Understanding the impact of differential university fees in England

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Preface

In 2011, the RAND Europe Board of Trustees commissioned this research into tuition fees in the United Kingdom and the impact of recent increases on the choices of students and parents whose children intended to attend university in 2012 or 2013. The study focuses on the choices of students in England who had already decided to attend university, and on how they believed that tuition fees would affect their choice of university; it does not cover the effect of fees on decisions about whether or not to attend university.

This document explores the relative importance of the level of tuition fees compared to the other characteristics of Higher Education Institutions in influencing students or parents of students intending to go to university. To obtain information on how individuals trade off between different factors when thinking about university choices, stated preference discrete choice modelling was used. A survey of 2,005 individuals was undertaken and respondents were asked to make hypothetical choices between universities under a range of different scenarios. The document reports findings from the analysis, whilst the annexes document the methods used in details and provide data tables.

This report is designed for the community of practitioners and decisionmakers who are impacted by changes in tuition fees. It was developed to provide helpful insights to Government departments, policymakers and universities alike, as well as to the wider research community. The report provides evidence to individuals interested in insights into which factors influence students' university choices,

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For more information about RAND Europe or this document, please contact:

Peter Burge

RAND Europe

Westbrook Centre, Milton Road

Cambridge, CB4 1YG

United Kingdom

Tel. +44 (1223) 353 329

burge@rand.org

Abstract

From September 2012 universities and other higher education institutions (HEIs) in England have been able to charge up to £9,000 per year in tuition fees, which had previously been capped at £3,375 per year. Against this backdrop, this report explores the relative importance of tuition fees on the choices made between universities by students, and parents of students, intending to go to university.

The research uses a stated preference survey approach, which consisted of asking individuals to make choices within a survey context about which university they would choose across a range of hypothetical scenarios. From these choices it is then possible to analyse the decisions made, the extent to which they are influenced by different factors, and to observe the trade-offs being made.

We see that tuition fee levels are not the only consideration which influences the judgement of parents and students when deciding to apply to university. Our analysis suggests that several factors influence university choice apart from tuition fees, including employment prospects, living expenses, location and quality of the course offered. We also quantify the trade-offs that students and parents are willing to make; specifically their willingness to pay, through tuition fees, for other aspects that may differentiate universities and their courses.

This report provides new empirical evidence to support the debate around the relative influence that tuition fee levels have in influencing the decisions of those choosing between universities, and provides a foundation for future econometric analysis.

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Aim and objectives

This study aimed to answer an overarching question of the relative importance of tuition fees on university attendance choices among students or parents of students intending to go to university over the coming years. In order to do so, this report explores four sub-questions, namely:

1. Which factors influence the choices of students and their parents regarding which university to attend (if any)?
2. What trade-offs are made when making these choices, and how do different levels of fees play off against other factors?
3. How do these choices vary between different student groups?
4. What are the wider implications of the factors influencing the choices that students will make within the higher education system?

Background

Higher education tuition fees were first introduced in England in September 1998 following the Dearing Report (National Committee of Inquiry into Higher Education, 1997) and required students to pay up to £1,000 per year towards the cost of their tuition in order to fund the planned rapid expansion of higher education in England. In January 2004 the maximum tuition fee level increased to £3,000 per year. In November 2010, following the Browne Review, the Universities Minister David Willetts announced plans for universities and other higher education institutions (HEIs) in England to be able to charge up to £9,000 per year in tuition fees from September 2012. This represented a substantial increase on 2011 tuition fees, which were previously capped at £3,375 per year, and a significant shift in the balance between increased student (and parent) contributions and government funding for higher education teaching.

Analysis of secondary data and attitudinal surveys conducted before and after the most recent increase in tuition fees present a mixed picture (NFER, 2011, ICF, 2012a, ICF, 2012b). It is clear that since their introduction in September 1998, increasing tuition fee levels do deter some young people from applying to university, and that given the choice between paying high fees in England or studying elsewhere, many choose to study elsewhere or not at all. However, the most recent rise in tuition fees announced in November 2010 does not appear to have deterred those who might have been expected to have been affected most – potential applicants from low-income households – and it does not appear to have increased (already very high) levels of debt aversion amongst those considering going to university. Thus

the available evidence leaves important questions unanswered: if increasing tuition fees do not deter those least able to pay, what other factors influence their decisionmaking? Within a market of variable tuition fees, how important are fees in applicants' selection of a university to apply to? If fees do not affect applicants' attitudes towards getting into debt, do they believe that future employment and earnings will provide a sufficient return on their investment? Clearly the process of deciding whether or not to go to university, and choosing which university to apply to, is complex and requires further analysis if we are to understand the importance of tuition fees relative to other considerations.

It is against this backdrop that the RAND Europe Board of Trustees decided to fund this piece of research to provide some fresh empirical evidence to support the debate around the relatively influence that tuition fee levels may (or may not) have in influencing the decisions of those choosing between universities.

Approach and methodology

The research uses a stated preference survey approach, which consisted of asking individuals to make choices within a survey context about which university they would choose across a range of hypothetical scenarios. From these choices it is then possible to analyse the decisions made, the extent to which they are influenced by different factors, and to observe the trade-offs being made.

Data about the choices that individuals actually made regarding their choice of university were not available at the time of undertaking the survey as the increased level of fees had not yet been introduced. Even if such data had been available, an analysis based on this would be limited by the lack of variation in some important characteristics (such as, for example, fee levels). It was therefore advantageous to use stated preference choice experiments which could be constructed to explore a wide decision space and explore possible responses to scenarios beyond those currently available.

To undertake this work, surveys of two groups of individuals (students and parents of students who were intending to go to university in the autumn of 2012 or 2013) were commissioned. The parents and students were not related. As part of these surveys, respondents participated in a stated preference discrete choice experiment, which contained hypothetical university options described by characteristics of the universities, including their fee level. From these data we are able to quantify the importance of specific characteristics of the universities in parents' and students' university choices.

In order to provide realism to the hypothetical choices, we used the attributes which emulated those being collated for official use in supporting students' choices, known within the sector as the "Key Information Set" (KIS). All HEIs had made this information available via their course website pages by the end of October 2012, allowing prospective students can compare all the KIS data for each course with data for similar courses via the unistats.direct.gov.uk web site. The choice experiments therefore provide us with new insights into how parents and students respond to this information and weigh it alongside the financial information on fees and living costs when making decisions regarding university choice.

We analysed the data collected in the surveys using discrete choice modelling methods to quantify the importance of different university characteristics on prospective students' and their parents' hypothetical university choices. Within these econometric models we examined how the importance of attributes varied across different student and parent groups, specifically focusing on different levels of household income and other factors that may reveal trends that could have policy implications.

Findings

Much of the debate on access to higher education over the past years has focused on the impact of increased tuition fees, especially on students' decisions to attend university. Commentators, academics and politicians alike feared that higher tuition fees would deter students from poorer backgrounds from applying to university. On the other hand, funding cuts in universities and the need to maintain comparable funding levels has led to a 'race to the top' in fee levels across the United Kingdom, whereby a large majority of higher education institutions have had to increase fee levels to the maximum of £9,000 per year since September 2012.

We see that from the analysis of our survey that in hypothetical choice situations tuition fee levels are not the only consideration that influences the judgement of parents and students when deciding which university to choose. Our analysis suggests that several factors influence university choice apart from tuition fees, including employment prospects, living expenses, location and quality of the course offered. We find that:

1. **Universities appear to have behaved in a rational way when setting their fees** as students, and their parents, are relatively price inelastic with respect to tuition fees (ie any revenue lost from students opting not to attend is less than the revenue gained from those attending paying more).

2. **Living expenses are, pound for pound, less of a disincentive than tuition fees**, with those from households not receiving income benefits being half as sensitive to a change in living costs than a change in tuition fees.

3. **Longer-term employment and earning prospects were considered when choosing between universities.** The choices both of students and parents suggest a willingness to pay higher fees to increase likely earnings on graduation, and those students intending to work part-time during their studies are more focused on the prospects of achieving employment upon graduation.

4. **We observe some elements of altruism amongst parents**, with those from higher income households indicating that they are willing to pay more for their children to attend universities that support less well-off students.

5. **Whilst financial considerations are important, quality also matters**, and this is judged both on the basis of course league table rankings and the satisfaction of current students. We observe a higher willingness to pay additional fees to attend better performing courses amongst the students compared to the parents surveyed.

6. **Debt aversion plays a role in the decision to study online.** There is a greater willingness to consider online courses amongst parents. Those students that are not debt-adverse are unlikely to consider online courses, but those that are debt-adverse would be willing to consider studying online if this enabled them to save £4,320 or more on their annual tuition fees.

7. **The location of the university matters**, with the primary preference being to study in an English institution at universities located within the student's existing region.

8. **Income had less impact than the public debate might lead one to expect.** In considering the choices of those indicating an intention to consider applying to a university we were unable to

identify any difference in tuition fee price sensitivity, the relative value of university characteristics or the probability of choosing not to go to university given the characteristics presented, for poorer students. This finding is not unique to our study, and is also in line with the observed behaviour in the real market, where data shows that the entry rates of students from disadvantaged areas have not reduced since fees have increased (UCAS, 2012).

In all cases we are able to quantify the scale of these impacts, and within the main report we provide tables of the trade-offs that students and parents would make in their willingness to pay tuition fees to achieve differences in other attributes describing the performance or characteristics of the university or course on offer.

The models estimated from our choice data therefore strengthen the evidence base in the debate on access to university and tuition fees. They do so by enabling the quantification of the trade-offs and the 'willingness to pay' for different factors in a way that is not possible from observing the current higher education market where institutions have clustered around the higher fee levels.

The alternatives offered and explored within our choice experiments drew in part on the forms of data that are now being published on the UNISTATS, and other web sites using data collected through the KIS. Whilst a number of commentators have downplayed the importance of these data sets, our analysis would suggest that if students are directed towards them and consider them at the time of making their higher education choices it could play an influential role in their decisions. This is especially relevant in a system in which fees have been set at such levels that they don't act as a significant differentiator between institutions.

Our research shows that, when presented these data, students use them to inform the choices that they make and can be significantly influenced by a wide range of factors. This puts a new onus on universities to outperform their competitors across a wide number of different dimensions. This introduces some new incentives in the higher education. The basis of the data within the KIS also alters the balance of power. The fact that student ratings form part of the dataset means that current students will gain a more powerful voice in holding institutions to account for the education that they provide in return to the tuition fees paid. Whilst student satisfaction surveys have been undertaken for a long time, and have played a role in other league tables, the introduction of the KIS gives them an increased prominence. It will therefore be more important than ever for universities to ensure that their current students are receiving the education, and broader university experience, that they are expecting.

We have also identified opportunities for the choice models developed in this study to be further developed and supplemented with additional data that are now becoming available to allow a range of alternative policy scenarios or commercial strategies to be explored.

The research undertaken therefore provides both fresh empirical evidence to support the debate around the relative influence that tuition fee levels have in influencing the decisions of those choosing between universities, and provides a foundation for future analysis that could provide practical insights into those wishing to better understand the behaviours within this developing market.

Acknowledgements

Abbreviations

DCM	Discrete choice modelling
KIS	Key Information Set
RP	Revealed preference (observed choice) data
SP	Stated preference (hypothetical choice) data
SPDCE	Stated preference discrete choice experiment
UCAS	Universities and Colleges Admissions Service
WTP	Willingness to pay

1. Introduction

1.1. Policy history and previous research

Higher education tuition fees introduced in September 1998 following the Dearing Report (National Committee of Inquiry into Higher Education, 1997) required students to pay up to £1,000 per year towards the cost of their tuition in order to fund the planned rapid expansion of higher education in England. In January 2004 the maximum tuition fee level increased to £3,000 per year. Following the Browne Review (published in October 2010), in November 2010 the Universities Minister David Willetts announced plans for universities and other higher education institutions (HEIs) in England to be able to charge up to £9,000 per year in tuition fees from September 2012 (Browne, 2010; Willetts, 2010). This represented a substantial increase on 2011 tuition fees capped at £3,375 per year, and a significant shift in the balance between increased student (and parent) contributions and government funding for higher education teaching, which has been reduced in equal measure. This latest increase in tuition fees led to widespread protests in November and December 2010 and has resulted in significant political fallout, particularly for Liberal Democrats whose 2010 election manifesto opposed tuition fees, but the majority of whose MPs voted with the coalition government in favour of the change on 9 December 2010.

With every increase in tuition fees over the past 14 years, the risk that students from low-income households will be deterred from applying to university has been debated. The latest rise in tuition fees is no exception, and has produced a number of reports which explore this issue.

Analysis of applications for full-time undergraduate places from 2004 to 2012[1] suggested that the rise in fee levels had indeed deterred some applicants, but perhaps not the most likely ones. After controlling for general population changes, the Universities and Colleges Admissions Service (UCAS) found a 1 per cent fall in applications from 18 year-olds against a recent trend of annual increases of a similar amount, representing 15,000 young people in England who might have been expected to apply to university in 2012 but did not. This contrasts with unchanging trends for applications from young people to universities within Northern Ireland, Scotland and Wales, where education policy is devolved and fee levels for 2012 remain similar to 2011. However applications from young people in Scotland and Northern Ireland to study *outside* their home country, where fees are higher, have fallen. Moreover, while applications from older age groups for full-time undergraduate places in Northern Ireland, Scotland and

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[1]   Universities and Colleges Admission Service, "How have applications for full-time undergraduate higher in the UK changed in 2012" (July 2012).

Wales (where 2012 fee levels are similar to 2011) remain unchanged, applications in England for 2012 have declined markedly, by up to 20 per cent for applicants aged over 18 years. Surprisingly, the 2012 dip is for applicants from higher income households: disadvantaged applicants do not appear to have been deterred in equal measure.

Analysing the same UCAS data with different parameters, the Independent Commission on Fees (ICF) found a larger drop in applications in 2012.[2] The commission grouped applications from 18 and 19 year-olds (the latter forming a substantial proportion of all applications, and including gap-year students), compared 2012 applications with 2010 rather than 2011 (in order to exclude 2011 applications which may have been influenced by David Willetts' announcement in November 2010), and selected an earlier run of data (from 2002–2009) for trend analysis. Commissioners found that compared to 2010, in 2012 applicants within England aged 20 and over declined by 12.8 per cent, and applications aged 18 and 19 declined by 7 per cent. In contrast, applications from the same age groups within the Northern Ireland, Scotland and Wales either increased (most notably in Scotland, where there are no tuition fees) or declined slightly. By adopting different age and date parameters, the ICF trend analysis argues for a larger impact on university applications than UCAS found, but it agrees that this is most apparent among higher-income households.

The UCAS and ICF secondary analyses of administrative data are amplified by the results of three attitudinal surveys of young people conducted by the National Foundation for Educational Research (NFER). The first survey,[3] an omnibus conducted in June 2011 including 433 pupils in years 10–12 in England, found only 15 per cent of respondents whose plans to go to university were unchanged by David Willetts' November 2011 tuition fees announcement. The vast majority were reconsidering their plans, with most (26 per cent) planning to apply only to local universities so that they could live at home, whilst 19 per cent planned only to apply to universities charging fees of less than £9,000 per year, and the remainder considered going to further education or studying abroad instead (17 per cent), or not going to university at all because of increased tuition fees (15 per cent).

The second NFER survey[4] (commissioned by the ICF), asked 1,000 pupils in years 10–13 about their aspirations and plans for higher education. Tuition fees and the overall cost of going to university were most often cited by students who said they were unlikely to go to university. Despite this, three quarters of respondents said they were likely to go to university. This suggests the cost of going to university (including tuition fees) is a significant factor in young people's decisionmaking and a deterrent to some but not all potential applicants.

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2   "Analysis of UCAS Applications for 2012/13 Admissions" (Independent Commission on Fees, August 2012).

3   "Prospective University students are Re-considering their Options" (National Foundation for Educational Research, 25 August 2011).

4   "Finances: The biggest reason young people aren't going to university, despite high levels of HE aspiration" (Independent Commission on Fees, 2012).

In the third survey,[5] the NFER surveyed more than 44,000 young people in 118 secondary schools (years 7–13) in five waves between January 2010 and July 2011, completing two waves before David Willetts' November 2010 announcement and three afterwards. The survey results show that since the announcement, secondary school pupils were one-and-a-half times as likely to agree that they can be successful without qualifications, including those in the earliest years. The minister's announcement appears to have had little impact on secondary school pupils' attitudes towards debt: around 80 per cent of respondents continued to think staying out of debt was very important across the whole reference period.

Taken together, the available analysis of secondary data and attitudinal surveys conducted before and after the most recent increase in tuition fees presents a mixed picture. It is clear that since their introduction in September 1998, increasing tuition fee levels do deter some young people from applying to university, and that given the choice between paying high fees in England or studying elsewhere, many choose to study elsewhere or not at all. However, the most recent rise in tuition fees announced in November 2010 does not appear to have deterred those who might have been expected to have been affected most – potential applicants from low-income households – and it does not appear to have increased the (already very high) levels of debt aversion amongst those considering going to university. Thus the available evidence leaves important questions unanswered: if increasing tuition fees do not deter those least able to pay, what other factors influence their decisionmaking? Within a market of variable tuition fees, how important are fees in applicants' selection of a university to apply to? If fees do not affect applicants' attitudes towards getting into debt, do they believe that future employment and earnings will provide a sufficient return on their investment? Clearly the process of deciding whether or not to go to university, and choosing which university to apply to, is complex and requires further analysis if we are to understand the importance of tuition fees relative to other considerations.

Whilst this is by no means a comprehensive review of all the literature available in this area, which would exceed the resources available for this work; this overview is intended to provide a sense of the policy context within which the work was commissioned and the evidence that was being publicly discussed in the UK media whilst the work was being undertaken.

1.2. Research questions and methods

1.2.1. Research questions

This study aimed to answer an overarching question of the relative importance of tuition fees on university attendance choices among students or parents of students intending to go to university over the coming years. In order to do so, this report explores four sub-questions, namely:

1. Which factors influence the choices of students and their parents regarding which university to attend (if any)?

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5   T. Benton, "Do I Really Need a Degree? The impact of increased tuition fee increases on young people's attitudes towards the need for qualifications" (National Foundation for Educational Research, February 2012).

2. What trade-offs are made when making these choices, and how do different levels of fees play off against other factors?

3. How do these choices vary between different student groups?

4. What are the wider implications of the factors influencing the choices that students will make within the higher education system?

1.2.2. Stated preference choice experiments

This work stems out of the observation that there is little available evidence on these issues. We decided to utilise our experience of Discrete Choice Modelling to generate evidence that could inform the tuition fees debate. The research uses a stated preference survey approach, which consists in asking individuals to make hypothetical choices regarding a public good or a service, with a view to analyse and predict their choices and to observe trade-offs (Potoglou, Kim, and Burge, 2009).[6] To undertake this work, surveys of two groups of individuals (students and parents of students who were intending to go to university in the autumn of 2012 or 2013) were commissioned. The parents and students were not related. As part of these surveys, respondents participated in a stated preference discrete choice experiment, which contained hypothetical university options described by characteristics of the universities, including their fee level. From these data we are able to quantify the importance of specific characteristics of the universities in parents' and students' university choices.

Ideally, such a study would collect data about the choices that individuals *actually made* regarding their choice of university (called revealed preference data). However, this was not feasible in this study, because at the time of undertaking the survey the increased level of fees had not yet been introduced. There would be value in undertaking a follow-up survey in the future, which could provide data on actual choices made by students. Such a study would again strengthen the evidence base regarding the impact of tuition fees, although it would face inherent limitations owing to the lack of variation in some important characteristics, (such as, for example, fee levels).

Stated preference data enable the analysis of trade-offs in terms of factors influencing university attendances (living costs, course quality, employment prospects, etc). It is worth noting that the survey does not focus on factors influencing students' and parents' decisions about whether to go to university. Rather, it examines the choice of university of those who have stated that they are considering going into higher education by investigating the institutional characteristics which influence the choice of university.

1.3. Structure of this document

The rest of this document is structured as follows. Chapter 2 provides an overview of the methodological tools underpinning the study and the administration of the survey. Chapter 3 presents the results and key findings from the survey. Finally, in Chapter 4 the main messages underpinning the findings are

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[6] Potoglou, D., Kim, C.W., and Burge, P., (2009), "Discrete choice modelling," in Ling, T., and Villalba van Dijk, L., *Performance Audit Handbook: Routes to effective evaluation*, Santa Monica, Calif.: RAND Corporation, TR-788-RE. As of 3 February 2014: http://www.rand.org/pubs/technical_reports/TR788

presented, their implications are discussed and we reflect on possible ways that this research could be extended to further support policy analysis of the higher education market.

2.   Research approach

2.1. Our methodological framework

Stated preference discrete choice experiments (SPDCEs) provide an analytical method for understanding and predicting how individuals choose between discrete (mutually exclusive) alternatives, for example, whether to travel by bus or train. It is a technique that has been widely used in transportation economics and is increasingly used in other fields, such as environmental and health economics.[7]

Box 2.1 describes the theoretical underpinning for a discrete choice experiment.

For this study we have undertaken SPDCEs with students and parents of students who were intending to go to university in the autumn of 2012 or 2013. We included an option which allowed the individual to indicate that they would not attend university should they find that none of the alternatives offered acceptable. However, we recognise that we are not fully able to capture the scale of this response as the sample of respondents only includes those that stated they were considering attending university. This group were likely to be aware that the level of fees was increasing, and we are aware that the models will under-represent the likelihood that a representative student will decide not to attend university. This restriction on the sample definition was chosen to maximise the use of resources by focusing directly on the population of interest: a broader, alternative design encompassing all students leaving secondary education would have meant that for a significant proportion of interviewees, the choices posed in the survey would have been far less relevant. In future extensions of this work it would be interesting to also survey students and parents who have not already decided to go to university in order to also examine the impact of fees on their choice.

As well as participating in the experiments, respondents were asked a number of background questions about their secondary school experience, their plans for university and personal characteristics.

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[7] I. J. Bateman, Carson, R. T., Day, B., Hanemann, M., Hanley, N., Hett, T., Jones-Lee, M ., Loomes, G., Mourato, S., Ozedemiroglu, E., Pearce, D., Sugden, J. & Swanson, J., *Economic Valuation with Stated Preference Techniques: A manual*, Cheltenham, UK: Edward Elgar, 2002; Her Majesty's Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, London: Her Majesty's Treasury, 2003.

Box 2.1: Using stated preferences for understanding and quantifying the choices that people make

Within the stated preference discrete choice experiments (SPDCE) framework, it is possible to investigate and quantify the importance of specific drivers of consumers' choices; for example, how important is the quality of the course or the level of fees when choosing a university.

In an SPDCE, hypothetical choice situations – in which each alternative is described by a set of attributes (for example, fee level, quality of the course, location of the university, etc) – are presented to each individual. Each of the attributes in the experiment is described by a number of levels. The attribute levels are combined using principles of experimental design to define different service packages, which respondents evaluate in surveys by choosing one of the alternatives within the choice set. When cost is included as an attribute, as in this study where the fee level is an important attribute, values can be provided for each characteristic in terms of 'willingness-to-pay', which provides a quantification of the user benefits.

Stated preference data also has many useful statistical properties. For example, because the researcher controls the choices that are presented to respondents, correlation between explanatory variables, such as quality and price, can be reduced or limited. Also, a wider range of variation in explanatory variables can be tested, which may not be possible in the real world. For example, we were able to test the impact of a much wider range of fees than has been provided by the market for 2012. The technique is also data efficient: more than one choice scenario can be presented to respondents within one interview. Its main drawback, however, is that such data are based around what individuals say they would do in hypothetical situations. Careful design, ensuring that realistic choices are offered to respondents can help mitigate problems.

The UK Treasury recommends the use of stated preference discrete choice experiments for valuing public sector services (http://greenbook.treasury.gov.uk).

We have analysed the data collected in the surveys using discrete choice modelling methods (DCM) to quantify the importance of different university characteristics on prospective students' and their parents' hypothetical university choices (see description in Box 2.2). We examined how the importance of attributes varied across different student and parent groups, specifically focusing on different levels of household income.

Box 2.2: What is discrete choice modelling?

Discrete choice modelling (DCM) provides an analytical framework to analyse and predict how consumers' choices are influenced by the characteristics of the alternatives and the characteristics of the people making the choices. Because not all aspects of human behaviour can be fully understood, these influences can only be modelled as affecting the *probabilities* that people will make certain choices: the possibility always remains that specific individuals will not make the choices indicated as most probable by the model. Nevertheless, for the total population, general effects can be found and predictions can be made with reasonable accuracy.

The basic tenet of DCM is utility maximisation; that is, given a set of alternatives, people choose the alternative which brings them the most utility. Functions describing the utility of each choice alternative available to a consumer are therefore constructed, incorporating explanatory variables like price and quality, multiplied by coefficients (β) that reflect the relative value (weight) of the service terms. It is the model coefficients (β) that are estimated in the model calibration procedure.

The discrete choice model is based on the assumption that the respondent chooses the alternative with the highest utility. The estimation can therefore be conducted within the framework of random utility theory, ie accounting for the fact that the analyst has only imperfect insight into the utility functions of the responding households and businesses.

The most popular and widely available estimation procedure is logit analysis. The logit model predicts the probability of choice of each alternative by the *logit formula*, which gives the probability (P) of choosing alternative 1 from a set of k alternatives as:

$$P_1 = \exp(V_1) / \{\exp(V_1) + \exp(V_2) + \ldots + \exp(V_k)\}$$

In which the V's represent the utilities of each of the alternatives 1,2,…, k. Typically they are described by the characteristics of the alternative and characteristics of individuals.

The logit model estimation procedure produces estimates of the model coefficients, such that the choices made by the respondents are best represented. The standard statistical criterion of Maximum Likelihood is used. Both the values of the coefficients (in utility terms) and the significance of the coefficients are output (Train, 2003).

The process of model estimation is one of defining the utility formulations that best explain the choices made and then of estimating the β values that give the maximum likelihood for that specification.

Because the cost of the services, ie the university fee level, is included as an attribute, then the ratio of the coefficients for the other attributes and cost provide indirect estimates of willingness to pay (WTP).

2.2. Survey administration and recruitment

The discrete choice experiment formed part of a web survey that was administered to a group of students intending to go to university, and to parents whose children intended to go to university, in the coming two years. Respondents were recruited from the Research Now's panels.

In order to better target students aged 16–18 the survey of students utilised Research Now's social media panel. The individuals on this panel have been recruited through social networking applications and online communities, and this provides a larger sample of young people than available on other survey panels. The survey was then promoted to these individuals through embedded links within their social networking applications and online communities.

The use of on-line survey panels, has allowed us to draw samples that have the broad characteristics of interest. The sample will not, however, reflect a truly randomly drawn sample. Moreover, by the nature of online survey panels there will be a lack of representation of the population that is not online, which will mean that the study is unlikely to include some hard-to-reach groups. This is unlikely to be a major consideration for the sampling of students considering applying to a university as the majority of these will have online access, if not at home, through their current education institutions. However, it may have led to some groups of harder-to-reach parents being under-represented. Whilst it is difficult to say the exact impact that the exclusion of such groups may have on the study findings, the judgement was taken that the effect would likely be small and that the trade-off between achievable sample size and coverage within the available resources made the use of on-line survey panels the preferred option for this study.

The fieldwork was undertaken between 25 October and 2 November 2011. We obtained 1,000 completed surveys from students, and 1,005 completed surveys from parents.

2.3. Survey structure

The questionnaire was structured to collect a rich dataset for analysis. Table 2.1 summarises the information that was collected.

Table 2.1: Information collected in the survey

Education to date	• School attended
	• Exam results achieved
	• Expected grades
Plans for university	• What, where, why?
	• Availability of information to support choice
	• Financial plans
Discrete choice experiment	• Introduction
	• 8 hypothetical choice scenarios

	• Feedback on choice scenarios
Issues related to choice of university	• Parental influence
	• Attitudes to debt
	• Awareness of loan mechanisms and expected borrowing
Demographic information	• Demographic profile of student
	• Demographic profile of parent

2.4. Design of the discrete choice experiment

As part of these surveys, respondents participated in an SPDCE, which contained hypothetical university options, described by characteristics of the university and the fee level.

2.4.1. Defining the attributes and levels

A key aspect of the stated preference methodology is the specification of the attributes and attribute levels to be tested in the discrete choice experiment.

In order to provide realism to the hypothetical choices, we used the same attributes which are being collated for official use in supporting students' choices, known within the sector as the Key Information Set (KIS).

The KIS were launched by the higher education funding councils in September 2012 with the aim of providing prospective higher education students with comparable sets of standardised information about full-time or part-time undergraduate courses offered by universities and colleges of higher education in the UK. The KIS are designed to provide the information students say they value most (principally concerning course satisfaction, employability and cost) in a readily accessible form on the unistats.direct.gov.uk web site, in order to aid comparison and decisionmaking. The sets provide information on 17 items classified into 4 overarching themes, namely study, costs and financial support, the Students' Union, and employment and salary information (HEFCE, 2013). Information is provided visually through figures and bar charts and may be compared across institutions. For students, the KIS is a source of information and evidence supporting choices for university: its 17 items cover a broad range of issues from future employment prospects to overall student satisfaction with the course.

The development of the KIS began when the funding councils commissioned research in order to understand the information needs of users of public information about higher education, the best modes for delivering that information, who should provide the information, and how the information would support potential students deciding which higher education institutions (HEI) to apply to. Building on these findings, subsequent research was commissioned to enhance and develop the National Student Survey (NSS), and to improve access to the information published on HEIs' web sites and which is used for quality assurance purposes. Expert working groups tested the collection of data that are not already available nationally, including about learning activities and assessment methods, professional accreditation, accommodation costs and graduate salary outcomes. Eight HEIs piloted the new data collations recommended by the expert working groups, and an information technology (IT) consultancy

was commissioned to develop an engaging, user-centred design for the online interface with the information.

The resulting KIS presented on the unistats.direct.gov.uk web site are drawn from existing (or enhanced) annual collections, including the NSS and the Destination of Leavers from Higher Education (DLHE) survey (collected 6 and 40 months after graduation), and data supplied by universities and colleges (Unistats, 2014). All HEIs had made this information available via their course web site pages by the end of October 2012, allowing prospective students to compare all the KIS data for each course with data for similar courses via the unistats.direct.gov.uk web site.

The following information about each course is presented in the KIS:

- Student satisfaction data concerning teaching, advice and support, feedback, library resources, IT resources, the Students' Union – supplied by the NSS
- Time spent in different learning and teaching activities, summative assessment methods, professional body accreditation, institutional accommodation – supplied by HEIs
- Financial support available from the institution and average tuition fees – supplied by the Universities and Colleges Admissions Service (or individual HEIs)
- Leaver destinations 6 and 40 months after graduation – supplied by the DLHE survey.

The arrival of the KIS was greeted with scepticism by leading commentators reported by the *Times Higher Education* (THE) on 27 September 2012. Sami Benyahia, research director at Ipsos MORI responsible for collecting the NSS, thought the KIS would have little influence on students:

> I suspect it will be used with other information to inform a choice they have already made. It's a bit like someone who buys a car reading reviews [afterwards] to make them feel more comfortable about their decision.

Duna Sabri, visiting research fellow in higher education policy at King's College London, expressed concern about the equation of high student satisfaction scores with quality: "Students care a lot about content and what they are taught but this is not addressed in the KIS. It is all about processes, satisfaction and treating students as customers" (Grove and Gibney, 2012). Roger Brown, professor of higher education policy at Liverpool Hope University and former chief executive of the Higher Education Quality Council, argues the NSS data provide crude and unreliable indicators of university teaching quality Grove and Gibney, 2012):

> "Those universities which are well-resourced and campus-based tend to be those that do well in the NSS. The differences between institutions are also insignificant. As a guide to compare universities, I think it's almost useless".

These comments echo those made by Lee Harvey, former director of research and evaluation at the Higher Education Academy and international expert on student surveys, in a 2008 letter to the Times Higher Education (Harvey, 2008). He decried the "fraudulent nature of the NSS", pointing to gamesmanship by universities, rankings which are meaningless because most institutions fall within a narrow range covered by sampling error, and the inadequacy of the NSS as a quality improvement tool because "it takes no account of context and institutional setting". Four years later, Duna Sabri agreed,

arguing that a more reliable reading of the NSS data than provided in the KIS rankings would be how well HEIs reached their benchmarks, which are adjusted according to each study body's profile.

In defining the attributes to include within the choice experiment we used a similar approach to the Key Information Sets in the choice exercises, emulating the sorts of choices that students and parents may face in future and the sort of information that will be provided to them to help make decisions as we surveyed the student and parent group. The list of attributes and attribute levels tested are summarised in Table 2.2.

Table 2.2: Summary of attributes and levels tested in the discrete choice experiment

	Attribute	Description
Location / type of university	Type of university	City centre university
		Campus university
		e-learning online
	University location	North of England
		Midlands and East
		London
		South East and South West
		Scotland
		Wales
		Northern Ireland
		Outside the UK
Status	Course ranking	Course ranked in top 10%
		Course ranked between top 10–30%
		Course ranked between top 30–60%
		Course ranked between top 60–80%
		Course ranked below top 80%
Financial considerations	Tuition fees	£3,000 per year
		£4,500 per year
		£6,000 per year
		£7,500 per year
		£9,000 per year
		£12,000 per year
	Annual cost of living, including rent	£6,000 per year
		£8,000 per year
		£9,000 per year
		£10,000 per year
		£12,000 per year
	Financial support	Non means tested support available
		Means tested support available
		No support available
Views of current students	Percentage of students satisfied with course	95% satisfied with course
		90% satisfied with course
		80% satisfied with course
		70% satisfied with course
		50% satisfied with course
	Percentage of students who view social opportunities positively	95% view social opportunities positively
		90% view social opportunities positively
		80% view social opportunities positively
		70% view social opportunities positively
		50% view social opportunities positively

	Attribute	Description
Prospects six months after graduation	Percentage of students who go on to further study	95% go on to work or further study
		85% go on to work or further study
		70% go on to work or further study
		50% go on to work or further study
		25% go on to work or further study
	Average annual salary	£16,000 or less
		£16,001 – £22,000
		£22,001 – £24,000
		£24,001 – £26,000
		£26,001 – £32,000

We specifically tested separate attributes for tuition and cost of living, to examine whether these different types of cost have different impacts on choices. The study exploits the strengths of stated preference choice experiments by testing a wide range of values for tuition fees, much wider than what is currently allowed (and with more variation than what is likely to be offered). This has enabled the study to consider the possibility of a competitive response from universities in lowering their fees, as well as the potential for universities to further increase fees in response to future policies.

The inclusion of cost will allow us to compute willingness to pay for other attributes, eg the value of the course ranking.

2.4.2. Specification of the experimental design

Another issue with regard to the design of the stated preference surveys is the number of alternatives which are presented to individuals within any choice scenario. Increasing the number of alternatives leads to increased variation in the attribute levels being tested within any one choice scenario, but adds to cognitive burden on the respondent. We settled on presentation of three hypothetical university choices, plus an option to not attend university, given the characteristic of the options.

An example choice scenario is presented in Figure 2.1.

The combinations of attribute levels to present to survey respondents in the choice experiment were derived from a statistical experimental design. The design was specified to be orthogonal in attribute levels, with orthogonal blocking to split the design into blocks for presentation to different respondents. This ensured that each respondent was presented with choices with variation in each of the attributes. Each respondent was asked to consider eight different choice scenarios, and 64 different blocks were used resulting in 512 different combinations of attribute levels being considered across the sample as a whole.

Figure 2.1 Example choice scenario

If you had to choose one of these options, which would be your first choice?

	University A	University B	University C	Do not attend university
Location and type of university	City centre university located in London	Campus university located in North of England	City centre university located outside of UK	
Course status	Course ranked between top 30-60%	Course ranked between top 10-30%	Course ranked in top 10%	
Financial considerations	Tuition fees: £9,000 per year Cost of living: £10,000 per year Means tested support available	Tuition fees: £8,000 per year Cost of living: £9,000 per year Non-means tested support available	Tuition fees: £7,000 per year Cost of living: £6,000 per year No support available	
Views of current students	70% satisfied with course 90% view social opportunities positively	50% satisfied with course 80% view social opportunities positively	80% satisfied with course 80% view social opportunities positively	
Prospects 6 months after graduation	90% go on to work or further study Average annual salary between £16,001 - £22,000	95% go on to work or further study Average annual salary between £24,001 - £26,000	80% go on to work or further study Average annual salary between £22,001 - £24,000	
My first choice would be:	☐	☐	☐	☐

2.5. Pilot testing the survey

The coding of the survey was extensively tested by the study team before the survey launch, allowing the identification and resolution of any issues relating to question wording, routing and presentation.

The survey was then formally piloted by undertaking a soft launch of the survey, pausing for an initial analysis after the collection of the first 100 responses. This allowed both the process of undertaking the survey, the coding of the survey routing, and the specification of the choice experiments to be reviewed. Through this we identified no causes for concern, and gained the reassurance necessary to proceed with the rest of the data collection.

2.6. Analysing the data

Discrete choice models were developed using the data from the choice experiments (see Box 2.2 for the theoretical background on discrete choice modelling). The models developed from the SPDCE data are logit models, with four choice alternatives, described by attributes and levels as described in Table 2.2.

The estimation procedure assumes that respondents choose the alternatives with the highest utility. The outputs from the estimation procedure are attribute coefficients that best represent the choices made by the respondents. Both the values of the coefficients (in utility terms) and the significance of the coefficients are calculated and reported.

The ratio of coefficients quantifies the marginal rate of substitution between the attributes ie the trade-off rate between one attribute and another. The ratios of the service coefficients and the cost (fees or annual cost of living) coefficient provide an estimation of consumers' willingness to pay for service improvements in £/year.

Separate models were developed for students and parents of students, on the basis that pooling these led to a significant reduction in model fit. This means that students and parents of students have different priorities and preferences across the dimensions measured in the choice exercises.

A key part of the model analysis was to investigate how choices and preferences regarding university choices varied as a result of household demographic characteristics. So, tests were undertaken comparing the predicted probabilities of choosing alternatives (described by specific characteristics) across different respondent characteristics. Where these tests indicated significant differences in the value of attributes, for a specific demographic group, the model specification was developed to take explicit account of this difference. The characteristics that were examined in this investigation included:

- gender
- age
- household income
- whether household claims benefits/allowances
- social class
- ethnic group
- type of school attended
- UCAS points achieved

- region location
- Index of Multiple Deprivation for home postcode
- whether the student would take a part-time job
- how much the student would rely on the parents financially
- attitude towards debt
- father's/mother's employment status
- highest level of parents' education
- intended university subject.

We have also examined variations in cost sensitivity by household income. Again, we found little significant variation in cost sensitivity.

In developing the models we identified that there were differences in the observed substitution patterns between the alternative university options depending on whether the course presented was an e-learning online course or a course physically located at a university. There was greater switching within either of these types of courses than between them. This was reflected by using a nested logit model that allowed these substitution patterns to be captured.

During the development of the models the repeated nature of the data was not taken into account; that is it was assumed that each observations was independent, even though each respondent provided multiple responses. This assumption is incorrect as each respondent participated in three stated preference discrete choice exercises and provided multiple choice observations in each. Naïve models that do not take account of the repeated choice nature in SP datasets underestimate the standard errors on the coefficient estimates finding higher levels of statistical significance than would be judged once the repeated measured property of the data is taken into account. Therefore, as a final step in the estimation procedure, a bootstrap re-sampling procedure was applied to the models to correct for model misspecification and take into account the repeated nature of the SP data. Each model was bootstrapped across 50 separate model runs, which was found to be sufficient to allow the estimation of the standard errors to stabilise. The application of the bootstrap procedure ensured that the t-ratios produced by the models were a realistic statement of the true errors of the model parameters.

3.   Results and findings

In this chapter we discuss some of the key findings from the analysis. Further details of the models underpinning these findings can be found in the analytical annexes.

3.1. Choice of university comes down to more than just fees

The public debate around access to universities in recent times has focused largely on the impact of increasing fees. However, following the tuition fee reforms there was a race to the top, leading to a situation in which fees did not on the whole differentiate suppliers. Whilst there were some differences in the fee levels required, universities generally chose to position themselves at, or close to, the top level of fees permitted.

In our choice experiments we have been able to examine how students and parents may respond if there were greater differentiation in the fees offered within the higher education market. However, even when we consider these hypothetical situations in which fees vary we see that fees are certainly not the only factor taken into consideration in the choices being made. Our models show that a range of other attributes have a statistically significant effect on the choices made, and from these models we can quantify the trade-offs that students and their parents are willing to make. Clearly when presented with information on the broader performance of the courses, both students and parents make choices which reveal that they also care about the quality of education, and social experience, on offer and the longer term career prospects.

It is useful for the purposes of interpreting the models to look at the implied trade-offs made by respondents between the different attributes of the university courses offered in the choice experiment. We have therefore examined the level of fees that the models suggest that students, or parents, would be willing to pay in order to obtain a stated difference in other attributes. For example, we report how different the fee level would need to be to make universities with different rankings equally attractive if all else were equal.

The detailed models that have been used to calculate these trade-offs is provided in Appendix B.

3.2. Universities appear to have behaved in a rational way when setting their fees

From the choice models it is possible to calculate, for our sample of respondents, the implied elasticity of demand with regard to fees. The models show that both parents and students were relatively inelastic to

fees. A scenario was run where three universities were equal in all regards, but one chose to reduce their fee level from £9,000 to £6,000 per year. The predicted demand response suggests fee elasticities of -0.35 for students and -0.43 for parents. There are a number of interesting points to draw from this.

Firstly, parents have a greater sensitivity to the fee level than students, and would be more likely to be swayed by the fee level when presented with universities with differentiation in fees.

Secondly, the fact that demand is relatively inelastic to fees (ie the elasticity is below -1), reveals that universities behaved in a rational way when setting their fees. When elasticities are within this range the additional revenue gained through an increase in the fee level will exceed the revenue lost through students switching to alternative providers with lower fees. There is therefore little commercial incentive to differentiate on price in this market, which is further compounded when the overall demand for places exceeds the available supply.

It is worth noting that this price elasticity is calculated from a sample of students that have indicated that they are considering attending university, who will have a lower elasticity than those that have already abandoned any consideration of attending in light of the likely levels of fees (which respondents knew would be increasing, but not by how much at the time of the survey).

3.3. Living expenses are, pound for pound, less of a disincentive than fees

Our models reveal that in the choices made within the survey the respondents were less influenced by the level of living expenses than that of tuition fees. This varied between groups of respondents, as shown in Table 3.1.

Table 3.1: Equivalent values placed on living costs and tuition fees

		Living Costs	Tuition Fees
Households receiving income benefits	Student	£1.00	£0.83
	Parent	£1.00	£0.99
Household not receiving income benefits	Student	£1.00	£0.51
	Parent	£1.00	£0.49

We see that respondents from households who do not receive any benefits or tax credits, value a £1 increase in living expense costs as approximately equivalent to a 50p increase in tuition fees when choosing between universities, ie are less sensitive to the living costs than the tuition fees. Those receiving benefits exhibited less of a difference through the choices they made. The design of the student loans

system does not differentiate between the availability of funding to cover either of these components, so it would seem unlikely that this is influencing the choices being made; although it is possible that students and parents do not fully understand the nature of the financial support available.

It is also possible that the difference in the way that these costs are valued has been influenced by the highly emotive environment regarding tuition fees at the time of the survey, and that the fee levels were given higher consideration as a result. It would be interesting to revisit over time whether such differences persist as students and parents become more familiar with the higher levels of tuition fees and expectations recalibrate around their new levels.

The lower price sensitivity observed for some groups to living expenses suggests that the elasticity of demand with respect to accommodation costs is even more inelastic than that observed for fees.

In the short term the findings would suggest that there might be mechanisms available to universities to make their courses more attractive by lowering their fee levels but increasing their accommodation fees; leaving the overall cost neutral but gaining competitive advantage through the way that the costs are perceived. However, in reality the presence of private rental markets operating alongside university accommodation would make this hard to achieve in practice, and is likely to act as a disincentive to applying such strategies grounded in utilising these behavioural insights.

3.4. Longer-term employment and earning prospects were considered when choosing between universities

We see that both students and parents of students are influenced by the information provided on the average salaries achieved by students upon graduation. The trade-offs observed suggest that students were willing to pay an additional £660 per year in tuition fees in order to obtain a starting salary on graduation that would be on average £1,000 higher. Parents placed a lower relative importance on this aspect, but would still expect be willing to pay an additional £440 in tuition fees per year in return for a £1,000 difference in average starting salary (all else being equal).

However, the choices also revealed that difference in earning prospects were balanced against the likelihood of finding employment. We see less difference between students and parents in the value placed on employment prospects, but as can be observed from Table 2.2, there is a marked difference between those cases in which the student would expect to be working part-time during their studies and those in which the student would be unlikely to work alongside their studies. Both students and parents from such households place a significantly higher value on the chances of achieving employment following graduation.

Table 3.2: Willingness to pay for improvements in employment prospects

		Value of a 10% increase in the number of students who go on to work or further study (£/year)
Students	Student intending to work part-time	£1,440
	Student not intending to work part-time	£750
Parents	Student intending to work part-time	£1,450
	Student not intending to work part-time	£840

3.5. We observe some elements of altruism amongst parents

The choices which were offered in the survey included information on whether financial support was available to students. This was presented at three possible levels: (i) no financial support available, (ii) means tested support available and (iii) non means tested support available.

As would be anticipated, having means tested support available was valued by students and parents from lower income households, and having non means tested support available was valued by students and parents from higher income households.

Students and parents from lower income households do not place a statistically significant value on providing non means tested support, which is a rational response if the amount of support available to be distributed amongst students is limited.

However, as can be seen from Table 3.3, parents from high income households are willing to pay extra for their children to attend universities that support less well-off students, even though they are unlikely to obtain such support themselves.

Table 3.3: Willingness to pay for different forms of financial support to students

		Value of means tested support (£/year)	Value of non means tested support (£/year)
Students	Household income <£33,592	£3,010	£0
	Household income ≥ £33,593	£0	£2,190
Parents	Household income <£33,592	£3,390	£0
	Household income ≥ £33,593	£2,370	£1,280

3.6. Whilst financial considerations are important, quality also matters

We included information on the league table position of the courses within our choice experiments. This was presented as the course being ranked in the top x per cent of those available, so in our models a smaller number represents a higher ranking course.

From the choices made in the survey we can observe that students were more sensitive to the ranking of the course than parents. Each 10 per cent difference in course ranking was worth a difference in fees of

£1,040 per year to students, but £450 per year to parents. It should be noted that this relates solely to the difference in league ranking alone, and ignores any additional value placed on any other factors that might differentiate universities.

Within the choices we also provided additional ratings from current students. The models reveal that each percentage increase in student satisfaction with their course is equivalent to around £155 in annual tuition fees for students and £110 in annual tuition fees for parents.

The positive rating of social opportunities by current students at each university is identified to be valued by prospective students that intend to work part-time, but not by those who do not. It is however noteworthy that 80 per cent of the prospective students in our study were anticipating working part-time. Taking this into account leads to an average fee differential of £60 being placed by students on every percentage improvement in current student satisfaction with the social opportunities available. For the parents we see a slightly different pattern. The parents of students who intend to work part-time during their studies place a relatively low weight on the information provided regarding social opportunities, and those that have children not intending to work part-time during their studies have a preference for universities that have lower satisfaction on social opportunities.

3.7. Debt aversion plays a role in the choice to study online

Within the choices the respondents were given options with university courses that would be located at a campus-based university, at a city-based university, or provided as an online e-learning course.

From the choices we were not able to identify any significant difference in propensity to choose between universities that were campus or city-based. However, we found a lower willingness to choose courses that were provide online compared to those delivered at physical universities.

Differences in the willingness to consider online courses were observed between both students and parents, and according to the level of debt aversion within each group. Within the survey we asked respondents to classify their level of debt aversion with the question:

> What is your attitude towards debt?
>
> 1. I do not have any aversions towards taking on debts which I will repay later in my life.
>
> 2. I can live with the idea of taking on debts which I will repay later in my life.
>
> 3. I feel uneasy with the idea of taking on debts which I will repay later in my life.
>
> 4. I am very debt-averse and will not take on debt.
>
> 5. Don't know.

In the case of parents the question was worded around how they felt about their child taking on debt. Those who said that they had no aversion or could live with the idea were classified as 'not debt-averse', whereas those who reported being very debt-averse, uneasy with the idea, or stated they did not know, were classified as 'debt-averse'.

As can be seen from Table 3.4, students who were not debt-averse very rarely chose the online course options over those from physical universities, and all else being equal, would require very high fees at

physical universities to convince them otherwise. Whereas it can be observed that those students who self-classified as debt-averse were far more likely to consider this option and if the fee difference were £4,320 or more per year, they would opt for the cheaper online option.

Parents were even more willing to consider these options for their children, and clearly placed greater weight on their children's financial welfare (or were less concerned about the 'university experience'). Parents who reported not being debt-averse when considering their children's financial situation only required a fee difference of £3,420 or more to favour an online course, whereas those who reported being debt-averse were as willing to consider an online course as enrolment at a physical university for their children.

Table 3.4: Difference in fee necessary to make an online course equally attractive as a course at a physical university

		Fee reduction (£/year)
Students	Debt adverse	£4,320
	Not debt adverse	£15,150
Parents	Debt adverse	£0
	Not debt adverse	£3,420

3.8. The location of the university matters

As well as exploring whether there was a difference in the value of whether the course was offered online or at a physical university, for those cases in which a physical university was presented there was also information provided on the region in which the university was located.

We see a strong willingness to pay for attending universities in England, relative to attending a university outside the UK. The choices of both students and parents suggest a willingness to pay annual fees close to £9,000 to attend a university in England. It is noteworthy that this corresponds closely to the actual fee level being asked in the case of many universities. A university outside of the UK, equal in all other ways, would need to have no tuition fees to be viewed as equally attractive.

University options in Wales, Scotland and Northern Ireland are viewed less positively for our sample of English students and parents. Their behaviour in the choice experiment suggests that students would need to save almost £6,800 per year in fees to consider attending an equivalent university in Scotland or Wales, and would need to face no tuition fee to consider an equivalent university in Northern Ireland. By contrast, the parents were more willing to consider options in Scotland or Wales, requiring fee reductions of £4,800 and £2,700 respectively. However, they were less keen on Northern Ireland and the English fees would have to be a further £4,200 higher for them to consider a university asking for no fee in Northern Ireland to be equally attractive.

Both students and parents placed a positive value on a university location in their own region of England. As can be seen from Table 3.5, students were willing to pay an additional premium of £6,500 per year to achieve this if they intended to live at home (presumably seeing this as a way of reducing the stated cost of living). Whilst the parents placed a higher initial value on their child staying close to home than the students, they added a smaller premium if they anticipated that their child would also be living at home.

Table 3.5: Additional willingness to pay to stay within own region of England

		Willingness to pay (£/year)
Students	If student is not considering living at home	£4,500
	If student is considering living at home	£11,000
Parents	If student is not considering living at home	£6,700
	If student is considering living at home	£10,000

3.9. We found that income had less impact than the public debate might lead one to expect

Much of the debate around the increase in the rates of university fees suggested that the higher fees would have a differentially negative impact on students from poorer backgrounds. This is something that we carefully examined during the development of the choice models. We were unable to identify any difference in tuition fee price sensitivity, the relative value of university characteristics or the probability of choosing not to go to university given the characteristics presented, for poorer students. In short, the data analysed did not appear to indicate a difference in the choice making behaviour of richer and poorer students despite differences in backgrounds.

We did find that students and parents of students were more likely to consider university alternatives, regardless of fees, if at least one of the parents had a university degree. This may have equity implications in that it may be easier for students whose parents have participated in higher education to make choices with regard to higher education destinations, compared to the children of parents that do not have experience of the system.

We also see that the students and parents with a low stated debt aversion are more likely to consider university options in the choice experiments, again regardless of fee level, in contrast with those with higher debt aversion. However, there is no significant distinction in the indicated propensity to choice the option of not selecting any of the offered universities by income level.

We reviewed whether within our sample there appeared to be differences the amount that students from households with different income levels anticipated that they would borrow to fund their studies. Household income was divided into two categories, namely lower income (under £33,592 per year), and high income (£33,593 and above), corresponding with the income split used in earlier analysis. Similarly, borrowing levels were categorised into three bands, £0–15,000, £15,001 – £35,000, and more than £35,000.

As can be seen in Table 3.6, the majority of students anticipated borrowing smaller amounts of money (£0–15,000), no matter their household income. However, twice as many students coming from higher income households (30.1 per cent) were considering borrowing larger amounts of money – more than £35,000 – compared to the proportion of students from lower income backgrounds anticipating borrow as much (16 per cent).

Table 3.6: Students' anticipated level of borrowing by household income

| Amount likely to be borrowed | Household income | | | |
	Under £33,592	£33,593 or over	Don't know or refused to say	Total
£0–15,000	51.6%	36.5%	56.9%	48.4%
£15,001 – £35,000	32.4%	33.3%	29.9%	32.0%
> £35,000	16.0%	30.1%	13.2%	19.6%
Total	100.0%	100.0%	100.0%	100.0%

Within the survey the proportion of students from lower income households who responded they were likely not to depend on their parents at all to go to university was almost double that of students from higher income households (27.5 per cent compared to 14.1 per cent).

Some differences therefore exist in attitudes to borrowing and the affordability of higher tuition fees based on respondents' backgrounds. Students from poorer backgrounds intend to borrow less and do not expect to rely on their parents to the same extent as those from households with higher incomes.

An important caveat of this study is that our sample of respondents included only those students who stated they were considering attending university in the next couple of years, in the full knowledge of high tuition fees. Thus, the survey may be biased in that it will exclude students and parents of students who have already decided not to go to university as a result of the increases in fees.

However, the 2012 UCAS End of Cycle Report[8] suggests that our null finding with respect to income reflects the trends observed within the actual university application process. The UCAS data show that the entry rates of students from disadvantaged areas have not reduced since fees have increased; in fact they have increased slightly and show a growth trend in participation that is not matched in students from other areas. In England, in the 2012 cycle, a higher proportion of the 18 year-old population in disadvantaged areas entered higher tariff institutions than in any other cycle. The much discussed disenfranchisement of those from poorer backgrounds does not therefore appear to have materialised.

It therefore seems that our data collected during the autumn of 2011, in which respondents were stating their intentions on the basis of hypothetical scenarios, reflects some of the behaviour subsequently exhibited in the UCAS admissions process. This gives some reassurance that the patterns of responses observed in the choice experiments may be expected to reasonably reflect real-world admission behaviour.

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[8] Universities and Colleges Admission Service, "End of Cycle Report 2012" (December 2012).

4.   Conclusions

4.1. Our research approach provides new evidence to support the policy debate

Much of the debate on access to Higher Education over the past years has focused on the impact of increased tuition fees, especially on students' decision to attend university. Commentators, academics and politicians alike feared that higher tuition fees would deter students from poorer backgrounds from applying to university. On the other hand, funding cuts in universities and the need to maintain comparable funding levels has led to a 'race to the top' in fee levels across the United Kingdom, whereby a large majority of higher education institutions have had to increase annual fee levels to the maximum of £9,000 since September 2012.

This study asked students and parents of students who were intending to go to university in the autumn of 2012 or 2013 to make 'hypothetical' choices. This allowed us to explore the possible responses to the immediate policies being implemented in the higher education funding model, but also to investigate a far wider range of scenarios where institutions may adopt different strategies.

We see from our analysis that even in these hypothetical choice situations tuition fee levels are not the only consideration that influences the judgement of parents and students when deciding to apply to university. In addition, the models estimated from the choice data strengthens the evidence base in the debate on access to university and tuition fees as they enable the quantification of the trade-offs and the 'willingness to pay' for different factors in a way that is not possible from observing the current higher education market where institutions have clustered around the higher fee levels.

4.2. The potential importance of the KIS data

The alternatives offered and explored within our choice experiments drew in part on the forms of data that are now being published on the UNISTATS, and other web sites using data collected through the Key Information Set. Whilst a number of commentators have downplayed the importance of this data, our analysis would suggest that if students are directed towards it and consider it at the time of making their higher education choices it could play an influential role in their decisions.

It is worth bearing in mind that up until recently the vast amount of debate around higher education choices has focused on fees. However, we see that in fact fees are now less of a differentiator than originally anticipated as there has been a widespread race to the top. This means that other factors will play a greater role, and with the commitment of fees students will be more focused than ever on ensuring that they are making the right choices. We know from our choice experiment that prospective students,

and parents, took into account a wide range of different metrics when deciding which course would be preferable. It was not all about fees. Students traded off differences in fees, the quality of the course, the cost of the accommodation, the views of their peers, and their graduate prospects. Each of these elements played a significant role in the choices that they made.

The KIS could therefore significantly change the way that the higher education market operates and have real implications for the success of individual universities and the sustainability of the courses that they offer. This standardised dataset now allows prospective students to compare potential courses across institutions on a range of different factors in a way that they never could before. Our research shows that, when presented these data sets, students use them to inform the choices that they make and can be significantly influenced by a wide range of factors. This puts a new onus on universities to outperform their competitors across a wide number of different dimensions; if they don't, prospective students will vote with their feet. This introduces some new incentives in the higher education. Institutions will need to look to ways that they might improve their performance across the different dimensions that are reported in the KIS releases; be that student satisfaction, graduate prospects, or cost of living. Any step that a university can take that will make it appear more attractive in the KIS is likely to have an impact on the volume of applicants that they receive.

The basis of the data within the KIS also alters the balance of power. The fact that student ratings form part of the dataset means that current students will gain a more powerful voice in holding institutions to account for the education that they provide in return to the tuition fees paid. Whilst student satisfaction surveys have been undertaken for a long time, and have played a role in other league tables, the introduction of the KIS gives them an increased prominence. This will mean that the opinion of current students will play a larger role than ever before in informing the choices of the cohort of students that follow. It will be more important than ever for universities to ensure that their current students are receiving the education, and broader university experience, that they are expecting. A failure to do so could translate into poor satisfaction ratings and a direct reduction in applications from prospective students in future years.

Of course, this is all predicated on an assumption that students will be made aware of the range of web sites now offering this information and will feel compelled to consult such resources prior to making their university choices. However, given the importance that both students and parents have been seen to place on this information in our survey, and the number of independent advice web sites pointing students towards the KIS data, it would seem likely that sufficient numbers will use it to make its impact in the market meaningful.

4.3. Considerations in interpreting the research findings

There are two caveats to be borne in mind when interpreting and extrapolating from the findings from this research.

The first is that the study focused on respondents who had already decided that they would attend university rather than the whole range of students including those who had not yet decided whether to attend a higher education institution in the coming year. There were practical reasons for the decision to focus the research in this way; and whilst out of the scope of this study, the approaches used here could be

easily applied to investigate the preferences and decisionmaking behaviour of a broader group of students in future research.

Secondly, these models were based on hypothetical choices made in a survey environment rather than actual, past decisions. It may be that upon further consideration or in a real-world setting, survey respondents would make different choices to those they expected to make when answering the survey. However, care was taken within the survey to build up the context for the choices and place the respondents in a considered frame of reference in order to minimise the possible dissonance.

4.4. The potential for our modelling to support future decisionmaking

Discrete choice modelling is particularly useful when it comes to understanding the trade-offs which respondents are willing to make, their likely responses to policy interventions and their behaviour in developing markets. It provides an evidence-based quantitative framework providing policymakers with valuable information on how individuals make choices, and enables the weighing of the relative importance of factors underpinning specific choices such as the choice of higher education institute.

The choice models developed in this study draw on an experiment that explored choices between three hypothetical universities. It would be possible to extend this by calibrating the model to data from the existing UK higher education market. Utilising the database of KIS data for all current university courses, and information on the applications received for each course it would be possible to calibrate the model to reflect the current choice behaviour observed in the market. This would then provide a model that was grounded in current application patterns but with the capability to use the information from the trade-offs observed through our choice experiment to run scenarios for a range of possible futures. This ability to extrapolate, with a degree of confidence, beyond the current limitations of the market would allow a range of alternative policy scenarios or commercial strategies to be explored.

We also recognise that the current model is based solely around the choice of which institution to attend given the decision to consider applying to university. It would be interesting to undertake a broader survey to also explore this initial choice process, upon which the subsequent decision of institution is contingent, ie "how do the university offerings influence the decision to consider entering higher education?"

Opportunities also exist to enrich this model to provide bespoke analysis for higher education providers. It would be possible to supplement the existing dataset by collecting additional data from specific groups of potential applicants to provide a more nuanced understanding of the trade-offs being made by those seeking to study a particular subject or considering competing universities in a similar cluster. The models could then be embedded within a strategic support tool to explore different scenarios within particular parts of the higher education market. This could improve the understanding of how to differentiate the offering being made to prospective students, and specific segments of applicants.

The research undertaken within this study provides both fresh empirical evidence to support the debate around the relative influence that tuition fee levels have in influencing the decisions of those choosing between universities, and provides a foundation for future analysis that could provide practical insights into those wishing to better understand the behaviours within this developing market.

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Appendix A: Sample characteristics

In total we surveyed 2005 respondents: 1000 students and 1005 parents. Respondents from all regions of England were surveyed, with a slightly higher concentration of surveys being conducted with respondents from London and the South East. However, the sample was drawn from a broad range of different area types and was not clustered predominantly in urban or rural areas.

Table A.1: In which region do you live?

	Students	Parents
East of England	70	76
East Midlands	85	67
London	165	144
North East	49	57
North West	121	141
South East	183	177
South West	107	108
West Midlands	119	100
Yorkshire / Humberside	101	135
Total	1000	1005

Table A.2: Please indicate type of areas you currently live in

	Students	Parents
A London Borough	178	149
Another City / large town	182	139
Suburbs of a city / large town	220	268
A small town	264	276
A rural area or village	156	173
Total	1000	1005

The majority of students were studying full-time or part-time at the time of the survey, as would be anticipated given the sampling strategy and the known patterns in admissions to universities.

Table A.3: Are you (they) currently studying, or are you taking a year out before university?

	Students	Parents
Currently studying, full-time	863	912
Currently studying, part-time	61	50
On year out	76	43
Total	1000	1005

A majority of students thought that they would take a part-time job whilst studying at university. An even larger group thought that they would work during the holidays to manage financially while at university.

Table A.4: Do you think you (they) are likely to take a part-time job during term time to help you (them) manage financially while at university?

	Students	Parents
Yes	784	759
No	97	87
Don't Know	119	159
Total	1000	1005

Table A.5: Do you think you (they) are likely to take a job during holidays to help you (them) manage financially while at university?

	Students	Parents
Yes	833	861
No	73	40
Don't Know	94	104
Total	1000	1005

The distribution across social grade and income for each survey segment are shown below.

Table A.6: Social grade

	Students	Parents
A	95	122
B	146	293
C1	265	267
C2	94	149
D	57	73
E	79	87
None / not specified	19	1
Sub total	755	992
Not available (non UK and Irish respondents)	245	13
Total	1000	1005

Table A.7: Please could you estimate your annual household income before tax and other deductions?

	Students	Parents
Under £8,164 per year	58	15
£8,165 – £12,168 per year	67	35
£12,169 – £16,328 per year	57	40
£16,329 – £21,268 per year	63	70
£21,269 – £26,988 per year	70	97
£26,989 – £33,592 per year	92	150
£33,593 – £41,340 per year	73	137
£41,341 – £51,168 per year	103	157
£51,169 – £70,044 per year	77	131
£70,045 or over	59	86
Don't know / refused	281	87
Total	1000	1005

A key consideration is the extent to which the survey is representative of students and parents of students in the UK. Below we compare the distribution of income level with Experian data for the UK. This is not a perfect comparator, and some approximations have been necessary to align the data in Table A.7 with that in the Experian data, but in practice there are relatively few published data sources available with household income data. This comparison therefore allows an assessment of whether our sample as a whole seems to be in line with the UK population, rather than the more specific group of those domiciled in England and applying to university. We see that when considering both the student and parent surveys together, referred to as 'Total' in Table A.8 below, that the household income distribution generally reflects that of the UK (as measured in the Experian database), although the survey has a slightly larger proportion of respondents from households with income between £40,000 and £70,000 per year. We also see that the survey has a higher proportion of students from households with income < £15,000 per year, but a lower proportion of parents from this group. Together these reflect about 17 per cent of the sample, which is not substantially different from that observed in the Experian data for the UK.

Table A.8: Survey sample distribution of household income versus Experian data

Household Income	Students	Parents	Total	UK Experian
< £15,000	25%	10%	17%	20.0%
£15,000 – £19,999	9%	8%	8%	7.6%
£20,000 – £29,999	33%	42%	38%	38.1%
£30,000 – £39,999				
£40,000 – £49,999	14%	17%	16%	11.7%
£50,000 – £59,999	11%	14%	13%	11.7%
£60,000 – £69,999				
£70,000 – £99,999	8%	9%	9%	10.8%
£100,000 – £149,999				
£150,000 +				

In terms of university choice, the majority of students intending to go to university and parents of students planning to go to university felt that having a university education was important or very important for the student's career.

Table A.9: How important do you think having a university education will be to your (their) future career?

	Students	Parents
Very important	549	441
Important	325	419
Neither important or not important	75	84
Not important	19	30
Not at all	3	7
Don't Know	29	24
Total	1000	1005

At the time of the survey, around two thirds of students responded that they had decided which university they would apply to. Only one third of parents indicated that their children had decided which university they would apply to.

Table A.10: Have you (they) decided which universities you (they) will apply to?

	Students	Parents
Yes	624	378
No	376	627
Total	1000	1005

Of those who had decided which university they would apply to, the majority felt that they had enough information to inform their decision.

Table A.11: How much information did you find was available to you (them) when you (they) thought about which university to attend?

	Students	Parents
More information than I/they needed	123	58
Enough information to inform my/their decisions	460	304
Not enough information to inform my/their decisions	36	13
No information available	5	3
Total	624	378

Most students felt that they would be partially dependent financially on their parents to go to university.

Table A.12: How much do you think you (they) will depend on your parents (you) financially to go to university?

	Students	Parents
Entirely dependent on me/them	102	211
Partly dependent on me/them	621	700
Not dependent at all on me/them	200	63
Don't know	77	31
Total	1000	1005

Nearly half of students and more than half of the parents of students thought that they would consider living at home with their parents whilst attending university.

Table A.13: Would you (they) consider living at home with your (their) parents whilst attending university?

	Students	Parents
Yes	400	518
No	473	310
Don't Know	127	177
Total	1000	1005

More than half the students felt that the proposed system of university student loans would make them more independent from their parents. Parents had a slightly different view, with more thinking that their children would have 'about the same' level of independence, although many also thought that they would now be more independent.

Table A.14: Will the system of the university student loans make you (them) more independent from your parents (you)?

	Students	Parents
More independent than now	519	388
About the same	297	400
Less independent than now	54	89
Don't know	130	128
Total	1000	1005

Students and parents of students thought that parents' influence on university choice was moderate to high, with parents indicating a higher perceived level of influence than that acknowledged by students.

Table A.15: What is the level of your parents' (your) influence on your (your child's) choice of university?

	Students	Parents
Very high	59	84
High	252	362
Moderate	362	446
Low	190	80
Very low	99	15
Don't Know	38	18
Total	1000	1005

After the choice exercises, respondents were asked to indicate the most important factor in their choice of university. The academic reputation of the course and institution scored highest for both groups, with location and employment prospects after graduation also acknowledged as key issues. The cost of attendance was the most important factor for some respondents, but certainly not for the majority of the sample. Although, as might be expected, most students and parents of students felt that the rise in tuition fees was unfair or very unfair.

Table A.16: Please indicate the most important factor to you when considering a university

	Students	Parents
Location of institution	234	155
Academic reputation of the course and institution	329	364
The cost of attendance	135	172
The views of current students	48	17
Employment prospects on graduation	199	263
Advice of parents	27	9
Other (please specify)	28	25
Total	1000	1005

Table A.17: What is your perception of the fairness of the rising tuition fees in England?

	Students	Parents
Very fair	18	25
Fair	94	76
Neither fair or unfair	123	96
Unfair	310	332
Very unfair	423	468
Don't Know	32	8
Total	1000	1005

Both students and their parents were also asked about their attitude to debt in the survey, with a majority of both students and parents feeling uneasy with the idea of taking on debts, which have to be paid back later. Parents were more sensitive to this issue than students.

Table A.18: What is your attitude towards debt?

	Students	Parents
I do not have any aversions towards (my child) taking on debts which I (they) will repay later in my (their) life	124	85
I can live with the idea of (my child) taking on debts which I (they) will repay later in my (their) life	359	300
I feel uneasy with the idea of (my child) taking on debts which I (they) will repay later in my (their) life	383	538
I am very debt-averse and will not (let my child) take on debt.	73	60
Don't know	61	22
Total	1000	1005

Appendix B: Detailed model results

This Appendix sets out the findings from the stated preference discrete choice exercises. First we discuss general issues, including respondents' understanding of the choice exercises. We then present the findings from the choice exercises for student and parent respondents.

Respondents' understanding of the choice exercises

At the completion of the choice exercises respondents were asked whether they were able to make the choice comparisons and whether they felt that the choices were realistic. Over 90 per cent of students and 95 per cent of parents reported that they were able to make the comparisons in the choice exercises. We can therefore have confidence in the results.

Table B.19: Were you able to make comparisons in the choices we presented to you?

	Students	Parents
Yes	911	950
No	89	55
Total	1000	1005

A lower proportion of respondents felt that the attributes were realistic. A range of reasons were given for the choices being unrealistic from fees being too high, or too low, stated starting salaries being too high, or too low, stated employment prospects being too high, or too low, through to expectations of greater correlation between course rating, fee level, and employment prospects. Some respondents also felt that the choices sets offered were too constrained and in practice they would have more choice, whereas others noted that there were additional attributes that they would wish to take into consideration. However, in total it was only 8 per cent of students and 12 per cent of parents that felt the choices were unrealistic, and the majority of these still stated that they were able to make the comparisons so they were kept within the analysis.

Table B.20: Did you feel that the levels of educational attributes we have been asking about the choices were realistic?

	Students	Parents
Yes	755	662
No	80	120
Don't Know	165	223
Total	1000	1005

Final choice models

The model results for the best models developed during the study are presented in Table B.22. We explain the model fit statistics, below in Table B.21. The model coefficients reflect the results after bootstrapping to take account of repeated observations being collected from a single individual. Separate models are presented for students and parents of students.

Table B.21: Interpretation of model fit statistics

Statistic	Definition
Observations	The number of choice observations included in the model estimation.
Final log (L)	This indicates the value of the log-likelihood at convergence. The log-likelihood is defined as the sum of the log of the probabilities of the chosen alternatives, and is the function that is maximised in model estimation. The value of log-likelihood for a single model has no obvious meaning; however, comparing the log-likelihood of two models estimated on the same data allows the statistical significance of new model coefficients to be assessed properly through the Likelihood Ratio test.
D.O.F.	Degrees of freedom, i.e. the number of coefficients estimated in this model. Note that if a coefficient is fixed to zero then it is not a degree of freedom.
Rho2(c)	If we compare the log-likelihood (LL(final)) value obtained with the log-likelihood of a model with only constants (LL(c)) we get: Rho2(c): 1 – LL(final)/LL(c) A higher value indicates a better fitting model.

In interpreting the coefficient values the following points should be considered.

- A positive coefficient means that the variable level or constant has a positive impact on utility and so reflects a higher probability of choosing the university alternatives to which it is applied.
- A negative coefficient means that the variable level or constant has a negative impact on utility and so reflects a lower probability of choosing the university alternative to which it is applied.
- Some coefficients are multiplied by continuous variables and therefore reflect the disutility per unit of the variable, eg fees, which reflect the relative disutility per additional unit of cost.
- Some service attribute coefficients are applied to categorical variables; these therefore reflect the total utility increase or decrease for that variable, relative to a base situation, eg city university locations are valued more negatively than campus university locations.

The tables also show the coefficient t-ratio, which defines the (statistical) significance of the coefficient (relative to zero). The larger the t-ratio, the more significant is the coefficient estimate. A coefficient with a t-ratio greater than +/-1.960 is estimated to be significantly different from zero at the 95 per cent confidence level. A t-ratio of +/-1.645 is significantly different from zero at the 90 per cent confidence interval.

Table B.22: Discrete choice model results

	Students		Parents	
Summary statistics				
Observations	7288		7600	
Final Log Likelihood	-8338.5		-9144.5	
D.O.F	21		24	
Rho²(0)	0.175		0.132	
Rho²(c)	0.094		0.091	
Coefficient	Estimate	t-ratio	Estimate	t-ratio
Fee (£/year)	-0.000072	-10.5	-0.000087	-10.8
Living expenses - if on benefits (£/year)	-0.000060	-4.5	-0.000086	-6.7
Living expenses - if not on benefits (£/year)	-0.000037	-3.5	-0.000043	-4.3
Means tested support - if high income (relative to no support)	0	n/a	0.208	3.4
Means tested support - if low income (relative to no support)	0.218	4.0	0.296	4.5
Non means tested support - if high income (relative to no support)	0.158	3.0	0.112	2.1
Non means tested support - if low income (relative to no support)	0	n/a	0	n/a
City university (relative to campus)	0	n/a	0	n/a
Online Course - if debt-adverse (relative to campus)	-0.313	-2.5	0	n/a
Online Course - if not debt-adverse (relative to campus)	-1.10	-7.2	-0.300	-2.3
Course Ranking (top x%)	-0.00752	-8.7	-0.00392	-5.6
Student Satisfaction (%)	0.0114	7.9	0.00957	6.8
Social opportunities - if intending to work part-time (% view positively)	0.00543	4.3	0.00254	2.1
Social opportunities - if not intending to work part-time (% view positively)	0	n/a	-0.00403	-1.9
Employment prospects - if intending to work part-time (% in employment)	0.0104	11.1	0.0126	10.9

Employment prospects - if not intending to work part-time (% in employment)	0.00540	4.0	0.00732	4.1
Annual Salary on graduation (£)	0.000047	13.9	0.000038	13.4
University located in England (relative to outside of UK)	0.645	11.6	0.750	12.7
University located in Scotland (relative to outside of UK)	0.155	2.3	0.334	4.2
University located in Wales (relative to outside of UK)	0.155	2.3	0.517	6.5
University located in Northern Ireland (relative to outside of UK)	0	n/a	-0.372	-4.2
University located in own region	0.325	3.6	0.586	6.6
University located in own region and also would consider living at home	0.472	3.6	0.293	2.5
Constant - Not University	0.557	2.1	0.587	2.6
Not University - if either of parents hold a degree	-1.02	-4.6	-0.368	-1.7
Not University - if have low debt aversion	-1.204	-4.7	-0.650	-3.4
Structural parameter on online courses	0.709	17.4	0.774	19.5

From the coefficient estimates it is possible to calculate the marginal rates of substitution of different attributes. In Table B.23 we present the implied willingness to pay for each of the university attributes calculated using the observed cost sensitivity with respect to tuition fees.

Table B.23: Implied willingness to pay for university attributes (tuition fee in £/year)

	Students	Parents
Living expenses - if on benefits (£/year)	-£0.83	-£0.99
Living expenses - if not on benefits (£/year)	-£0.51	-£0.49
Means tested support - if high income (relative to no support)	£0.00	£2,374.80
Means tested support - if low income (relative to no support)	£3,014.59	£3,387.02
Non means tested support - if high income (relative to no support)	£2,186.77	£1,283.65
Non means tested support - if low income (relative to no support)	£0.00	£0.00
City university (relative to campus)	£0.00	£0.00
Online Course - if debt-adverse (relative to campus)	-£4,324.60	£0.00
Online Course - if not debt-adverse (relative to campus)	-£15,149.22	-£3,424.96
Course Ranking (top x%)	-£104.02	-£44.78
Student Satisfaction (%)	£157.03	£109.39

Social opportunities - if intending to work part-time (% view positively)	£75.14	£29.00
Social opportunities - if not intending to work part-time (% view positively)	£0.00	-£46.05
Employment prospects - if intending to work part-time (% in employment)	£143.78	£144.40
Employment prospects - if not intending to work part-time (% in employment)	£74.63	£83.65
Annual Salary on graduation (£)	£0.66	£0.44
University located in England (relative to outside of UK)	£8,917.03	£8,567.59
University located in Scotland (relative to outside of UK)	£2,148.08	£3,817.39
University located in Wales (relative to outside of UK)	£2,148.08	£5,912.48
University located in Northern Ireland (relative to outside of UK)	£0.00	-£4,247.46
University located in own region	£4,497.61	£6,695.78
University located in own region and also would consider living at home	£6,523.97	£3,346.20
Constant - Not University	£7,704.45	£6,710.15
Not University - if either of parents hold a degree	-£14,079.02	-£4,201.31
Not University - if have low debt aversion	-£16,655.90	-£7,429.28

Appendix C: Survey questions

This appendix contains the questionnaire used within the study. A common survey structure was used for both students and parents, but the wording for a number of the questions was tailored depending upon the survey participant. The coding "IF dSegm=1" indicates conditional text presented only to students, and the coding "IF dSegm=2" indicates conditional text presented only to parents.

Age. **How old are you?**

Gender. **And are you…?**
1. Male
2. Female

Region. **In which region do you live?**
1. North East
2. North West
3. Yorkshire and The Humber
4. East Midlands
5. West Midlands
6. East of England
7. London
8. South East
9. South West
10. Wales
11. Scotland
12. Northern Ireland CLOSE
13. Not in map CLOSE

Occ. **Which of the following best describes your employment status?**
1. Employed full-time
2. Employed part-time
3. Self-employed
4. Housewife/husband
5. Semi-retired
6. Retired
7. Student
8. Unemployed

RAND Europe

Segm:
1. Student
2. Parent

PIIINFO. Any personal identifiable information provided in this survey may be analysed in association with the rest of your answers to the survey. The personal identifiable information will only be passed on to our client RAND Europe for market research purposes only. The results of the analysis will be presented in an aggregated format only and will be anonymous. All data will be processed in adherence to Market Research Society's Code of Conduct and Data Protection Act 1998.

SHOW IF dSegm=1
INFONODE. As part of an independently funded research study, RAND Europe* is conducting a survey to explore the factors that influence students' choice of university.
The results of this research will be made publicly available on the RAND Europe web site and in presentations and openly published research papers.
Your responses will be anonymous and treated confidentially.
This survey is split into five parts.

- The first part asks you some background questions about your education to date.
- The second part asks you about your plans for university, what you are seeking to study and how you intend to finance your studies.
- The third part asks you to consider a series of scenarios where you could choose between different universities. This will give us insight in to the relative importance of a range of different factors.
- The fourth part asks you for your views on issues relating to your university choices.
- Finally, the last part asks you for some information about yourself and your background so that we can see how views and preferences differ between different groups.

*RAND Europe is an independent not for profit research organisation based in Cambridge. We produce objective and evidence based research to help those in government deal with important concerns in areas such as education, healthcare, security and transportation.

SHOW IF dSegm=2
INFONODE2. As part of an independently funded research study, RAND Europe* is conducting a survey to explore the factors that influence students' choice of university, and the influence of their parents on these choices.
The results of this research will be made publicly available on the RAND Europe website and in presentations and openly published research papers.
Your responses will be anonymous and treated confidentially.

This survey is split into five parts.
- The first part asks you some background questions about your child's education to date
- The second part asks you about their plans for university, what they are seeking to study and how they intend to finance their studies.
- The third part asks you to consider a series of scenarios where they could choose between different universities. This will give us insight in to the relative importance of a range of different factors and the advice that you would give them.
- The fourth part asks you for your views on issues relating to their university choices.
- Finally, the last part asks you for some information about yourself and your background so that we can see how views and preferences differ between different groups.

*RAND Europe is an independent not-for-profit research organisation based in Cambridge. We produce objective and evidence based research to help those in government deal with important concerns in areas such as education, healthcare, security and transportation.

PIIpcod. Please type the first part of your postcode. (eg EC1, E17, M7, SW10…etc)

ASK IF dSegm=2

Qfam. **Do you have a son or daughter that is of an age that they could consider going to university in the coming two years?**
1. Yes, son
2. Yes, daughter
3. No

SHOW IF dSegm=1

We would first like to ask you about your current situation.

SHOW IF dSegm=2

We would first like to ask you about your child's current situation.

Q1.

IF dSegm=1 **Are you intending to attend university in the coming two years?**

IF dSegm=2 **Are they intending to attend university in the coming two years?**
1. Yes
2. No CLOSE
3. Don't know

Q2:

ASK IF dSegm=1   **Are you currently studying, or are you taking a year out before university?**

ASK IF dSegm=2   **Are they currently studying, or taking a year out before university?**
1. Currently studying, full-time
2. Currently studying, part-time
3. On year out

ASK IF Q2=3

Q3:

IF dSegm=1   **Are you currently studying in the first year or the second year of the 6th form?**

IF dSegm=2   **Are they currently studying in the first year or the second year of the 6th form?**

    1. 1st year of the 6th form (U1)

    2. 2nd year of the 6th form (U2)

    3. Not applicable

Q4:

IF dSegm=1   **What is the name of the school or college that you are currently attending, or attended when you were undertaking your studies?**

IF dSegm=2   **What is the name of the school or college that they are currently attending, or attended when they were undertaking your studies?**

USE ALPHABETICAL AUTOCOMPLETION FIELD WITH LOOKUP OF SCHOOL AND COLLEGE NAMES

Q5G:

ASK IF dSegm=1   **Have you passed any GCSE exams?**

ASK IF dSegm=2   **Have they passed any GCSE exams?**

    1. Yes

    2. No

Q5ASL:

ASK IF dSegm=1   **Have you passed any AS-levels exams?**

ASK IF dSegm=2   **Have they passed any AS-levels exams?**

    1. Yes

    2. No

Q5AL:

ASK IF dSegm=1   **Have you passed any A-levels exams?**

ASK IF dSegm=2   **Have they passed any A-levels exams?**

    1. Yes

    2. No

Q5PGN:

ASK IF dSegm=1   **Have you passed any Part One – GNVQ exams?**

ASK IF dSegm=2   **Have they passed any Part One – GNVQ exams?**

    1. Yes

    2. No

Q5GNV:

ASK IF dSegm=1	**Have you passed any Full – GNVQ exams?**
ASK IF dSegm=2	**Have they passed any Full – GNVQ exams?**

1. Yes
2. No

ASK IF Q5G=1

Q5A Please enter the number of subjects attained at the specified grade for GCSEs

Grade A* OE NUM (VAL: 0-16) Grade C OE NUM (VAL: 0-16) Grade F OE NUM (VAL: 0-16)

Grade AOE NUM (VAL: 0-16) Grade D OE NUM (VAL: 0-16) Grade G OE NUM (VAL: 0-16)

Grade B OE NUM (VAL: 0-16) Grade E OE NUM (VAL: 0-16)

ASK IF Q5ASL=1

Q5B Please enter the number of subjects attained at the specified grade for AS-levels

Grade A OE NUM (VAL: 0-10) Grade D OE NUM (VAL: 0-10)

Grade BOE NUM (VAL: 0-10) Grade EOE NUM (VAL: 0-10)

Grade C OE NUM (VAL: 0-10)

ASK IF Q5AL=1

Q5C Please enter the number of subjects attained at the specified grade for A-levels

Grade A OE NUM (VAL: 0-10) Grade D OE NUM (VAL: 0-10)

Grade BOE NUM (VAL: 0-10) Grade EOE NUM (VAL: 0-10)

Grade C OE NUM (VAL: 0-10)

ASK IF Q5PGN=1

Q5D Please enter the number of subjects attained at the specified grade for Part One – GNVQ

Intermediate Distinction OE NUM (VAL: 0-5)

Foundation Distinction OE NUM (VAL: 0-5)

Intermediate Merit OE NUM (VAL: 0-5)

Foundation Merit OE NUM (VAL: 0-5)

Intermediate Pass OE NUM (VAL: 0-5)

Foundation Pass OE NUM (VAL: 0-5)

ASK IF Q5GNV=1

Q5E Please enter the number of subjects attained at the specified grade for Full – GNVQ

Intermediate Distinction OE NUM (VAL: 0-5)

Foundation Distinction OE NUM (VAL: 0-5)

Intermediate Merit   OE NUM (VAL: 0-5)

Foundation Merit   OE NUM (VAL: 0-5)

Intermediate Pass   OE NUM (VAL: 0-5)

Foundation Pass   OE NUM (VAL: 0-5)

Q5F Are you in possession of any of the following qualification?

Please tick all that apply.

1. NVQ level 1
2. NVQ level 2
3. NVQ level 3
4. AVCE Part
5. AVCE Single
6. AVCE Double
7. BTEC Introductory Certificate
8. BTEC Introductory Diploma
9. BTEC First Certificate
10. BTEC First Diploma
11. BTEC National Award
12. BTEC National Certificate
13. BTEC National Diploma
14. If the qualifications possessed are not listed, please write them in the space provided

Q6:

ASK IF dSegm=1   **Will you be taking any more exams prior to going to university?**

ASK IF dSegm=2   **Will they be taking any more exams prior to going to university?**

1. Yes
2. No

Q7:

ASK IF dSegm=1 **What grades do you expect to get from these additional exams prior to going to university?**

ASK IF dSegm=2 **What grades do they expect to get from these additional exams prior to going to university?**

AS-levels

Please enter the number of subjects expected at the specified grade:

Grade A OE NUM (VAL: 0-10) Grade D OE NUM (VAL: 0-10)

Grade B OE NUM (VAL: 0-10) Grade E OE NUM (VAL: 0-10)

Grade C OE NUM (VAL: 0-10)

A-levels

Please enter the number of subjects expected at the specified grade:

Grade A OE NUM (VAL: 0-10) Grade D OE NUM (VAL: 0-10)

Grade B OE NUM (VAL: 0-10) Grade E OE NUM (VAL: 0-10)

Grade C OE NUM (VAL: 0-10)

Q7a. **Please tick the box if expected to obtain the following qualification.**

Please tick all that apply.

1. AVCE Part
2. AVCE Single
3. AVCE Double
4. NVQ level 3
5. BTEC National Award
6. BTEC National Certificate
7. BTEC National Diploma
8. If the qualifications expected are not listed, please write them in the space provided

ASK IF dSegm=1 Your plans for university

We would now like to tell us a bit more about what your plans are for university.

ASK IF dSegm=2 Their plans for university

We would now like to tell us a bit more about what their plans are for university.

Q8:

ASK IF dSegm=1 **Which subject do you intend to study at university?**

ASK IF dSegm=2 **Which subject do they intend to study at university?**

Please select

1. Accounting & Finance	23. Economics	44. Mechanical Engineering
2. Aeronautical & Manufacturing Engineering	24. Education	45. Medicine
3. Agriculture & Forestry	25. Electrical & Electronic Engineering	46. Middle Eastern & African Studies
4. American Studies	26. English	47. Music
5. Anatomy & Physiology	27. Food Science	48. Nursing
6. Anthropology	28. French	49. Other Subjects Allied to Medicine
7. Archaeology	29. General Engineering	50 Pharmacology & Pharmacy
8. Architecture	30. Geography & Environmental Science	51. Philosophy
9. Art & Design	31. Geology	52. Physics & Astronomy
10. Biological Sciences	32. German	53. Politics
11. Building	33. History	54. Psychology
12. Business Studies	34. History of Art, Architecture & Design	55. Russian & East European Languages
13. Celtic Studies	35. Hospitality, Leisure, Recreation & Tourism	56. Social Policy
14. Chemical Engineering	36. Iberian Languages	57. Social Work
15. Chemistry	37. Italian	58. Sociology
16. Civil Engineering	38. Land & Property Management	59. Sports Science
17. Classics & Ancient History	39. Law	60. Theology & Religious Studies
18. Communication & Media Studies	40. Librarianship & Information Management	61. Town & Country Planning and Landscape
19. Computer Science	41. Linguistics	62. Veterinary Medicine
20. Dentistry	42. Materials Technology	63. Other (please specify)
21. Drama, Dance & Cinematics	43. Mathematics	64. Not yet decided
22. East & South Asian Studies		

ASK IF Q8 !=64

Q9:

ASK IF dSegm=1 **How much influence did the likely prospects of future employment have on your decision regarding which subject you would study?**

ASK IF dSegm=2 **How much influence did the likely prospects of future employment have on their decision regarding which subject they would study?**

    1. This was a major consideration

    2. This was a minor consideration

    3. This was not a consideration

    4. Don't know

Q10:

ASK IF dSegm=1 **How important do you think having a university education will be to your future career?**

ASK IF dSegm=2 **How important do you think having a university education will be to their future career?**

    1. Very important

    2. Important

    3. Neither important or not important

    4. Not important

    5. Not at all

    6. Don't know

Q11:

ASK IF dSegm=1 **Are you intending to take a gap year before university?**

ASK IF dSegm=2 **Are they intending to take a gap year before university?**

    1. No

    2. Yes

    3. Don't know

Q12:

ASK IF dSegm=1 **Have you decided which universities you will apply to?**

ASK IF dSegm=2 **Have they decided which universities they will apply to?**

    1. Yes

    2. No

Q13:

ASK IF dSegm=1 **Which university is likely to be your first choice?**

ASK IF dSegm=2 **Which university is likely to be their first choice?**

USE ALPHABETICAL AUTOCOMPLETION FIELD WITH LOOKUP OF UNIVERSITY NAMES

ASK IF Q12=1

Q14:

ASK IF dSegm=1 **How much information did you find was available to you when you thought about which university to attend?**

ASK IF dSegm=2 **How much information did you find was available to them when they thought about which university to attend?**

      1. More information than ["I" IF dSegm=1 "they" IF dSegm=2] needed

      2. Enough information to inform ["my" IF dSegm=1 "their" IF dSegm=2] decisions

      3. Not enough information to inform ["my" IF dSegm=1 "their" IF dSegm=2] decisions

      4. No information available

Q15:

ASK IF dSegm=1   **Do you think you are likely to take a part-time job during term time to help you manage financially while at university?**

ASK IF dSegm=2   **Do you think they are likely to take a part-time job during term time to help them manage financially while at university?**

      1. No

      2. Yes

      3. Don't know

Q16:

ASK IF dSegm=1   **Do you think you are likely to take a job during holidays to help you manage financially while at university?**

ASK IF dSegm=2   **Do you think they are likely to take a job during holidays to help them manage financially while at university?**

      1. No

      2. Yes

      3. Don't know

Q17:

ASK IF dSegm=1   **How much do you think you will depend on your parents financially to go to university?**

ASK IF dSegm=2   **How much do you think they will depend on you financially to go to university?**

      1. Entirely dependent on ["me" IF dSegm=1 "them" IF dSegm=2]

      2. Partly dependent on ["me" IF dSegm=1 "them" IF dSegm=2]

      3. Not dependent at all on ["me" IF dSegm=1 "them" IF dSegm=2]

      4. Don't know

Q18:

ASK IF dSegm=1 **Would you consider living at home with your parents whilst attending university?**

ASK IF dSegm=2 **Would they consider living at home whilst attending university?**

     1. No

     2. Yes

     3. Don't know

Q19:

ASK IF dSegm=1 **Will the system of the university student loans make you more independent from your parents?**

ASK IF dSegm=2 **Will the system of the university student loans make them more independent from you?**

     1. More independent than now

     2. About the same

     3. Less independent than now

     4. Don't know

Choice of university

ASK IF dSegm=1 We would now like you to consider a series of scenarios in which you would be choosing which university to attend.

ASK IF dSegm=2 We would now like you to consider a series of scenarios in which your child would be choosing which university to attend. We would like you to tell us which you would advise them to attend.

SHOW ALL INFONODE3. We will ask you to consider three different universities, each of which will be described by a number of factors such as the location and type of university, the status of the course, the level of fees, cost of living and availability of financial support, the levels of student satisfaction with the course and the social opportunities, and the prospects of graduates six months after graduation described by the proportion that go on to work or further study, and the average salary being earned by those in employment.

SHOW IF dSegm=1 We will present you with a total of eight scenarios, and in each we will ask you to indicate which of the three alternatives would be your first choice. If none of these would be acceptable you can also indicate that you would not attend university.

SHOW IF dSegm=2 We will present you with a total of eight scenarios, and in each we will ask you to indicate which of the three alternatives would be your first choice. If none of these would be acceptable you can also indicate that you would suggest that they do not attend university.

CHOICE EXPERIMENT

PICK AND RECORD RANDOM NUMBER 1–64
LOOK UP CORRESPONDING SET OF CHOICES
RECORD PREFERRED ALTERNATIVE FOR EACH

Q20:

I now would like to ask you a few questions about the choice exercises you have just done. **Were you able to make comparisons in the choices we presented to you?**

      1. Yes
      2. No

Q21:

Why weren't you able to make comparisons in the choices?

Q22:

Did you feel that the levels of educational attributes we have been asking about the choices were realistic?

      1. Yes
      2. No
      3. Don't know

Q23:

Why do you say that?

Q24:

ASK IF dSegm=1   **In some scenarios you indicated that you would not attend university. In these situations, what would you intend to do:**

ASK IF dSegm=2   **In some scenarios you indicated that you would advise them not to attend university. In these situations, what would you suggest they do:**

      1. Seek employment
      2. Undertake further study in a non-university environment
      3. Travel or take a gap year
      4. Other

Issues related to your choice of university

Q25:

Please indicate the most important factor to you when considering a university:

1. Location of institution

2. Academic reputation of the course and institution

3. The cost of attendance

4. The views of current students

5. Employment prospects on graduation

6. Advice of parents

7. Other (please specify)

Q26:

ASK IF dSegm=1   **What is the level of your parents' influence on your choice of university?**

ASK IF dSegm=2   **What is your level of influence on your child's choice of university?**

1. Very high

2. High

3. Moderate

4. Low

5. Very low

6. Don't know

Q27: **What is your attitude towards debt?**

ASK IF dSegm=1

1. I do not have any aversions towards taking on debts which I will repay later in my life.

2. I can live with the idea of taking on debts which I will repay later in my life.

3. I feel uneasy with the idea of taking on debts which I will repay later in my life.

4. I am very debt-averse and will not take on debt.

5. Don't know

ASK IF dSegm=2

1. I do not have any aversions towards my child taking on debts which they will repay later in their life

2. I can live with the idea of my child taking on debts which they will repay later in their life.

3. I feel uneasy with the idea of my child taking on debts which they will repay later in their life.

4. I am very debt-averse and will not let my child take on debt.

5. Don't know.

Q28:

ASK IF dSegm=1   Are you aware of the rules which determine when you would be expected to start repaying a student loan and the general level of payments that you would be expected to make?

ASK IF dSegm=2   Are you aware of the rules which determine when they would be expected to start repaying a student loan and the general level of payments that they would be expected to make?

> 1. Fully aware
> 2. Slightly aware
> 3. Unaware
> 4. No interest at this time

Q29:

ASK IF dSegm=1   How much do you think you would be likely to borrow in loans over the course of your studies?

ASK IF dSegm=2   How much do you think they would be likely to borrow in loans over the course of their studies?

Q30:

ASK IF dSegm=1   And for how many years would you anticipate making repayments?

ASK IF dSegm=2   And for how many years would you anticipate they would make repayments?

Q31:

What is your perception of the fairness of the rising tuition fees in England?

> 1. Very fair
> 2. Fair
> 3. Neither fair or unfair
> 4. Unfair
> 5. Very unfair
> 6. Don't know

Questions about yourself

We would like to close by asking some details about yourself and your background so that we can see how views and preferences differ between different groups.

Q34:

To which of these ethnic groups would you say you belong?

    1. White British

    2. White Irish

    3. Any other White background

    4. Indian

    5. Pakistani

    6. Bangladesh

    7. Any other Asian background

    8. Caribbean

    9. African

    10. Any other Black background

    11. Chinese

    12. Any other ethnic group

    13. Decline to answer

Q35:

ASK IF dSegm=1   **How many brothers and sisters do you have?**

    1. None

    2. One

    3. Two

    4. Three

    5. Four or more

ASK IF dSegm=2   **How many children do you have altogether?**

    1. One

    2. Two

    3. Three

    4. Four

    5. Five or more

Q36:

| ASK IF dSegm=1 | **Could you please indicate the current employment status of your parents?** |
| ASK IF dSegm=2 | **Could you please indicate your current employment status, and if applicable that of your partner?** |

	Father SHOW IF DSEGM=1	Mother SHOW IF DSEGM=1	You SHOW IF DSEGM=2	Partner SHOW IF DSEGM=2
1. Self-employed				
2. Full-time employee				
3. Part-time employee				
4. Unemployed				
5. Retired				
6. Other				
7. Not applicable				

Q37:

| ASK IF dSegm=1 | **What is the highest level of your parents' education?** |
| ASK IF dSegm=2 | **What is your, and if applicable your partner's, highest level of education?** |

	Father SHOW IF DSEGM=1	Mother SHOW IF DSEGM=1	You SHOW IF DSEGM=2	Partner SHOW IF DSEGM=2
1. No formal qualifications				
2. GCSE / O level				
3. 'A' level or equivalent				
4. Professional qualification below degree level				
5. Degree level qualification or equivalent				
6. Higher degree				
7. Other				
8. Not applicable				

Q38:

To help us analyse your responses, please could you estimate your annual household income before tax and other deductions?

      1. Under £8,164 per year

      2. £8,165 – £12,168 per year

      3. £12,169 – £16,328 per year

      4. £16,329 – £21,268 per year

      5. £21,269 – £26,988 per year

      6. £26,989 – £33,592 per year

      7. £33,593 – £41,340 per year

      8. £41,341 – £51,168 per year

      9. £51,169 – £70,044 per year

      10. £70,045 or over

      11. DK / refused

Q39:

Is anyone in your household in receipt of any of the following benefits or tax credits?

      1. Attendance Allowance

      2. Carer's Allowance

      3. Council Tax Benefit

      4. Disability Living Allowance

      5. Disabled Person's Tax Credit

      6. Employment and Support Allowance

      7. Housing Benefit

      8. Incapacity Benefit

      9. Income support

      10. Income-based Jobseeker's Allowance

      11. Pension Credits

      12. Working Families' Tax Credit

      13. No

OUTRO. Thank you very much for participating in this survey. If you have any further comments on the questions in this survey or wish to add anything please use the box below otherwise click "Next"