Higher education outcomes: How career satisfaction among graduates varies by ethnicity

JENNY BERMINGHAM, LEAD STATISTICAL ANALYST
TEJ NATHWANI, ECONOMETRICIAN
LUCY VAN ESSEN-FISHMAN, LEAD POLICY AND RESEARCH
ANALYST

SEPTEMBER 2020

HESA

ACKNOWLEDGEMENTS

HESA
95 Promenade
Cheltenham
GL50 1HZ
E pressoffice@hesa.ac.uk
T +44 (0) 1242 211 120
W www.hesa.ac.uk

INTRODUCTION

Much of the literature to date on the value of higher education has focused on earnings and whether or not graduates move into professional employment. It is widely noted, however, that the benefits of going to university are likely to extend beyond such measures. Indeed, the Augar Review (2019) states that 'we are clear that successful outcomes for both students and society are about more than pay'. Beech (2017) highlights how 'personal fulfilment is becoming an increasingly important metric for measuring 'good work''. In a speech delivered in July 2020, the universities minister in England, Michelle Donelan, argued that '[t]rue social mobility is about getting people to choose the path that will lead to their desired destination and enabling them to complete that path' (Donelan 2020). In this vein, the key aims of higher education policy, as articulated by funding and regulatory bodies across the UK, include ensuring that individuals from all backgrounds have the opportunity not only to access and progress through higher education, but also to realise their ambitions afterwards.[1]

This paper aims to begin addressing the paucity of evidence around the broader impact of higher education by focusing on graduate career satisfaction - a previously under-explored variable captured in the Longitudinal Destinations of Leavers from Higher Education (LDLHE) survey. As ethnic differences in outcomes have become more apparent over the last few years, they have increasingly become a focus of educational policy. Indeed, in England, higher education providers are now mandated to publish information on admissions and attainment by students from different ethnic backgrounds (Department for Education 2019), with questions surrounding ethnic equality in higher education having grown in prominence over the past few months (see, for example, Choudhery 2020, Morrison 2020). Recent publications, such as those by Universities UK (2019) and HESA (2020a), continue to illustrate ethnic differences in degree attainment and employment outcomes, suggesting that at least some of the possible benefits of higher education are not accruing equally to all students. Observing these disparities, however, cannot tell us whether graduates from different ethnic backgrounds are able to meet their personal ambitions. HESA's mission is to disseminate information that continuously advances knowledge about higher

---

[1] The first stated objective of the Office for Students (OfS) in England is to ensure that 'all students, from all backgrounds, with the ability and desire to undertake higher education, are supported to access, succeed in, and progress from higher education' (OfS 2020a). Similarly, the first objective in the strategic framework for 2019 to 2022 published by the Scottish Funding Council (SFC) is 'to invest in education that is accessible to learners from all backgrounds, gives them a high-quality learning experience, supports them to succeed in their studies, and equips them to flourish in employment, further study and fulfilling lives' (SFC 2019). The Draft Higher Education Strategy to 2027 submitted to the Welsh Government by the Higher Education Funding Council for Wales (HEFCW) aims to see higher education providers 'Equipping individuals, whatever their background, with the knowledge, skills and attributes to achieve maximum intellectual and personal fulfilment' (HEFCW 2016). Finally, the Department for the Economy, Northern Ireland, notes that 'Higher education and the opportunities that it brings should be available to all, regardless of their background' (DfE(NI) 2020).

education and thereby supports decision making (HESA 2020b). The Equality Act 2010 obliges the sector to monitor and promote equal opportunity for all (Equality Act 2010, Part 6, c.2). We therefore investigate here whether discrepancies by ethnicity are also evident when considering career satisfaction – an important matter to consider given current policy objectives across the UK.

For our analysis, we use the final two LDLHE collections (comprising those who graduated in either 2010/11 or 2012/13) linked to Destinations of Leavers from Higher Education (DLHE) and the HESA Student record.[2] Our initial descriptive exploration shows that Black African and Black Caribbean graduates report lower career satisfaction three and a half years after course completion relative to all other ethnic groups, with the gaps being larger among those who entered higher education aged 26 or over.[3] We follow this up by undertaking an econometric analysis, which takes the form of estimating a linear probability model (LPM). This allows us to jointly control for factors that could influence career satisfaction, alongside ethnicity. Our outcome of interest is a binary variable indicating if the graduate reported being (fairly or very) satisfied with their career to date. Independent variables are iteratively added to the model and include personal/study characteristics, degree attainment, DLHE/LDLHE activity and whether they have ever had a spell of unemployment (lasting one month or more) after finishing their course. Furthermore, we also take into account graduate views on their higher education experience, such as the extent to which they believe it helped them with their career aspirations and whether they are able to utilise the skills gained from study in the workplace.

Prior to the inclusion of any control variables, we find that Black African graduates aged 25 or under are 6.3 percentage points less likely to report they are satisfied with their career than White graduates in the same age group, with the figure being 7.9 percentage points among Black Caribbean graduates. Incorporating a full battery of controls reduces the gap to 2.6 percentage points for both Black African and Black Caribbean graduates. When concentrating on those aged 26 or over, we observe in our baseline model with no controls that Black African graduates are 14.3 percentage points less likely to be satisfied with their career than the White group, while the estimate for Black Caribbean graduates is 12.5 percentage points. Among both Black African and Black Caribbean graduates, the disparity falls to approximately 9 percentage points, once

---

[2] The 2010/11 and 2012/13 LDLHE questionnaires can be found at https://www.hesa.ac.uk/collection/c10019 and https://www.hesa.ac.uk/collection/c12019 respectively.
[3] Within universities, mature students are often defined as those who begin their undergraduate degree at age 21 or above. However, within the existing student finance system, a mature student is one who enters their course after the age of 25. Here, we utilise the latter definition in creating our binary variable for age.

accounting for a comprehensive set of covariates. In all instances, the differences we find are statistically significant at the 5 percent level.

This paper proceeds as follows. We begin with an outline of the policy context and a summary of the literature in this area. A description of the dataset we use is then provided, after which we highlight the methodology employed to undertake our analysis. Results are then discussed, with concluding remarks closing the study.

POLICY BACKGROUND AND LITERATURE REVIEW

Although efforts to promote equality in higher education have traditionally focused on access and admissions, discussions about widening opportunity have increasingly expanded to include the employment prospects of graduates (Gaskell and Lingwood 2019). Recent deliberations around employment, moreover, have concentrated not just on rates of employment, but also on quality of employment. In a UK policy context, this focus is reflected in the title of the Taylor Review of Modern Working Practices (2017), which is 'Good Work'. Although the authors of the review acknowledge that 'good work' will mean different things to different people, they argue that 'all work in the UK economy should be fair and decent with reasonable scope for development and fulfilment'. Good work, that is, is not just about stability and wages, but also about the prospect of satisfaction. If the ability to find good work is considered an important element of graduate success - as it is both in government policy and in the stated objectives of the funding and regulatory bodies across the UK higher education sector (DfE(NI) 2012, Donelan 2020, HEFCW 2016, OfS 2020a, SFC 2019) - then we must consider not just what graduates are paid, but also what they think about their careers.

The satisfaction associated with work can be considered in terms of either job satisfaction or career satisfaction, with job satisfaction referring to a worker's current employment and career satisfaction referring to their past and future career trajectory. The two types of satisfaction are related, but conceptually distinct; while job satisfaction may contribute to career satisfaction, it is possible to be satisfied in one's job without being satisfied with the overall direction of one's career, or dissatisfied with one's job, but satisfied with the prospects for career advancement offered by that job (Heslin 2005). Both job satisfaction and career satisfaction are associated with benefits to the individual, including increased life satisfaction (Erdogan *et al.* 2012), overall subjective wellbeing (Joo and Lee 2017, Sironi 2019) and general health (Faragher *et al.* 2003).

The benefits of satisfying work extend beyond the individual employee. Employers have a vested interest in the satisfaction of their employees, in that workers who are satisfied with their jobs are less likely to quit (Freeman 1978, Egan *et al.* 2004). Other research has suggested that employee satisfaction has a positive impact on business outcomes (Harter *et al.* 2002), while Trivellas *et al.* (2015) suggest that employees who are satisfied with their careers are more likely to perform effectively. Job and career satisfaction are thus good for employers and the wider economy, as well as for individual employees.

In a higher education context, career satisfaction can be considered one facet of the value of a degree. Although the discussion of value in the Augar Review (2019) focuses largely on graduate earnings, its authors nonetheless recognise the benefits of higher education go beyond this, while other recent studies of higher education students and graduates likewise suggest a broad conception of value. A 2019 survey commissioned by Universities UK found that, among the overall sample, only about a third of students and recent graduates mentioned the prospect of a higher salary among their reasons for going to university; more respondents highlighted interest in their subject, taking a first step in building a career, enjoyment of learning, and the prospect of new experiences (ComRes Research 2019). Similarly, although some students interviewed for a Commons report on value for money in higher education referred to job prospects and salary benefits, others noted support services, meeting new people, and learning to think differently (House of Commons Education Committee 2017 and 2018). While students and graduates clearly care about their future careers, they do not assess their prospects entirely in terms of earnings.

Studies of career satisfaction have suggested that it can be affected by a range of factors relating to employees, their employment circumstances, and their perceptions of their careers (Ayers *et al.* 2008, Hofmans *et al.* 2008). In Auster's (2001) study of the midcareer satisfaction of professional women, she suggests that career satisfaction is affected by a mix of individual characteristics (such as gender, family structure, or ethnicity), career characteristics (such as employment gaps or professional networks), organisational characteristics (such as management culture and HR practices), job characteristics (such as job security or opportunities for advancement) and stress factors (such as office politics or trying to maintain a work-life balance). Yap *et al.* (2013) use a modified version of Auster's framework in their analysis of the career satisfaction of immigrants, positing that career satisfaction will depend on a mix of employee characteristics, employer characteristics, objective employment outcomes and subjective workplace perceptions.

Many aspects of career satisfaction have both objective and subjective elements. Earnings can contribute to satisfaction, but it is not just how much workers are earning that matters, but also whether they feel they are paid fairly (Sloane and Williams 2000), whether their wages have increased in the past and whether they expect their wages to increase in the future (Lydon and Chevalier 2002); while salary can be classified according to Yap *et al.*'s (2013) framework as an objective employment outcome, the sense of fair remuneration and the expectation of future pay increases are at least in part a matter of subjective workplace perception. Similarly, opportunities for development or promotion are objective outcomes, but whether an employee feels that the opportunities for advancement in their organisation are fair is a matter of perception.

Several studies have identified differing levels of job and career satisfaction in employees from different ethnic groups. Yap *et al.* (2010 and 2013) find a similar pattern among Canadian managers, professionals, and executives (many but not all of whom held higher education qualifications), in which visible minority workers express lower levels of career satisfaction than White workers. While Hersch and Xiao (2015) find that ethnic differences in job satisfaction cannot be explained by employee or job characteristics, Yap *et al.* (2010) find that much of the difference in career satisfaction experienced by White and minority workers can be explained by factors such as salary, development opportunities, skills utilisation, and working relationships with managers. On the whole, Yap *et al.* (2010) suggest that ethnic minority employees receive lower returns to their human capital, which in turn leads to lower levels of career satisfaction.

Relatively little research has been done on the job and career satisfaction of different ethnic groups in the UK. Although Miller and Travers (2005) identify a number of sources of job dissatisfaction among ethnic minority teachers in the UK, they do not offer detailed comparisons between the experiences of ethnic minority and White teachers, nor do they distinguish between the experiences of different minority groups. Conversely, while a report by the Chartered Institute of Personnel and Development (CIPD 2017) finds that employees from different ethnic groups experience different levels of satisfaction, the report provides little detail on the factors which may lie behind these differences. Both Miller and Travers (2005) and the CIPD (2017) draw on relatively small samples (208 and 1290 survey respondents, respectively) of workers at different stages in their careers. The LDLHE dataset, on the other hand, provides us with career satisfaction data for a much larger sample - most of whom are likely to be at similar stages in their working lives. This

larger sample allows us to build on previous research into the relative career satisfaction of different groups.

The Equality Act 2010 requires that all public authorities in Great Britain - a category which includes higher education providers - 'advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it' (Equality Act 2010, Part 11, c.1). In light of this requirement, the recent memorandum of understanding between the SFC and the Equality and Human Rights Commission outlines the SFC's commitment to promoting equality of outcomes at Scottish universities (SFC 2020). Similarly, one of the stated objectives of the OfS in England is to ensure that 'all students, from all backgrounds are able to progress into employment, further study, and fulfilling lives, and that their qualifications hold their value over time' (OfS 2020a). While there has been considerable research on the higher education attainment and employment outcomes of graduates with protected characteristics, there has been much less discussion of how the non-financial returns to a degree may vary for graduates from different backgrounds. By examining the career satisfaction of higher education graduates by ethnic group three and a half years after course completion, this report seeks to fill a gap in our understanding of how graduates feel about the trajectory of their career.

DATA

Our primary data source for this analysis is linked LDLHE-DLHE-HESA records. The DLHE survey began in the early 2000s and looked to gather information on the destinations of graduates six months after they completed their higher education course. However, it was recognised that many individuals may not have settled into their ideal career paths at such a stage. LDLHE aimed to rectify this matter by surveying a sample of DLHE respondents three and a half years after they qualified. The first cohort to take part in this biennial survey were those who graduated in the academic year 2002/03, with the final collection involving 2012/13 qualifiers.

In recent years, we have seen the emergence of the Longitudinal Education Outcomes (LEO) dataset - an administrative data source that has been formed through linking education, benefits and tax records. Much of the analysis to date has focused on using LEO to evaluate the private financial return from studying in higher education (see, for example, Belfield *et al.* 2018), as well as producing open data that illustrates differences in employment outcomes by personal

characteristics.[4] Two of its principal advantages are that it covers almost the entire graduate population and the accuracy of the data on the earnings/employment outcomes of individuals. Yet, one of the limitations of LEO is that exploration is restricted to the labour market only, meaning one cannot use this dataset to evaluate some of the wider impacts of higher education.

The richness of LDLHE-DLHE-HESA data allows us to go solely beyond examining the labour market, with our principal dependent variable in this study being graduate career satisfaction. By linking to both DLHE and the HESA Student record, we are able to capture a number of variables that could be associated with this outcome, such as personal/study characteristics and activity undertaken after six months. For those in work after three and a half years, we have detailed information on the role the respondent was undertaking at the time of the LDLHE survey. An indicative list of the variables available to us include how they found the job, earnings, occupation, industry and basis of employment. Moreover, in the final two collections of LDLHE, graduates were supplied with a series of questions around the extent to which higher education had prepared them for their career and allowed them to develop a range of soft skills that they have been able to apply in the labour market. Those in employment during the LDLHE survey were also asked whether their employer provided them with the opportunity to apply the skills they had developed from their study.

Given the additional data available in LDLHE for graduates who qualified in 2010/11 or 2012/13, it is these two collections that we draw upon for our analysis. We restrict our dataset to UK domiciled first degree graduates, resulting in a pooled cross-sectional sample comprising of 111,950 graduates. Hence, while not offering the level of coverage that LEO is able to, we still have a very large dataset to work with. In particular, this enables us to utilise a more disaggregated version of the ethnicity field (our key independent variable) than is often possible in other survey data that collects information from graduates (e.g. birth cohort studies).

As part of the LDLHE survey, graduates were asked to report the extent to which they were satisfied with their career to date. Below, we report the proportion who stated they were either very or fairly satisfied with their career by ethnicity.[5] Across the overall population, we see that Black African and Black Caribbean graduates indicate lower satisfaction with their career than all other

---

[4] See, for example, https://www.ethnicity-facts-figures.service.gov.uk/education-skills-and-training/after-education/destinations-and-earnings-of-graduates-after-higher-education/latest
[5] We ran both unweighted and weighted descriptive statistics for this table (and the additional ones we supply in the appendix). As there was little meaningful difference between the two, we utilise unweighted data throughout, including for our econometric analysis.

ethnic groups. However, this masks variations by age, with there being wider gaps between Black African/Black Caribbean graduates and most other ethnic groups when one considers those aged 26 or over only. The table also highlights how a far higher proportion of Black African and Black Caribbean graduates begin their higher education journey at a later age when compared with all other ethnic groups.

Table 1: Career satisfaction in the LDLHE-DLHE-HESA sample by ethnic group. Figures illustrate the percentage who state they are very or fairly satisfied with their career.						
Ethnic group	Overall (%)	Total	Aged 25 or under (%)	Total	Aged 26 or over (%)	Total
White	87.6	90,770	87.7	75,750	86.9	15,020
Indian	87.7	4,600	87.8	4,375	87.1	225
Pakistani	83.5	2,705	83.5	2,515	84.4	190
Bangladeshi	83.0	1,105	82.8	1,060	87.2	45
Chinese	85.4	965	85.4	915	84.8	45
Black African	78.3	3,705	81.5	2,365	72.6	1,340
Black Caribbean	78.5	1,540	79.9	1,140	74.4	400
Other	83.4	6,565	84.4	5,680	77.3	880

In terms of the other control variables we use in our analysis, differences by ethnicity in degree attainment and employment outcomes have been well documented elsewhere (Universities UK 2019, HESA 2020a), so we do not provide any additional descriptive statistics on this here. Rather, we concentrate on those variables relating to graduates' perceptions of their higher education experience and its impact, which have not been examined to the same extent. Table A1 in Appendix A begins by considering whether respondents believe their university experience has assisted them with their career ambitions. Bangladeshi and Black Caribbean graduates were least likely to give a positive response to this question, with just under one third indicating that higher education has not prepared them well for their future career aspirations. These two groups also had the largest proportion of graduates who stated that their employer at three and a half years after graduation did not enable them to utilise the skills they had gained through study in their work in any way (Table A3).

In 2010/11 and 2012/13, graduates were asked to highlight the level to which their higher education experience had allowed them to apply a range of soft skills in the workplace to date (and

therefore this question was not restricted to just those in work at the time of the LDLHE survey).[6] Respondents were able to choose among three options: a great extent, some extent and not at all. For each of the 8 skills, we gave a score of 1 for those who responded 'not at all', 2 for 'some extent' and 3 for 'a great extent'. We then created a variable (ranging from 1 to 3), which averaged an individual's score across the various skills they had supplied an answer for. Note that almost 90 percent of our sample provided a response to all eight skills. Table A2 illustrates that there is generally little difference by ethnicity, with the exception of the Black African group who were slightly more likely to state that higher education had helped them to apply a range of skills to a greater extent in the workplace.

METHODOLOGY

The career satisfaction field in our dataset is an example of an ordinal variable, where there is a natural ordering of the four possible alternatives (1 = Not at all satisfied, 2 = Not very satisfied, 3 = Fairly satisfied, 4 = Very satisfied). One may therefore consider an ordered probit or logit model to be the most appropriate technique to use in this instance. However, in utilising this approach, we must assume that the regression coefficient is the same for each outcome. On running an ordered logit model with ethnicity, age and the corresponding interaction term, we found the Brant test rejected the null hypothesis that the parallel regression assumption was satisfied.[7] Consequently, it was determined that a binary indicator should be used as our outcome variable – equal to 1 if the graduate was fairly or very satisfied with their career and 0 otherwise.

We therefore employ a LPM, which we specify below. Often, probit or logit models are utilised in the case of a binary dependent variable, given some of the known (theoretical) limitations of a LPM.[8] However, Pischke (2012) highlights why one should stick to utilising the LPM. Furthermore, Wooldridge (2002) illustrates that the case for using a LPM is stronger when the controls are discrete – as they are in this instance. It should also be noted that we use robust standard errors to deal with any concerns over heteroscedasticity.[9]

---

[6] This covered the following areas: innovation, problem solving, communication, decision making, team working, initiative, as well as IT and numeracy skills.

[7] See Williams (2016) for further information on the parallel regression assumption and the Brant test.

[8] Using a LPM can mean the predicted probabilities do not lie in the 0 to 1 range, which can raise concerns around possible bias (Horace and Oaxaca 2006). In line with a suggestion in their paper, we excluded any observations where the predicted probability was outside the expected interval and re-estimated our fully specified equation using LPM. Doing so does not change the conclusions we reach.

[9] Following guidance by Abadie *et al.* (2017), we do not use clustered standard errors at the course/institution level, as some previous studies have (see, for example, Crawford (2014)).

$$Satisfaction_i = \alpha_i + \beta_e ethnicity_i + \delta age_i + \Upsilon_e ethnicity_i \, X \, age_i + \Phi_i' \Psi + \varepsilon_i$$

The ethnicity variable consists of eight categories corresponding to those highlighted in Table 1 and we use the White group as our reference. Consequently, the subscript e takes on a range from 1 to 7. Meanwhile, age is a binary variable, which is equal to 1 if the individual is aged 26 or over at the point of entry into higher education. As the descriptive statistics indicate quite large variation in career satisfaction by ethnicity among the two age groups, we also include the corresponding interaction term. Φ_i represents our set of controls, which we bring in successively into the model.[10] The first set of covariates we introduce relate to the person and include sex, disability, highest qualification on entry, region of domicile, year of graduation and an Index of Multiple Deprivation (IMD) marker. Each nation of the UK uses its own methodology to derive this index and consequently they are not directly comparable. We therefore create a binary variable, where one is defined as being from a disadvantaged background if they fall into the lowest IMD quintile in their country of residence prior to starting their higher education course. Of the variables available to us, we believe that IMD is the most suitable measure of socioeconomic status to use in this instance, given this paper places a focus on older students, which renders measures such as POLAR4 and parental education less relevant as proxies for disadvantage. We acknowledge though that for older graduates who have moved residence since childhood, this variable will not necessarily capture the circumstances they faced during their youth.[11] This is followed by study characteristics, which cover mode of study, subject area and institution attended, as well as term-time accommodation. We then add various outcomes from higher education, such as class of degree, DLHE/LDLHE activity and whether the graduate has experienced a period of unemployment. Note that we do not restrict our initial sample to those in employment, hence those not in the labour market at the time of the LDLHE survey also form part of our analysis. Finally, we also control for graduate views on the impact of their higher education experience, as these could influence their reported career satisfaction.

To see how the findings differ (if at all) when we consider a sample of individuals that are in paid work at the time of the LDLHE survey, we replicate the above approach for a sub-sample of employed workers working in the UK. The primary reason for doing this is that it enables an exploration into the role in career satisfaction of job-specific characteristics, such as earnings and

---

[10] We provide further detail on the controls we use in Appendix B.
[11] More information on our IMD marker is available in Appendix B.

whether the employer enables the graduate to use the skills they gained from study in their position.

RESULTS

We report our regression results in Table 2. For those individuals aged 25 or under, the age dummy will be equal to 0 in our model (specified above). As a result, the first set of seven coefficients in our table (β_e) relate specifically to those aged 25 or under. In model 1, prior to the inclusion of any controls, all ethnic groups report lower career satisfaction compared to White graduates aged 25 or under, with the exception of Indian graduates. In particular, the gaps are greatest among Black African and Black Caribbean graduates, with Black African graduates in this age group 6.3 percentage points less likely to be satisfied with their career (relative to the aged 25 or under White group), while the figure is 7.9 percentage points for Black Caribbean graduates. The addition of personal characteristics in model 2 does lead to a fall in the estimated coefficient, which may be partly driven by a higher proportion of Black African and Black Caribbean graduates being from disadvantaged backgrounds[12] (as proxied by IMD) when compared with their White peers (and disadvantaged graduates reporting lower satisfaction with their careers).

Among the majority of ethnic groups, the incorporation of study variables in model 3 leads to the differences in career satisfaction (relative to the White group) becoming wider. This is predominantly driven by the inclusion of the subject area of study variable, which suggests that ethnic minority graduates are more likely to have studied fields that are associated with higher levels of career satisfaction (e.g. subjects allied to medicine). The addition of institution attended, however, does not have much impact on the coefficients for ethnicity.

From model 4 to model 7, where we include various outcomes from higher education, the estimated coefficient for the Black African and Black Caribbean groups consistently falls, reflecting the fact that these two groups experience less positive outcomes (which in turn are linked to lower career satisfaction) from higher education than White graduates. Including graduate views on the higher education experience does not greatly change our estimates for the Black African and Black Caribbean groups. It is noticeable from the table that once we have a comprehensive set of controls in our model, the initial differences we observe for Pakistani, Bangladeshi, Chinese and

---

[12] 9 percent of White graduates in the sample were classified as disadvantaged using our IMD variable, whereas the figures were 46 per cent and 39 percent for Black African and Black Caribbean graduates, respectively.

Other ethnic groups are almost entirely eradicated. The same is not apparent for either the Black African or Black Caribbean groups, with both 2.6 percentage points less likely to be satisfied with their career.

For individuals aged 26 or over, the age dummy in our model will be equal to 1. Consequently, the differences by ethnicity are now calculated by summing β_e and Υ_e. We see that Black African graduates are 14.3 (0.0628 + 0.0805) percentage points less likely to be satisfied with their careers than their White peers aged 26 or over, while the corresponding value for Black Caribbean graduates is 12.5 percentage points. The addition of controls leads to a similar pattern of changes in the estimated coefficients as we see for those aged 25 or under. One exception to this is the inclusion of control variables relating to the higher education experience in model 8, where we observe a widening of the gaps in career satisfaction between the Black African/Black Caribbean and White groups. In our fully specified model, both Black African and Black Caribbean graduates aged 26 or over are around 9 percentage points less likely to be satisfied with their career than White graduates in the same age bracket – a far larger difference than that observed among the younger cohort.

Table 2: Estimation of a linear probability model.
Dependent variable: Career satisfaction (1 if graduate is very or fairly satisfied and 0 otherwise).
Sample: UK domiciled first degree graduates who participated in LDLHE 2010/11 or 2012/13.[13]

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Indian	0.000309	-0.00522	-0.0220	-0.0140	-0.00631	-0.000373	0.00486	0.00491
	(0.00510)	(0.00525)	(0.00542)	(0.00542)	(0.00541)	(0.00526)	(0.00523)	(0.00504)
Pakistani	-0.0429	-0.0369	-0.0505	-0.0388	-0.0262	-0.00966	-0.00202	-0.00296
	(0.00751)	(0.00762)	(0.00787)	(0.00787)	(0.00781)	(0.00751)	(0.00744)	(0.00708)
Bangladeshi	-0.0494	-0.0432	-0.0497	-0.0397	-0.0262	-0.0162	-0.00989	-0.00529
	(0.0117)	(0.0118)	(0.0119)	(0.0119)	(0.0119)	(0.0116)	(0.0115)	(0.0111)
Chinese	-0.0235	-0.0288	-0.0457	-0.0386	-0.0249	-0.0201	-0.00917	-0.00472
	(0.0117)	(0.0117)	(0.0117)	(0.0117)	(0.0116)	(0.0116)	(0.0116)	(0.0112)
Black African	-0.0628	-0.0551	-0.0639	-0.0517	-0.0418	-0.0289	-0.0202	-0.0263
	(0.00808)	(0.00842)	(0.00844)	(0.00842)	(0.00830)	(0.00801)	(0.00796)	(0.00770)

[13] Please note that in tables 2 and 3, both the ethnicity and ethnicity x age variables are jointly significant at the 5 percent level. Robust standard errors are reported in parentheses.

Black Caribbean	-0.0788	-0.0704	-0.0651	-0.0524	-0.0469	-0.0318	-0.0287	-0.0264
	(0.0119)	(0.0121)	(0.0120)	(0.0120)	(0.0120)	(0.0118)	(0.0117)	(0.0114)
Other	-0.0335	-0.0336	-0.0367	-0.0301	-0.0239	-0.0123	-0.00706	-0.00833
	(0.00496)	(0.00509)	(0.00511)	(0.00510)	(0.00504)	(0.00490)	(0.00486)	(0.00469)
26 or over	-0.00812	0.0127	-0.0169	-0.0257	-0.0195	-0.00505	-0.00911	-0.0115
	(0.00300)	(0.00362)	(0.00447)	(0.00448)	(0.00442)	(0.00429)	(0.00425)	(0.00407)
Indian*26 or over	0.00157	0.00727	0.0125	0.0171	0.00608	-0.00600	-0.00931	-0.0166
	(0.0231)	(0.0231)	(0.0226)	(0.0227)	(0.0224)	(0.0213)	(0.0210)	(0.0207)
Pakistani*26 or over	0.0174	0.0149	0.0294	0.0277	0.0201	0.0136	0.0100	-0.00552
	(0.0274)	(0.0273)	(0.0271)	(0.0272)	(0.0274)	(0.0262)	(0.0260)	(0.0247)
Bangladeshi*26 or over	0.0525	0.0426	0.0673	0.0719	0.0581	0.0297	0.0278	-0.00667
	(0.0501)	(0.0501)	(0.0511)	(0.0506)	(0.0510)	(0.0502)	(0.0502)	(0.0470)
Chinese*26 or over	0.00207	0.00287	0.0167	0.0145	-0.00122	0.0152	0.0184	0.0251
	(0.0543)	(0.0541)	(0.0553)	(0.0548)	(0.0534)	(0.0495)	(0.0493)	(0.0478)
Black African*26 or over	-0.0805	-0.0851	-0.0640	-0.0531	-0.0471	-0.0293	-0.0373	-0.0634
	(0.0149)	(0.0149)	(0.0149)	(0.0148)	(0.0146)	(0.0140)	(0.0140)	(0.0133)
Black Caribbean*26 or over	-0.0461	-0.0450	-0.0380	-0.0335	-0.0343	-0.0422	-0.0410	-0.0596
	(0.0250)	(0.0249)	(0.0248)	(0.0248)	(0.0245)	(0.0243)	(0.0242)	(0.0236)
Other*26 or over	-0.0625	-0.0609	-0.0443	-0.0393	-0.0395	-0.0395	-0.0418	-0.0478
	(0.0152)	(0.0152)	(0.0151)	(0.0150)	(0.0147)	(0.0142)	(0.0141)	(0.0134)
Sample size	111,950	111,950	111,950	111,950	111,950	111,950	111,950	111,950
Personal characteristics		X	X	X	X	X	X	X
Study characteristics			X	X	X	X	X	X
Class of degree				X	X	X	X	X
DLHE activity					X	X	X	X
LDLHE activity						X	X	X
Unemployment experience							X	X
Higher education experience								X

In Table 3, we focus only on those in paid employment in the UK at the time of the LDLHE survey. Qualitatively, Black African and Black Caribbean graduates are again the groups that display the biggest discrepancies in career satisfaction relative to the White group irrespective of whether we

control for other determinants of career satisfaction, with larger differentials observed among those aged 26 or over. From a quantitative perspective, we see that the addition of job-specific characteristics in model 6 reduces – but does not eliminate - the differences in career satisfaction we see between Black African/Black Caribbean and White graduates. Overall, the results are not too dissimilar to what we see for the full sample following the inclusion of a full battery of controls. Black African graduates aged 25 or under are 2.5 percentage points less likely to be satisfied with their career relative to White graduates in the equivalent age group, though a slightly bigger difference of 3.9 percentage points is evident when considering Black Caribbean graduates. Among those aged 26 or over, we see that both Black African and Black Caribbean graduates are approximately 9-10 percentage points less likely to be satisfied with their careers than White graduates.

Table 3: Estimation of a linear probability model. **Dependent variable: Career satisfaction (1 if graduate is very or fairly satisfied and 0 otherwise).** **Sample: UK domiciled first degree graduates who participated in LDLHE in 2010/11 or 2012/13 and reported being in paid employment.**								
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Indian	0.00316	-0.00344	-0.0193	-0.0131	-0.00650	-0.00305	-0.000787	-0.00179
	(0.00556)	(0.00575)	(0.00593)	(0.00594)	(0.00593)	(0.00544)	(0.00543)	(0.00534)
Pakistani	-0.0307	-0.0282	-0.0421	-0.0330	-0.0232	-0.00800	-0.00485	-0.00564
	(0.00826)	(0.00838)	(0.00866)	(0.00864)	(0.00859)	(0.00798)	(0.00794)	(0.00778)
Bangladeshi	-0.0336	-0.0319	-0.0403	-0.0330	-0.0213	-0.00940	-0.00602	-0.00375
	(0.0123)	(0.0125)	(0.0126)	(0.0127)	(0.0127)	(0.0119)	(0.0118)	(0.0116)
Chinese	-0.0271	-0.0326	-0.0471	-0.0423	-0.0312	-0.0171	-0.0121	-0.0113
	(0.0134)	(0.0134)	(0.0133)	(0.0133)	(0.0131)	(0.0125)	(0.0125)	(0.0122)
Black African	-0.0443	-0.0426	-0.0534	-0.0438	-0.0345	-0.0249	-0.0213	-0.0247
	(0.00886)	(0.00921)	(0.00924)	(0.00925)	(0.00910)	(0.00835)	(0.00834)	(0.00831)
Black Caribbean	-0.0836	-0.0810	-0.0784	-0.0678	-0.0614	-0.0414	-0.0406	-0.0393
	(0.0136)	(0.0137)	(0.0136)	(0.0137)	(0.0137)	(0.0127)	(0.0127)	(0.0125)
Other	-0.0234	-0.0265	-0.0299	-0.0250	-0.0198	-0.0103	-0.00820	-0.00817
	(0.00552)	(0.00565)	(0.00568)	(0.00568)	(0.00563)	(0.00524)	(0.00523)	(0.00515)
26 or over	-0.000545	0.0154	-0.0138	-0.0217	-0.0168	-0.0143	-0.0143	-0.0155
	(0.00327)	(0.00397)	(0.00486)	(0.00487)	(0.00484)	(0.00442)	(0.00440)	(0.00434)

Indian*26 or over	-0.0231	-0.0181	-0.00891	-0.00362	-0.0104	-0.0241	-0.0247	-0.0247
	(0.0265)	(0.0265)	(0.0262)	(0.0262)	(0.0258)	(0.0246)	(0.0244)	(0.0237)
Pakistani* 26 or over	0.0452	0.0437	0.0587	0.0570	0.0511	0.0285	0.0252	0.0194
	(0.0265)	(0.0265)	(0.0263)	(0.0265)	(0.0268)	(0.0242)	(0.0241)	(0.0233)
Bangladeshi*26 or over	0.0349	0.0249	0.0483	0.0507	0.0407	0.0200	0.0190	0.00623
	(0.0526)	(0.0526)	(0.0548)	(0.0540)	(0.0539)	(0.0480)	(0.0480)	(0.0458)
Chinese*26 or over	0.0675	0.0673	0.0835	0.0825	0.0657	0.0466	0.0478	0.0447
	(0.0490)	(0.0486)	(0.0514)	(0.0517)	(0.0481)	(0.0477)	(0.0455)	(0.0456)
Black African*26 or over	-0.0610	-0.0638	-0.0492	-0.0404	-0.0414	-0.0474	-0.0529	-0.0632
	(0.0170)	(0.0170)	(0.0169)	(0.0169)	(0.0166)	(0.0150)	(0.0151)	(0.0148)
Black Caribbean*26 or over	-0.0428	-0.0424	-0.0370	-0.0339	-0.0361	-0.0489	-0.0478	-0.0563
	(0.0297)	(0.0296)	(0.0294)	(0.0296)	(0.0293)	(0.0270)	(0.0269)	(0.0271)
Other*26 or over	-0.0407	-0.0416	-0.0331	-0.0285	-0.0308	-0.0303	-0.0317	-0.0369
	(0.0172)	(0.0172)	(0.0171)	(0.0169)	(0.0167)	(0.0153)	(0.0153)	(0.0148)
Sample size	82,870	82,870	82,870	82,870	82,870	82,870	82,870	82,870
Personal characteristics		X	X	X	X	X	X	X
Study characteristics			X	X	X	X	X	X
Class of degree				X	X	X	X	X
DLHE activity					X	X	X	X
LDLHE employment						X	X	X
Unemployment experience							X	X
Higher education experience								X

DISCUSSION

Despite the breadth of variables on offer within linked LDLHE-DLHE-HESA records, we recognise that we are unable to control for all the possible determinants of career satisfaction (and thus there could still be some bias present in our estimated coefficients). For example, we do not know the promotion opportunities available to those in work, which our literature review has highlighted as being a potential factor that influences career satisfaction. We also lack detailed information on the personal circumstances faced by graduates. This could be particularly relevant for older students, who may have family responsibilities that impact on their ability to pursue their desired career path.

Although Auster's (2001) study of the midcareer satisfaction of women observes that some family arrangements can mitigate lower career satisfaction, the study also notes that the stress of balancing work and family commitments can have a negative impact on career satisfaction.

The personal and job characteristics discussed above relate to the present circumstances of LDLHE respondents. Other aspects of respondents' personal and educational history, dating from before their entrance to higher education, may also play a role in eventual career satisfaction. In particular, studies have shown a high degree of variability both in the pre-university career aspirations of young people, as well as the quality and quantity of careers education available to them in school. For example, Moote and Archer (2017) find that careers provision in schools varies significantly by ethnicity, with White students far more likely to report receiving careers education than students from other ethnic groups. Students identifying as Black or other/mixed ethnicity were the most likely to report that they had received no careers education at school. Moreover, on the basis of the qualitative interviews which accompanied their survey about careers provision, Moote and Archer (2017) find that, as a direct consequence of the relative lack of careers education received, both Black and South Asian students were particularly likely to describe themselves as unsure about their career paths, while also expressing a desire for more careers support. The authors also point out that there are observable biases in the career expectations which teachers and careers advisors have for students of different ethnicity, social class, and gender.

These discrepancies in careers provision may be particularly important in light of the variations in how students of different ethnicities think about their career prospects while they are still at school. Perhaps unsurprisingly, given the gaps in school-based careers provision, Hutchinson *et al.* (2011) report that ethnic minority students, relative to their White peers, are more likely to consult family members about career options and to report family expectations as a factor in their careers decisions. Meanwhile, Moote and Archer (2017) highlight that ethnic minority students are especially likely to make educational choices which lead them towards known areas of employment (see also Hutchinson *et al.* 2011).

What Hutchinson *et al.* (2011) and Moote and Archer (2017) observe at the school level fits with what we find in the LDLHE-DLHE-HESA data. Table A4 in the appendix highlights the 15 most popular subjects studied by ethnic group within our full sample. Here, we utilise a two-way split of the ethnicity variable in order to see whether our data aligns with Moote and Archer (2017) and Hutchinson *et al.*'s (2011) observations about the educational choices made by ethnic minority

students. In line with their conclusions, we find that ethnic minority graduates clearly demonstrate a greater preference for more vocational subjects. The heavily vocational nature of the subjects studied by Black African and Black Caribbean graduates who entered higher education at 26 years of age or older - the group most likely to report feeling dissatisfied with their careers in the LDLHE survey - is even more striking; out of this group, more than 30 percent studied either nursing or social work, while another 20 percent studied other subjects allied to medicine, education, accounting, or law.

Once students arrive in higher education, further differences by ethnicity emerge. Results from the National Student Survey (NSS) show that ethnic minority students are typically less satisfied with the quality of their higher education courses; analysis of NSS data for 2005 to 2013 by the Higher Education Funding Council for England (HEFCE) found that Black African students, Black Caribbean students, and students of mixed ethnicity reported the lowest levels of course satisfaction out of all ethnic groups (HEFCE 2015). Indeed, the most recent NSS data shows that ethnic minority students continue to be less satisfied than their White peers (OfS 2020b). Similarly, a HEFCE (2016) report on the extent to which graduates report themselves to be satisfied with their undergraduate choices finds that ethnic minority graduates are more likely than White graduates to say that they would choose a different course, institution, or qualification if they had the opportunity to re-evaluate their higher education options, with particularly large differences seen between Black African and White graduates. While some possible causes for these gaps in course satisfaction have been suggested (Miller 2016), the authors of the HEFCE (2016) report conclude with a recommendation for further research into why ethnic minority graduates are frequently dissatisfied with their undergraduate choices.

CONCLUSION

Current policy aims to ensure that individuals from all backgrounds have the opportunity not only to go to university, but to also fulfil their aspirations after graduation. Previous research into the outcomes of higher education has tended to focus on earnings and whether or not graduates obtain employment in professional occupations, as well as examining how these vary among different groups within society. Despite wide acknowledgement that the advantages of going to university are likely to be far ranging, there has been little exploration of the alternative benefits of obtaining a degree.

Using linked LDLHE-DLHE-HESA data, this paper has therefore aimed to begin plugging this gap in the literature by examining ethnic variations in graduate career satisfaction. Our analysis illustrates that there are statistically significant differences by ethnic group – even after controlling for a comprehensive set of covariates that include personal/study characteristics, various outcomes from higher education and graduate views on their university experience. In our fully specified model, we find that Black African and Black Caribbean graduates aged 25 or under at the time of entry into higher education are 2.6 percentage points less likely to be satisfied with their careers than White peers in the equivalent age group, with a larger gap of around 9 percentage points being evident among those aged 26 or over.

Although our work allows us to control for a wide range of possible variables, unexplained differences remain in the career satisfaction experienced by graduates from different ethnic backgrounds three and a half years after course completion. Above, we have suggested some possible factors (not available in our dataset) that could help account for the discrepancies we see. We appreciate that this is by no means an exhaustive list and aspects such as student debt levels could also impact on how graduates evaluate their career. In light of this, we would recommend further research on this matter, which we believe should be of a qualitative nature in the first instance. This would enable a more detailed exploration into the determinants of graduate career satisfaction (including, for example, the role of careers services, family background, debt, etc.), thus advancing knowledge in this area. Such a study is likely to prove informative not only to organisations like ourselves in evaluating what quantitative data we need to collect, but also to those establishments involved in providing careers advice to students and graduates.

Our analysis here has utilised LDLHE, as opposed to the new Graduate Outcomes survey. The rationale behind this is that one of our core aims at HESA is to use research to help us in evaluating the data we gather and disseminate, which includes identifying ways in which we may be able to improve the Graduate Outcomes questionnaire. Since some aspects of the LDLHE dataset have yet to be fully explored and are not currently collected as part of Graduate Outcomes (such as the career satisfaction variable), this continues to be a useful resource for us to draw upon when considering how we can strengthen the Graduate Outcomes survey.[14] In future work by HESA, we will seek to assess other elements of the LDLHE survey that would add to our knowledge on how we can augment Graduate Outcomes.

---

[14] External researchers wishing to undertake analysis with either LDLHE or the first year of the Graduate Outcomes survey can request a bespoke dataset through Jisc. Please see https://www.jisc.ac.uk/tailored-datasets for further information.

Alongside this, we will be using the first year of Graduate Outcomes data to continue exploring some of the wider benefits of higher education (e.g. meaningful work) and how these outcomes vary across different groups within society. Together, these research projects will help inform the development of some of our key products, including our statistical bulletins and Open Data. For example, this study on career satisfaction represents one of the first instances where HESA has undertaken an investigation of outcomes from higher education in which the ethnicity variable has been more finely disaggregated within the analysis conducted. We acknowledge that, where possible, providing statistics in this way is likely to be more beneficial for providers and policymakers looking to ensure that all graduates are able to pursue their ambitions and enjoy rewarding careers, given broad ethnic groups could hide differences within these categories. Hence, where sample size allows, we will continue with such an approach in our research relating to Graduate Outcomes and subsequently use the findings in considering if and how we should enhance our Official Statistics publications.

REFERENCES

Abadie, A., S. Athey., G. W. Imbens, and J. Wooldridge. (2017) 'When Should You Adjust Standard Errors for Clustering?' Available at: https://economics.mit.edu/files/13927

Augar, P., I. Crewe, J. de Rojas, E. Peck, B. Robinson, and A. Wolf. (2019) *Independent panel report to the Review of Post-18 Education and Funding*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/805127/Review_of_post_18_education_and_funding.pdf

Auster, E. R. (2001) 'Professional Women's Midcareer Satisfaction: Toward an Explanatory Framework'. *Sex Roles* 44: 719-750.

Ayers, K. M. S, W. M. Thomson, A. M. Rich, and J. T. Newton. (2008) 'Gender differences in dentists' working practices and job satisfaction'. *Journal of Dentistry* 36: 343-350.

Belfield, C., J. Britton, F. Buscha, L. Dearden, M. Dickson, L. van der Erve, L. Sibieta, A. Vignoles, I. Walker, and Y. Zhu. (2018) *The impact of undergraduate degrees on early-career earnings: Research report*. Institute for Fiscal Studies. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759278/The_impact_of_undergraduate_degrees_on_early-career_earnings.pdf

Beech, D. (2017) 'Salary vs. satisfaction: What constitutes good work for graduates?' *Higher Education Policy Institute*, 30 June. Available at: https://www.hepi.ac.uk/2017/06/30/salary-vs-satisfaction-constitutes-good-work-graduates/

Chartered Institute of Personnel and Development. (2017) *Addressing the barriers to BAME employee career progression to the top*. Available at: https://www.cipd.co.uk/Images/addressing-the-barriers-to-BAME-employee-career-progression-to-the-top_tcm18-33336.pdf

Choudhery, T. (2020) 'We can't separate the issues of race and reopening in universities'. *WonkHE*, 3 June. Available at: https://wonkhe.com/blogs/we-cant-separate-the-issues-of-race-and-reopening-in-universities/

ComRes Research. (2019) *Universities UK – Students and Recent Graduates Research*. Available at: https://www.comresglobal.com/wp-content/uploads/2019/09/ComRes_UUK_Students_and_Recent_Graduates_Research_Final_Tables_September_2019.pdf

Crawford, C. (2014) *Socio-economic differences in university outcomes in the UK: drop-out, degree completion and degree class*. IFS Working Paper W14/31. University of Warwick and Institute of Fiscal Studies. Available at: https://www.ifs.org.uk/uploads/publications/wps/WP201431.pdf

Department for Education. (2019) *Universities must do more to tackle ethnic disparity*. https://www.gov.uk/government/news/universities-must-do-more-to-tackle-ethnic-disparity

DfE(NI). (2020) *Higher education widening participation*. https://www.economy-ni.gov.uk/articles/higher-education-widening-participation

DfE(NI). (2012) *Graduating to Success: A Higher Education Strategy for Northern Ireland*. Available at: https://www.economy-ni.gov.uk/sites/default/files/publications/del/graduating-to-success-he-strate

Donelan, M. (2020) *Universities Minister calls for true social mobility*. 1 July, NEON summit on widening access and mobility. [21 August 2020] Available at: https://www.gov.uk/government/speeches/universities-minister-calls-for-true-social-mobility

Egan, T. M., B. Yang, and K. R. Bartlett. (2004) 'The Effects of Organizational Learning Culture and Job Satisfaction on Motivation to Transfer Learning and Turnover Intention'. *Human Resource Development Quarterly* 15: 279-300.

Erdogan, B., T. N. Bauer, D. M. Truxillo, and L. Mansfield. (2012) 'Whistle While You Work: A Review of the Life Satisfaction Literature'. *Journal of Management* 38: 1038-1083.

Equality Act 2010. London: The Stationery Office. Available at: https://www.legislation.gov.uk/ukpga/2010/15/contents

Faragher, E. B., M. Cass, and C. L. Cooper. (2003) 'The relationship between job satisfaction and health: a meta-analysis'. *Occupational and Environmental Medicine* 62: 105-112.

Freeman, R. B. (1978) 'Job satisfaction as an economic variable'. *The American Economic Review* 68: 135-141.

Gaskell, S. and R. Lingwood. (2019) *Widening opportunity in higher education. The third phase: Beyond graduation.* Universities UK. Available at: https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2019/widening-opportunity-third-phase.pdf

Harter, J. K, F. L. Schmidt, and T. L. Hayes. (2002) 'Business-Unit-Level Relationship Between Employee Satisfaction, Employee Engagement, and Business Outcomes: A Meta-Analysis'. *Journal of Applied Psychology* 87: 268-279.

HEFCE. (2016) *Graduate satisfaction with undergraduate choices*. Higher Education Funding Council for England. Available at: https://dera.ioe.ac.uk/27867/1/HEFCE2016_28.pdf

HEFCE. (2015) *Causes of differences in student outcomes*. Report to HEFCE by King's College London, ARC Network and The University of Manchester. Higher Education Funding Council for England. Available at: https://dera.ioe.ac.uk/23653/1/HEFCE2015_diffout.pdf

HEFCW. (2016) *Draft Welsh Government Higher Education Strategy to 2027*. Available at: https://www.hefcw.ac.uk/documents/about_he_in_wales/WG_priorities_and_policies/Draft%20Higher%20Education%20Strategy%20to%202027%20.pdf

HESA. (2020a) *Higher Education Graduate Outcomes Statistics: UK 2017/18 – Graduate activities and characteristics.* https://www.hesa.ac.uk/news/18-06-2020/sb257-higher-education-graduate-outcomes-statistics/activities

HESA. (2020b) *Who we are and what we do*. https://www.hesa.ac.uk/about/what-we-do

Hersch, J. and J. Xiao. (2015) *Sex, Race, and Job Satisfaction among Highly Educated Workers*. IZA Discussion Paper No. 9355. Institute for the Study of Labour. Available at: http://ftp.iza.org/dp9355.pdf

Heslin, P. A. (2005) 'Conceptualizing and evaluating career success'. *Journal of Organizational Behavior* 26: 113-136.

Hofmans, J., N. Dries, R. Pepermans. (2008) 'The Career Satisfaction Scale: Response bias among men and women'. *Journal of Vocational Behavior* 73: 397-403.

Horace, W. and R. Oaxaca. (2006) Results on the bias and inconsistency of ordinary least squares for the linear probability model. *Economics Letters* 90: 321-327.

House of Commons Education Committee. (2018) *Value for Money in Higher Education*. Seventh Report of Session 2017 – 2019. Available at: https://publications.parliament.uk/pa/cm201719/cmselect/cmeduc/343/343.pdf

House of Commons Education Committee. (2017) *Oral Evidence: Value for Money in Higher Education*. Available at: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/education-committee/value-for-money-in-higher-education/oral/75634.html

Hutchinson, J., H. Rolfe, N. Moore, S. Bysshe, and K. Bentley. (2011) *All things being equal? Equality and diversity in careers education, information, advice and guidance*. Research report 71. Equality and Human Rights Commission. Available at: https://dera.ioe.ac.uk/4141/1/71_careers_information.pdf

Joo, B.-K. and I. Lee. (2017) 'Workplace happiness: work engagement, career satisfaction, and subjective well-being'. *Evidence-based HRM* 5: 206-221.

Lydon, R. and A. Chevalier. (2002) *Estimates of the Effect of Wages on Job Satisfaction*. Centre for Economic Performance, London School of Economics and Political Science. Available at: http://eprints.lse.ac.uk/20081/1/Estimates_of_the_Effect_of_Wages_on_Job_Satisfaction.pdf

Miller, G. V. F., and C. J. Travers. (2005) 'Ethnicity and the experience of work: Job stress and satisfaction of minority ethnic teachers in the UK'. *International Review of Psychiatry* 17: 317-327.

Miller, M. (2016) *The Ethnicity Attainment Gap: Literature Review*. Widening Participation Research & Evaluation Unit. University of Sheffield. Available at: https://www.sheffield.ac.uk/polopoly_fs/1.661523!/file/BME_Attainment_Gap_Literature_Review_EXTERNAL_-_Miriam_Miller.pdf

Morrison, N. (2020). 'Black Graduates Twice as Likely to be Unemployed'. *Forbes*, 18 June. Available at: https://www.forbes.com/sites/nickmorrison/2020/06/18/black-graduates-twice-as-likely-to-be-unemployed/#659915c77eb3

Moote, J., and L. Archer. (2017) 'Failing to deliver? Exploring the current status of career education provision in England'. *Research Papers in Education*.

OfS. (2020a) *What we do*. https://www.officeforstudents.org.uk/about/our-strategy/

OfS. (2020b) *National Student Survey – NSS: Sector Analysis.* https://www.officeforstudents.org.uk/advice-and-guidance/student-information-and-data/national-student-survey-nss/sector-analysis/

Pischke, J.-S. (2012) 'Probit better than LPM?' *Mostly Harmless Econometrics*, 9 July. Available at: http://www.mostlyharmlesseconometrics.com/2012/07/probit-better-than-lpm/

SFC. (2020) *Memorandum of understanding between the Scottish Funding Council and the Equality and Human Rights Commission*. Available at: http://www.sfc.ac.uk/web/FILES/EqualityDiversity/SFC_EHRC_Memorandum_of_Understanding.pdf

SFC. (2019) *Strategic Framework 2019-2022*. Available at: http://www.sfc.ac.uk/web/FILES/StrategicFramework/Scottish_Funding_Council_Strategic_Framework_2019-2022.pdf

Sironi, E. (2019) 'Job satisfaction as a determinant of employees' optimal well-being in an instrumental variable approach'. *Quality & Quantity* 53: 1721-1742.

Sloane, P. J. and H. Williams. (2000) 'Job Satisfaction, Comparison Earnings, and Gender'. *Labour* 14: 473-502.

Taylor, M., G. Marsh, D. Nicol, and P. Broadbent. (2017) *Good Work: The Taylor Review of Modern Working Practices*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627671/good-work-taylor-review-modern-working-practices-rg.pdf

Trivellas, P., N. Kakkos, N., Blanas, and I. Santouridis. (2015) 'The impact of career satisfaction on job performance in accounting firms. The mediating effect of general competencies'. *Procedia Economics and Finance* 33: 468-476.

Universities UK. (2019) *Black, Asian and Minority Ethnic Student Attainment at UK Universities: #Closingthegap.* Available at: https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2019/bame-student-attainment-uk-universities-closing-the-gap.pdf

Williams, R. (2016) 'Understanding and interpreting generalized ordered logit models'. *The Journal of Mathematical Sociology* 40: 7-20.

Wooldridge, J. (2002) *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Mass.: MIT Press.

Yap, M., M. Holmes, C.-A. Hannan, and W. Cukier. (2013) 'Correlates of Career Satisfaction in Canada— the Immigrants' Experience'. *Journal of International Migration and Immigration* 15: 49-71.

Yap, M., W. Cukier, M. R. Holmes, and C.-A. Hannan. (2010) 'Career Satisfaction: A Look behind the Races'. *Relations industrielles / Industrial Relations* 65: 584–608.

APPENDIX A: ADDITIONAL DESCRIPTIVE STATISTICS

Ethnic group	Not at all (%)	Not very well (%)	Quite well (%)	Very well (%)	Missing information (%)	Total
White	6.5	16.6	47.0	28.6	1.3	90,770
Indian	7.1	17.5	45.5	28.8	1.1	4,600
Pakistani	8.6	18.3	44.5	27.4	1.2	2,705
Bangladeshi	9.9	22.1	43.5	23.2	1.4	1,105
Chinese	6.4	20.0	50.8	21.8	0.9	965
Black African	7.8	17.3	38.1	35.5	1.3	3,705
Black Caribbean	9.9	20.2	41.4	26.9	1.7	1,540
Other	8.0	18.7	44.1	27.8	1.5	6,565

Table A1: Graduate views on the extent to which higher education prepared them for/helped them progress their career aspirations in the LDLHE-DLHE-HESA sample by ethnic group.

Ethnic group	Mean	Total
White	2.20	89,575
Indian	2.25	4,550
Pakistani	2.25	2,660
Bangladeshi	2.19	1,100
Chinese	2.17	955
Black African	2.37	3,630
Black Caribbean	2.20	1,525
Other	2.22	6,435

Table A2: Graduate views on the extent to which higher education has enabled them to utilise various skills in the workplace in the LDLHE-DLHE-HESA sample by ethnic group.

Table A3: Graduate views on the extent to which their employer enables them to use their skills in the LDLHE-DLHE-HESA sample by ethnic group.					
	Not at all (%)	Some extent (%)	A great extent (%)	Missing information (%)	Total
White	12.8	48.7	36.5	2.1	67,775
Indian	12.2	51.5	34.2	2.1	3,405
Pakistani	12.2	49.4	35.7	2.8	1,945
Bangladeshi	15.7	51.3	31.6	1.4	860
Chinese	13.8	57.7	26.5	2.0	690
Black African	13.6	45.1	38.0	3.3	2,535
Black Caribbean	18.5	49.0	30.2	2.3	1,110
Other	14.5	49.9	33.3	2.4	4,550

Table A4: The top 15 subjects studied in the LDLHE-DLHE-HESA sample by ethnic group.			
White	**Percentage**	**All other ethnic groups**	**Percentage**
Psychology	5.9	Business studies	5.7
Nursing	5.1	Psychology	5.7
English studies	3.9	Pharmacology, toxicology and pharmacy	4.2
Design studies	3.5	Accounting	3.5
Business studies	3.2	Nursing	3.3
History by period	3.2	Economics	3.0
Training teachers	2.8	Clinical medicine	2.8
Sport & exercise science	2.6	Mathematics	2.8
Social work	2.5	Design studies	2.8
Academic studies in education	2.4	Sociology	2.7
Mathematics	2.3	Others in subjects allied to medicine	2.7
Others in subjects allied to medicine	2.0	Social work	2.7
Sociology	1.9	Law by topic	2.5
Biology	1.8	Law by area	2.5
Drama	1.8	Computer science	2.2

APPENDIX B: VARIABLES USED IN THE ECONOMETRIC ANALYSIS[15]

KEY INDEPENDENT VARIABLES

Ethnicity: A categorical variable consisting of eight categories. We use the White group as our reference group.

Age: A categorical variable consisting of two categories. Those aged 25 or under are utilised as the reference group.

Ethnicity*Age: An interaction term involving the above two variables.

PERSONAL CHARACTERISTICS

IMD marker: A categorical variable consisting of two categories (excluding the missing information category), where those who lived in an area (prior to starting their higher education course) that fell within the lowest quintile of their country's index are classified as disadvantaged. Those defined as being advantaged were the reference group.

We have used the November 2018 Office for National Statistics postcode mapping information to generate this variable. Consequently, an individual is classified as disadvantaged if;

They resided in England prior to starting higher education and lived in an area that sits in the lowest IMD quintile according to the 2015 English IMD
or
They resided in Scotland prior to starting higher education and lived in an area that sits in the lowest IMD quintile according to the 2016 Scottish IMD
or
They resided in Wales prior to starting higher education and lived in an area that sits in the lowest IMD quintile according to the 2014 Welsh IMD
or
They resided in Northern Ireland prior to starting higher education and lived in an area that sits in the lowest IMD quintile according to the 2017 Northern Irish IMD.

---

[15] Missing information dummies were utilised when introducing our control variables to preserve sample size.

Year of graduation: A categorical variable consisting of two categories – 2010/11 or 2012/13. We use 2010/11 as the reference group.

Disability marker: A categorical variable consisting of two categories. Those with no known disability were used as the reference group.

Sex: A categorical variable consisting of two categories. Females were used as the reference group.

Region of domicile: A categorical variable highlighting the region of the UK in which one resided before they started their higher education course. Those living in London were used as the reference group.

Highest qualification on entry: A categorical variable consisting of four categories (excluding the missing information category). These were as follows;

- A/AS levels
- Level 3 qualifications of which some or all were subject to UCAS tariff
- Any combination of GCE 'A'/SQA, 'Higher'/SQA, 'Advanced Higher' & GNVQ/GSVQ or NVQ/SVQ at level 3
- Other qualifications (an indicative list includes BTECs, Foundation and Access courses and previous HE qualifications)

'Other qualifications' was used as the reference group.[16]

STUDY CHARACTERISTICS

Term-time accommodation: A categorical variable consisting of four categories (excluding the missing information category). These were own residence, parental home, other rented accommodation and some other form of accommodation (e.g. institution maintained property). Own residence was chosen as the reference group.

---

[16] We also examined if the results changed if we used a derived version of the grouped entry qualifications variable, which also takes into account detailed A level grades and tariff scores (https://www.hesa.ac.uk/data-and-analysis/performance-indicators/definitions#entry-qualification-groups-applicable-series-t1-t2-200809-onwards). This did not materially impact our findings.

Qualification mode of study: A categorical variable consisting of two categories. We use those who studied full-time as the reference group.

Subject of study: Based on the xjacsa01 variable and therefore comprising of 19 categories. Medicine & Dentistry was used as the reference group. A 'multiple subjects' category was also created which included any students who studied more than one subject (based on 4 digit JACS).

Institution of study: A categorical variable consisting of over 150 categories each representing an individual institution. Aberystwyth University was chosen as the reference group.

CLASS OF DEGREE

Class of degree: A categorical variable consisting of four categories (excluding the missing information category). The groups were first class, upper second, lower second and third. Those with a first class degree were chosen as the reference group.

DLHE ACTIVITY

DLHE activity: A categorical variable consisting of 15 categories. For those in employment, we distinguish individuals based on their mode of employment and their contract type, resulting in a total of 10 categories (e.g. full-time permanent employment). Other categories include self-employment, work and further study, further study only, unemployed and other activity. Those in full-time permanent employment were chosen as the reference group.

LDLHE ACTIVITY/EMPLOYMENT

LDLHE activity: A categorical variable consisting of 15 categories (excluding the missing information category). For those in employment, we distinguish individuals based on their mode of employment and their contract type, resulting in a total of 10 categories (e.g. full-time permanent employment). Other categories include self-employment, work and further study, further study only, unemployed and other activity. Those in full-time permanent employment were chosen as the reference group.

When we conduct the analysis for those in paid employment only, those in self-employment, work and further study, further study only, unemployed or doing some other activity are excluded from the exploration.

Job found (employed sample only): A categorical variable consisting of eight categories (excluding the missing information category). These were as follows;

- Already/previously worked for the organisation
- Employer website
- Recruitment agency
- Institution career service
- Personal contacts
- Professional contacts
- Other careers service
- Other

We use 'already/previously worked for the organisation' as the reference group.

Earnings (employed sample only): For each of the two graduate cohorts, the top 1-2% of earnings at both the top and bottom end were firstly trimmed to remove extreme responses. Earnings were then converted into real terms using the Consumer Prices Index including owner occupiers' housing costs (CPIH), with 2015 chosen as the base year. The resulting values were then split into four groups (with a missing information category also created). Those falling into the bottom quartile were chosen as the reference group.

Region of employment (employed sample only): A categorical variable highlighting the region of the UK in which one was employed. Those working in London were used as the reference group.

Standard Industrial Classification (employed sample only): A categorical variable consisting of three categories (excluding the missing information category). These were the education, health or other sector. Other sector was chosen as the reference group.

Standard Occupational Classification (employed sample only): A categorical variable consisting of two categories (excluding the missing information category). Those in professional employment were chosen as the reference group.

Job tenure (employed sample only): A categorical variable consisting of two categories (excluding the missing information category). Those with less than one year of work experience at their organisation were chosen as the reference group.

Employee skill application (employed sample only): A categorical variable consisting of three categories (excluding the missing information category), highlighting the degree to which the graduate was able to utilise the skills gained through study in their current job. These were not at all, some extent and a great extent. We use 'not at all' as the reference group.
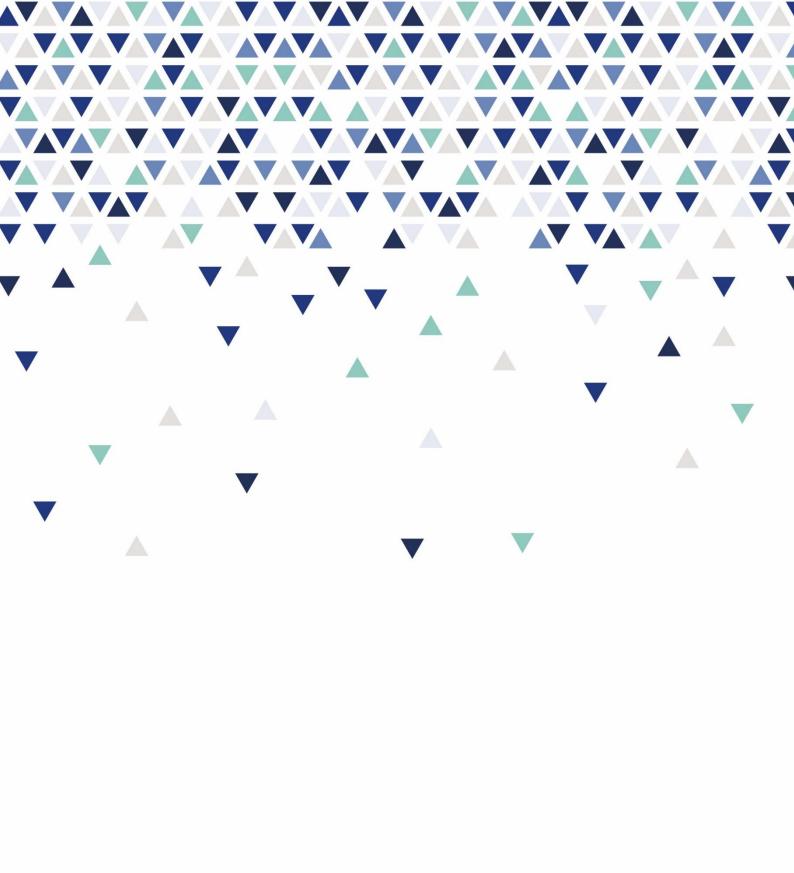
UNEMPLOYMENT EXPERIENCE

Unemployment experience: A categorical variable consisting of two categories (excluding the missing information category). We use those who have not experienced a period of unemployment lasting one month or more as the reference group.

HIGHER EDUCATION EXPERIENCE

Skill use: A categorical variable consisting of four categories (excluding the missing information category). As stated in the main paper, we firstly create a continuous variable ranging from 1 to 3. This is an average based on the extent to which a graduate believes their higher education experience enabled them to apply certain skills in the workplace. For the econometric analysis, we generate a categorical variable, with those falling into the bottom quartile being the reference group.

Career preparation: A categorical variable consisting of four categories (excluding the missing information category), highlighting the extent to which one believes their higher education experience assisted their career aspirations. These were: not at all, not very well, quite well and very well. We use 'not at all' as the reference group.

HESA
95 Promenade
Cheltenham
GL50 1HZ
E pressoffice@hesa.ac.uk
T +44 (0) 1242 211 120
W www.hesa.ac.uk