.86E-01 | 1.167 | 0.243355 | | 1.567999 |
| Subject_END[T.Engineering & tech] | -8.06E-03 | 2.69E-01 | -0.03 | 0.976083 | | 0.991971 |
| Subject_END[T.Geo studies] | -2.39E-01 | 2.82E-01 | -0.847 | 0.396719 | | 0.787572 |
| Subject_END[T.Hist & phil studies] | -6.45E-01 | 2.43E-01 | -2.653 | 0.007969 | ** | 0.52482 |
| Subject_END[T.Languages] | -5.25E-01 | 2.38E-01 | -2.211 | 0.027047 | * | 0.591378 |
| Subject_END[T.Law] | 1.51E-01 | 2.65E-01 | 0.568 | 0.570155 | | 1.162415 |
| Subject_END[T.Allied to med] | 9.80E-01 | 2.87E-01 | 3.412 | 0.000645 | *** | 2.663923 |
| Subject_END[T.MIXED] | -4.01E-01 | 2.34E-01 | -1.714 | 0.086463 | . | 0.669851 |
| Subject_END[T.Physical Sci] | 3.59E-02 | 2.50E-01 | 0.144 | 0.885626 | | 1.036583 |
| Subject_END[T.Social studies] | -3.63E-01 | 2.34E-01 | -1.549 | 0.121497 | | 0.695865 |
| POLAR[T.Q2] | 5.98E-02 | 1.50E-01 | 0.399 | 0.690118 | | 1.061667 |
| POLAR[T.Q3] | 1.83E-01 | 1.47E-01 | 1.249 | 0.211803 | | 1.200814 |
| POLAR[T.Q4] | 2.07E-01 | 1.44E-01 | 1.436 | 0.151036 | | 1.229983 |
| POLAR[T.Q5] | 1.62E-01 | 1.39E-01 | 1.165 | 0.243883 | | 1.176213 |
| DistanceFromHome | 5.28E-04 | 4.61E-04 | 1.147 | 0.251452 | | 1.000528 |
| NSSScoreEND | 2.16E-03 | 4.69E-03 | 0.46 | 0.645649 | | 1.002159 |
| DegreeSizeEND | -3.59E-04 | 5.45E-04 | -0.658 | 0.510277 | | 0.999641 |
| Clearing[T.Non-Clearing] | -4.56E-01 | 2.51E-01 | -1.812 | 0.069997 | . | 0.634131 |
| EntryQual[T.A-Level <360] | 3.20E-01 | 1.39E-01 | 2.301 | 0.021414 | * | 1.377541 |
| EntryQual[T.A-Level 400-439] | 3.38E-01 | 1.33E-01 | 2.547 | 0.010879 | * | 1.402281 |
| EntryQual[T.A-Level 440-479] | 1.98E-01 | 1.35E-01 | 1.471 | 0.141159 | | 1.219206 |
| EntryQual[T.A-Level 480-520] | 2.66E-01 | 1.49E-01 | 1.779 | 0.075204 | . | 1.304344 |
| EntryQual[T.A-Level >520] | 4.87E-01 | 1.37E-01 | 3.565 | 0.000364 | *** | 1.627427 |
| EntryQual[T.Access] | 4.98E-01 | 4.64E-01 | 1.072 | 0.283738 | | 1.644605 |
| EntryQual[T.BTEC] | -5.82E-01 | 4.89E-01 | -1.19 | 0.234139 | | 0.558668 |
| EntryQual[T.HE above Degree] | 1.23E+01 | 2.11E+02 | 0.058 | 0.953523 | | 224134.1 |
| EntryQual[T.HE below Degree] | 4.30E-01 | 5.51E-01 | 0.78 | 0.43523 | | 1.537565 |
| EntryQual[T.IB] | 1.26E+00 | 1.10E+00 | 1.151 | 0.249767 | | 3.525421 |
| EntryQual[T.Other] | 5.70E-01 | 3.74E-01 | 1.524 | 0.127605 | | 1.767737 |
| Hardship[T.Y] | 9.30E-02 | 3.65E-01 | 0.255 | 0.798922 | | 1.097407 |

| | | | | | | |
|---|---|---|---|---|---|---|
| FinancialAidYrAverage | 6.57E-05 | 1.11E-04 | 0.59 | 0.555146 | | 1.000066 |
| MAP[T.Not MAP] | -2.19E-01 | 5.05E-01 | -0.433 | 0.665069 | | 0.803723 |
| StartYear[T.Year2010] | 1.73E-01 | 9.68E-02 | 1.788 | 0.073708 | . | 1.188985 |
| StartYear[T.Year2011] | 2.95E-01 | 1.05E-01 | 2.823 | 0.004761 | ** | 1.342992 |
| DegreeResult[T.2:1] | -6.18E-01 | 1.12E-01 | -5.532 | 3.17E-08 | *** | 0.53886 |
| DegreeResult[T.2:2] | -1.29E+00 | 1.41E-01 | -9.155 | < 2e-16 | *** | 0.274996 |
| DegreeResult[T.3rd] | -1.58E+00 | 3.03E-01 | -5.228 | 1.72E-07 | *** | 0.205358 |
| DegreeResult[T.Pass] | -2.08E+00 | 4.74E-01 | -4.39 | 1.14E-05 | *** | 0.124556 |
| IntegratedMasters[T.Y] | 5.37E-01 | 1.74E-01 | 3.091 | 0.001996 | ** | 1.710353 |
| BursaryAverageCash | -2.53E-05 | 4.48E-05 | -0.564 | 0.572558 | | 0.999975 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 4205.4  on 3370  degrees of freedom
Residual deviance: 3839.0  on 3306  degrees of freedom
  (12140 observations deleted due to missingness)
AIC: 3969

Number of Fisher Scoring iterations: 11
```

## Appendix 25 – Regression - Employment 2012-13 Cat Entry Quals (Bursary Cat)



```
glm(formula = ProbabilityPosDest ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + SubjectE
ND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAvera
ge + MAP + StartYear + DegreeResult + IntegratedMasters + BursaryAverageCashCat, family = binomial(logit), data = B
ursary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5301  -0.8954   0.6170   0.7892   1.4485
```

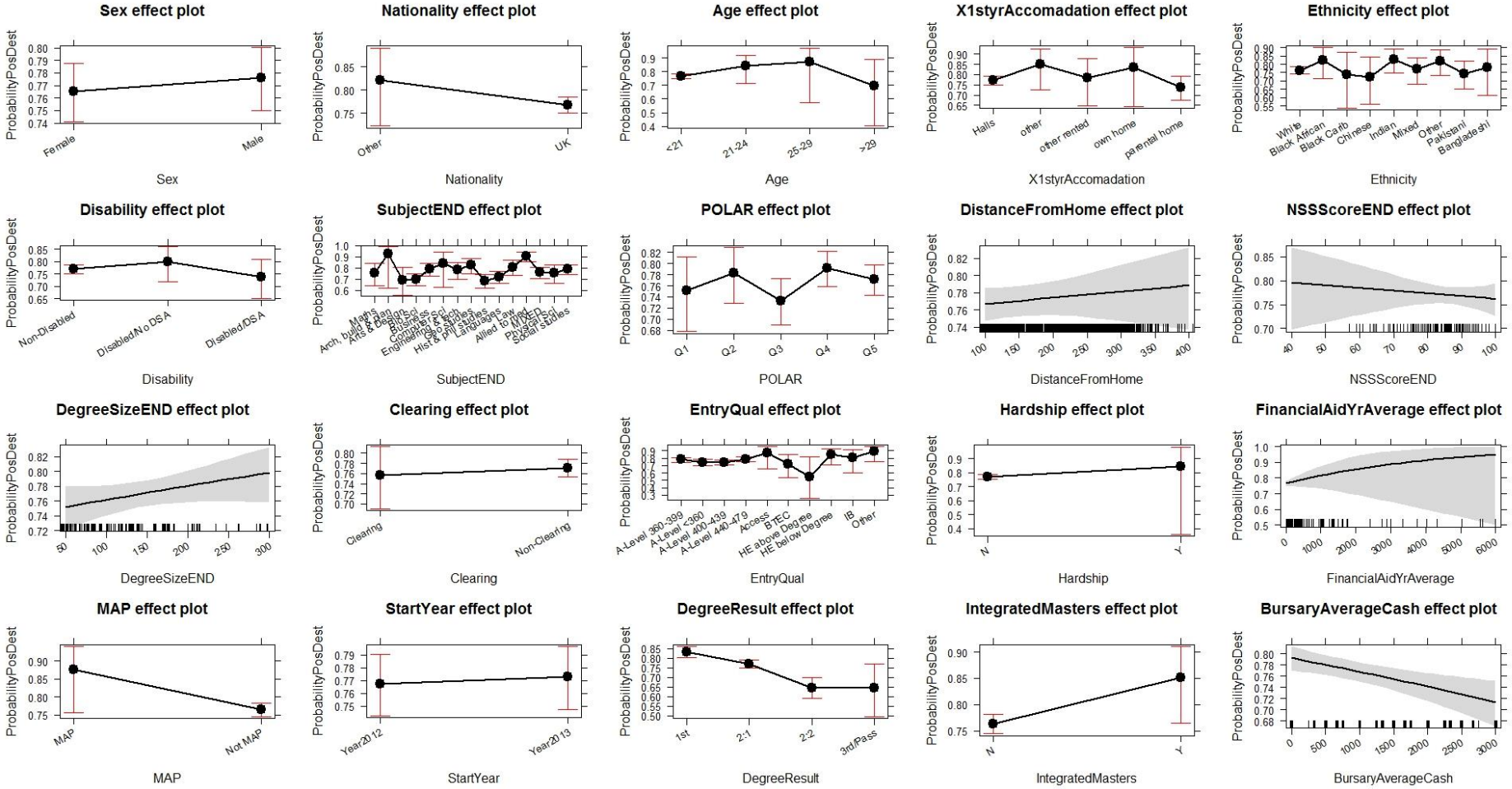
| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 2.513863 | 0.832217 | 3.021 | 0.00252 | ** | 12.35255 |
| Sex[T.Male] | 0.05818 | 0.099146 | 0.587 | 0.55733 | | 1.059906 |
| Nationality[T.UK] | -0.3008 | 0.30037 | -1.001 | 0.31662 | | 0.740224 |
| Age[T.21-24] | 0.417221 | 0.392336 | 1.063 | 0.28759 | | 1.517738 |
| Age[T.25-29] | 0.712167 | 0.841661 | 0.846 | 0.39747 | | 2.038403 |
| Age[T.>29] | -0.41812 | 0.64487 | -0.648 | 0.51674 | | 0.658286 |
| X1styrAccomadation[T.other] | 0.58296 | 0.398387 | 1.463 | 0.14339 | | 1.791333 |
| X1styrAccomadation[T.other rented] | 0.201833 | 0.362794 | 0.556 | 0.57799 | | 1.223644 |
| X1styrAccomadation[T.own home] | 0.477498 | 0.530936 | 0.899 | 0.36847 | | 1.612035 |
| X1styrAccomadation[T.parental home] | -0.12568 | 0.189448 | -0.663 | 0.50707 | | 0.881896 |
| Ethnicity[T.Black African] | 0.3862 | 0.340346 | 1.135 | 0.25649 | | 1.471379 |
| Ethnicity[T.Black Carib] | -0.15489 | 0.461543 | -0.336 | 0.73719 | | 0.856513 |
| Ethnicity[T.Chinese] | -0.24532 | 0.37896 | -0.647 | 0.51741 | | 0.782457 |
| Ethnicity[T.Indian] | 0.420622 | 0.268255 | 1.568 | 0.11688 | | 1.522909 |
| Ethnicity[T.Mixed] | 0.02254 | 0.236661 | 0.095 | 0.92412 | | 1.022796 |
| Ethnicity[T.Other] | 0.336511 | 0.2755 | 1.221 | 0.22191 | | 1.400054 |
| Ethnicity[T.Pakistani] | -0.18478 | 0.242882 | -0.761 | 0.44678 | | 0.831284 |
| Ethnicity[T.Bangladeshi] | 0.03952 | 0.430011 | 0.092 | 0.92677 | | 1.040311 |
| Disability[T.Disabled/No DSA] | 0.159429 | 0.229632 | 0.694 | 0.48751 | | 1.17284 |
| Disability[T.Disabled/DSA] | -0.20107 | 0.21807 | -0.922 | 0.35651 | | 0.817857 |
| SubjectEND[T.Arch, build & plan] | 1.428963 | 1.102669 | 1.296 | 0.19501 | | 4.174368 |
| SubjectEND[T.Arts & Design] | -0.37521 | 0.420048 | -0.893 | 0.37172 | | 0.687145 |
| SubjectEND[T.Bio Sci] | -0.32373 | 0.30364 | -1.066 | 0.28635 | | 0.723446 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Business ] | 0.196818 | 0.32036 | 0.614 | 0.53897 | | 1.217523 |
| SubjectEND[T.Computer Sci] | 0.475857 | 0.628507 | 0.757 | 0.44898 | | 1.609393 |
| SubjectEND[T.Engineering & tech] | 0.138628 | 0.35911 | 0.386 | 0.69947 | | 1.148696 |
| SubjectEND[T.Geo studies] | 0.383243 | 0.371086 | 1.033 | 0.30172 | | 1.467035 |
| SubjectEND[T.Hist & phil studies] | -0.40468 | 0.309523 | -1.307 | 0.19107 | | 0.667192 |
| SubjectEND[T.Languages] | -0.21509 | 0.311179 | -0.691 | 0.48944 | | 0.80647 |
| SubjectEND[T.Law] | 0.303843 | 0.337105 | 0.901 | 0.36741 | | 1.355057 |
| SubjectEND[T.Allied to med] | 1.120848 | 0.380576 | 2.945 | 0.00323 | ** | 3.067454 |
| SubjectEND[T.MIXED] | -0.00657 | 0.31154 | -0.021 | 0.98318 | | 0.993452 |
| SubjectEND[T.Physical Sci] | -0.05211 | 0.351342 | -0.148 | 0.88209 | | 0.949222 |
| SubjectEND[T.Social studies] | 0.152251 | 0.314406 | 0.484 | 0.62821 | | 1.164452 |
| POLAR[T.Q2] | 0.161772 | 0.23353 | 0.693 | 0.48848 | | 1.175592 |
| POLAR[T.Q3] | -0.10663 | 0.210846 | -0.506 | 0.61306 | | 0.89886 |
| POLAR[T.Q4] | 0.212155 | 0.209215 | 1.014 | 0.31056 | | 1.236339 |
| POLAR[T.Q5] | 0.072072 | 0.205242 | 0.351 | 0.72547 | | 1.074732 |
| DistanceFromHome | 0.000258 | 0.000545 | 0.473 | 0.63605 | | 1.000258 |
| NSSScoreEND | -0.00379 | 0.005795 | -0.654 | 0.5129 | | 0.996215 |
| DegreeSizeEND | 0.001039 | 0.000679 | 1.531 | 0.12585 | | 1.001039 |
| Clearing[T.Non-Clearing] | 0.067235 | 0.177249 | 0.379 | 0.70445 | | 1.069547 |
| EntryQual[T.A-Level <360] | -0.23249 | 0.140799 | -1.651 | 0.0987 | . | 0.792561 |
| EntryQual[T.A-Level 400-439] | -0.20619 | 0.130428 | -1.581 | 0.11391 | | 0.813681 |
| EntryQual[T.A-Level 440-479] | 0.04469 | 0.143538 | 0.311 | 0.75554 | | 1.045704 |
| EntryQual[T.Access] | 0.627006 | 0.668166 | 0.938 | 0.34804 | | 1.871997 |
| EntryQual[T.BTEC] | -0.34336 | 0.427992 | -0.802 | 0.42241 | | 0.709384 |
| EntryQual[T.HE above Degree] | -1.13292 | 0.664182 | -1.706 | 0.08806 | . | 0.322091 |
| EntryQual[T.HE below Degree] | 0.508408 | 0.441142 | 1.152 | 0.24912 | | 1.662643 |
| EntryQual[T.IB] | 0.098461 | 0.527913 | 0.187 | 0.85205 | | 1.103471 |
| EntryQual[T.Other] | 0.797648 | 0.535098 | 1.491 | 0.13605 | | 2.220312 |
| Hardship[T.Y] | 0.539174 | 1.145272 | 0.471 | 0.6378 | | 1.71459 |
| FinancialAidYrAverage | 0.00027 | 0.000251 | 1.075 | 0.28238 | | 1.00027 |
| MAP[T.Not MAP] | -0.78262 | 0.426184 | -1.836 | 0.06631 | . | 0.457207 |
| StartYear[T.Year2013] | 0.054071 | 0.101347 | 0.534 | 0.59367 | | 1.055559 |

| | | | | | | |
|---|---|---|---|---|---|---|
| DegreeResult[T.2:1] | -0.39697 | 0.127408 | -3.116 | 0.00183 | ** | 0.672353 |
| DegreeResult[T.2:2] | -1.01974 | 0.167005 | -6.106 | 1.02E-09 | *** | 0.360689 |
| DegreeResult[T.3rd/Pass] | -1.01538 | 0.337447 | -3.009 | 0.00262 | ** | 0.362265 |
| IntegratedMasters[T.Y] | 0.635841 | 0.30294 | 2.099 | 0.03583 | * | 1.888611 |
| BursaryAverageCashCat[T.High/Unknown,£0] | -0.0304 | 0.246031 | -0.124 | 0.90167 | | 0.970061 |
| BursaryAverageCashCat[T.Low, £2000-£3000] | -0.28996 | 0.272934 | -1.062 | 0.28806 | | 0.748294 |
| BursaryAverageCashCat[T.Low,£3000] | -0.15888 | 0.237816 | -0.668 | 0.5041 | | 0.853103 |
| BursaryAverageCashCat[T.Low,< £2000] | 0.008692 | 0.339799 | 0.026 | 0.97959 | | 1.00873 |
| BursaryAverageCashCat[T.Mixed L/H/U,<£2000] | -0.10799 | 0.376079 | -0.287 | 0.774 | | 0.897635 |
| BursaryAverageCashCat[T.Mixed L/H/U,>£2000] | -0.09861 | 0.418724 | -0.236 | 0.81382 | | 0.906094 |
| BursaryAverageCashCat[T.Mixed L/P, < £2000] | -0.40038 | 0.473203 | -0.846 | 0.3975 | | 0.670068 |
| BursaryAverageCashCat[T.Mixed L/P, > £2000] | -0.35683 | 0.286487 | -1.246 | 0.21293 | | 0.699889 |
| BursaryAverageCashCat[T.Mixed P/H/U, < £1000] | -0.4487 | 0.329734 | -1.361 | 0.17358 | | 0.638456 |
| BursaryAverageCashCat[T.Mixed P/H/U, > £1000] | -0.42344 | 0.33281 | -1.272 | 0.20326 | | 0.654792 |
| BursaryAverageCashCat[T.Part,£2000] | -0.45106 | 0.315539 | -1.429 | 0.15286 | | 0.636952 |
| BursaryAverageCashCat[T.Part,< £2000] | -0.02514 | 0.35658 | -0.071 | 0.94378 | | 0.97517 |
| BursaryAverageCashCat[T.Unknown,£0] | 0.252541 | 0.20925 | 1.207 | 0.22748 | | 1.287292 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 2982.5  on 2647  degrees of freedom
Residual deviance: 2775.0  on 2576  degrees of freedom
  (6238 observations deleted due to missingness)
AIC: 2919

Number of Fisher Scoring iterations: 5
```

## Appendix 26 – Regression - Employment 2012-13 Entry Qual Cat (Bursary Cash)



```
glm(formula = ProbabilityPosDest ~ Sex + Nationality + Age + X1styrAccomadation + Ethnicity + Disability + SubjectE
ND + POLAR + DistanceFromHome + NSSScoreEND + DegreeSizeEND + Clearing + EntryQual + Hardship + FinancialAidYrAvera
ge + MAP + StartYear + DegreeResult + IntegratedMasters + BursaryAverageCash, family = binomial(logit), data = Burs
ary)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5442  -0.8880   0.6291   0.7959   1.4645
```

| | Estimate | Standard Error z | z value | Pr(>\|z\|) | Significance | Odds Ratio |
|---|---|---|---|---|---|---|
| (Intercept) | 2.53E+00 | 8.17E-01 | 3.093 | 0.00198 | ** | 12.4909 |
| Sex[T.Male] | 6.13E-02 | 9.85E-02 | 0.622 | 0.53382 | | 1.063175 |
| Nationality[T.UK] | -3.32E-01 | 2.99E-01 | -1.112 | 0.26614 | | 0.717344 |
| Age[T.>29] | -3.59E-01 | 6.38E-01 | -0.563 | 0.57342 | | 0.698095 |
| Age[T.21-24] | 4.58E-01 | 3.84E-01 | 1.193 | 0.23277 | | 1.581225 |
| Age[T.25-29] | 7.35E-01 | 8.42E-01 | 0.873 | 0.38246 | | 2.085691 |
| X1styrAccomadation[T.other] | 5.19E-01 | 3.93E-01 | 1.319 | 0.18701 | | 1.680515 |
| X1styrAccomadation[T.other rented] | 7.55E-02 | 3.53E-01 | 0.214 | 0.83068 | | 1.078423 |
| X1styrAccomadation[T.own home] | 3.91E-01 | 5.24E-01 | 0.745 | 0.45623 | | 1.478015 |
| X1styrAccomadation[T.parental home] | -1.85E-01 | 1.76E-01 | -1.051 | 0.29304 | | 0.831187 |
| Ethnicity[T.Black African] | 3.83E-01 | 3.39E-01 | 1.131 | 0.2579 | | 1.466971 |
| Ethnicity[T.Black Carib] | -1.45E-01 | 4.60E-01 | -0.315 | 0.75276 | | 0.865195 |
| Ethnicity[T.Chinese] | -2.06E-01 | 3.76E-01 | -0.547 | 0.58432 | | 0.813996 |
| Ethnicity[T.Indian] | 4.08E-01 | 2.67E-01 | 1.532 | 0.12563 | | 1.504108 |
| Ethnicity[T.Mixed] | 3.51E-02 | 2.36E-01 | 0.149 | 0.8819 | | 1.035713 |
| Ethnicity[T.Other] | 3.51E-01 | 2.75E-01 | 1.28 | 0.20044 | | 1.421056 |
| Ethnicity[T.Pakistani] | -1.07E-01 | 2.36E-01 | -0.453 | 0.65057 | | 0.898795 |
| Ethnicity[T.Bangladeshi] | 1.11E-01 | 4.26E-01 | 0.26 | 0.79508 | | 1.116948 |
| Disability[T.Disabled/No DSA] | 1.66E-01 | 2.29E-01 | 0.727 | 0.46732 | | 1.181045 |
| Disability[T.Disabled/DSA] | -1.75E-01 | 2.17E-01 | -0.805 | 0.42074 | | 0.839541 |
| SubjectEND[T.Arch, build & plan] | 1.45E+00 | 1.10E+00 | 1.317 | 0.18778 | | 4.271649 |
| SubjectEND[T.Arts & Design] | -3.06E-01 | 4.17E-01 | -0.733 | 0.46386 | | 0.736681 |
| SubjectEND[T.Bio Sci] | -2.86E-01 | 3.01E-01 | -0.95 | 0.34193 | | 0.751037 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SubjectEND[T.Business ] | 2.15E-01 | 3.18E-01 | 0.677 | 0.4987 | | 1.239862 |
| SubjectEND[T.Computer Sci] | 5.30E-01 | 6.28E-01 | 0.844 | 0.39849 | | 1.698762 |
| SubjectEND[T.Engineering & tech] | 1.70E-01 | 3.57E-01 | 0.477 | 0.63351 | | 1.18566 |
| SubjectEND[T.Geo studies] | 4.34E-01 | 3.69E-01 | 1.176 | 0.23949 | | 1.542956 |
| SubjectEND[T.Hist & phil studies] | -3.55E-01 | 3.08E-01 | -1.155 | 0.24799 | | 0.701033 |
| SubjectEND[T.Languages] | -1.79E-01 | 3.09E-01 | -0.579 | 0.56239 | | 0.836022 |
| SubjectEND[T.Law] | 3.21E-01 | 3.36E-01 | 0.956 | 0.33922 | | 1.378092 |
| SubjectEND[T.Allied to med] | 1.14E+00 | 3.79E-01 | 3.003 | 0.00268 | ** | 3.120521 |
| SubjectEND[T.MIXED] | 3.15E-02 | 3.09E-01 | 0.102 | 0.91885 | | 1.032012 |
| SubjectEND[T.Physical Sci] | 1.76E-03 | 3.49E-01 | 0.005 | 0.99598 | | 1.00176 |
| SubjectEND[T.Social studies] | 1.98E-01 | 3.13E-01 | 0.635 | 0.52545 | | 1.21945 |
| POLAR[T.Q2] | 1.76E-01 | 2.32E-01 | 0.758 | 0.44857 | | 1.192438 |
| POLAR[T.Q3] | -9.29E-02 | 2.10E-01 | -0.443 | 0.65751 | | 0.911276 |
| POLAR[T.Q4] | 2.34E-01 | 2.08E-01 | 1.125 | 0.26077 | | 1.263013 |
| POLAR[T.Q5] | 1.14E-01 | 2.04E-01 | 0.559 | 0.57607 | | 1.120528 |
| DistanceFromHome | 4.20E-04 | 5.39E-04 | 0.779 | 0.43571 | | 1.00042 |
| NSSScoreEND | -3.35E-03 | 5.78E-03 | -0.58 | 0.56205 | | 0.996654 |
| DegreeSizeEND | 1.07E-03 | 6.76E-04 | 1.581 | 0.1138 | | 1.00107 |
| Clearing[T.Non-Clearing] | 7.93E-02 | 1.76E-01 | 0.45 | 0.65237 | | 1.082529 |
| EntryQual[T.A-Level <360] | -2.08E-01 | 1.40E-01 | -1.49 | 0.13631 | | 0.811963 |
| EntryQual[T.A-Level 400-439] | -1.93E-01 | 1.30E-01 | -1.491 | 0.13595 | | 0.824152 |
| EntryQual[T.A-Level 440-479] | 3.85E-02 | 1.43E-01 | 0.27 | 0.78746 | | 1.039261 |
| EntryQual[T.Access] | 6.44E-01 | 6.64E-01 | 0.97 | 0.33212 | | 1.90313 |
| EntryQual[T.BTEC] | -3.32E-01 | 4.23E-01 | -0.784 | 0.43312 | | 0.717846 |
| EntryQual[T.HE above Degree] | -1.07E+00 | 6.62E-01 | -1.616 | 0.10616 | | 0.343009 |
| EntryQual[T.HE below Degree] | 4.81E-01 | 4.39E-01 | 1.097 | 0.27283 | | 1.618015 |
| EntryQual[T.IB] | 1.45E-01 | 5.24E-01 | 0.277 | 0.78183 | | 1.156155 |
| EntryQual[T.Other] | 8.43E-01 | 5.32E-01 | 1.585 | 0.11288 | | 2.323094 |
| Hardship[T.Y] | 4.67E-01 | 1.15E+00 | 0.407 | 0.68411 | | 1.59552 |
| FinancialAidYrAverage | 2.93E-04 | 2.53E-04 | 1.156 | 0.24754 | | 1.000293 |
| MAP[T.Not MAP] | -7.70E-01 | 4.27E-01 | -1.803 | 0.07143 | . | 0.463198 |
| StartYear[T.Year2013] | 3.27E-02 | 9.80E-02 | 0.334 | 0.7383 | | 1.033282 |

| | | | | | | |
|---|---|---|---|---|---|---|
| DegreeResult[T.2:1] | -4.10E-01 | 1.27E-01 | -3.233 | 0.00123 | ** | 0.663916 |
| DegreeResult[T.2:2] | -1.01E+00 | 1.66E-01 | -6.073 | 1.26E-09 | *** | 0.364219 |
| DegreeResult[T.3rd/Pass] | -1.02E+00 | 3.37E-01 | -3.03 | 0.00244 | ** | 0.360595 |
| IntegratedMasters[T.Y] | 5.76E-01 | 3.00E-01 | 1.918 | 0.05512 | . | 1.778197 |
| BursaryAverageCash | -1.44E-04 | 4.41E-05 | -3.259 | 0.00112 | ** | 0.999856 |

```
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
(Dispersion parameter for binomial family taken to be 1)
    Null deviance: 2982.5  on 2647  degrees of freedom
Residual deviance: 2788.1  on 2588  degrees of freedom
  (6238 observations deleted due to missingness)
AIC: 2908.1
Number of Fisher Scoring iterations: 5
```