



USING CENSUS DATA TO GENERATE A UK-WIDE MEASURE OF DISADVANTAGE

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EXECUTIVE SUMMARY

INTRODUCTION

In all four countries of the UK, there is a desire for prosperity and growth to become more evenly distributed, alongside an ambition for continued progress in the levels of social mobility across society by ensuring there is equal opportunity for all. Governments in all four nations have outlined the importance of higher education providers in enabling those in disadvantaged communities to consider and access education (e.g. through more flexible modes of learning that are accessible throughout adulthood), so that they can make choices that allow them to achieve their full potential and contribute their skills within the local economy. Outreach and other widening participation activity have been highlighted as key initial steps in the process of achieving such objectives. However, existing measures used in this field (e.g. Participation of Local Areas (POLAR) and state school marker) vary in their relevance and usefulness among the home nations. Furthermore, despite the ability to compare statistics across domains being one of the pillars of quality outlined within the European Statistical System Quality Assurance Framework, there is currently a paucity of measures that adequately meet this aim.

While the potential benefits of individual-level information on disadvantage for the contextual admissions process have been highlighted in previous research (as well as the possible drawbacks of using area-based measures for such individual-level decisions), this does not preclude a need for area-based measures. Indeed, there are aspects of the widening participation agenda where drawing upon individual measures may not be possible or practical, such as forms of outreach work within disadvantaged communities. Furthermore, given current policy objectives around equality of opportunity and equitable growth, as well as the role that higher education is expected to play in achieving these aims, it is important for providers to be able to identify those areas that would be most beneficial to support. In such instances, appropriate area-based measures can be helpful in enabling providers to pinpoint the localities in which they should prioritise their outreach activities.

As a statistics producer, HESA aspires to regularly assess the value of the data we supply to users. In line with our strategic and statutory ambitions, the principal purpose of this study is to utilise Census 2011 to develop an area-level measure of socioeconomic disadvantage that has UK-wide applicability and the potential to support decision-making among our data users in ways

such as those set out in the previous paragraph. It is not intended that this variable should be utilised in an individual setting, such as contextualised admissions, for which there are more suitable indicators beginning to emerge within the sector, which we highlight in this report.

OUR MEASURE OF DISADVANTAGE

The smallest geographic domain at which Census data is released to the public is output area level (or 'small areas' in Northern Ireland). Such localities typically contain 125 households in England and Wales, with the corresponding figure being 160 in Northern Ireland. In Scotland, the number of households in an output area tends to range between 20 and 78. Using the key statistics disseminated about each output area in the UK, we are able to derive the following;

- Proportion of residents in an output area aged 16 and over with below level 4 qualifications
- Proportion of residents in an output area aged 16 to 74 in NSSEC groups 3 to 8 (those that couldn't be classified were excluded from the calculation)

After highlighting why these two variables are suitable to incorporate in developing a measure of socioeconomic disadvantage, we explain the statistical rationale behind taking their average and ranking all 274,611 UK output areas on the basis of this calculation. Those areas that were situated within the bottom 20% (based on having the highest average proportions of residents with below level 4 qualifications/in occupations that fell within NSSEC groups 3 to 8) were identified as disadvantaged localities.

COMPARING TO POLAR AND IMD – A SUBSEQUENT ASSESSMENT

One of the distinguishing features of this measure relative to both POLAR and the Indices of Multiple Deprivation (IMD) (irrespective of the nation being considered)¹ is that it relies on a smaller geographic territory. After deriving our variable, we proceed by conducting an exploration into how the composition of students in the 2011/12 academic year within the HESA Student record (corresponding to the year Census 2011 was collected) varies between (quintile 1 of) this new measure, POLAR and IMD. While POLAR is not in itself a measure of socioeconomic disadvantage, the initial research around it did indicate a correlation between the two. Additionally,

¹ Each of the four nations adopt slightly different approaches in deriving IMD, hence this measure is country-specific.

with a number of universities using POLAR as part of their outreach work (e.g. as stated in their access and participation plans), we believe it is valuable to incorporate this into our investigation.

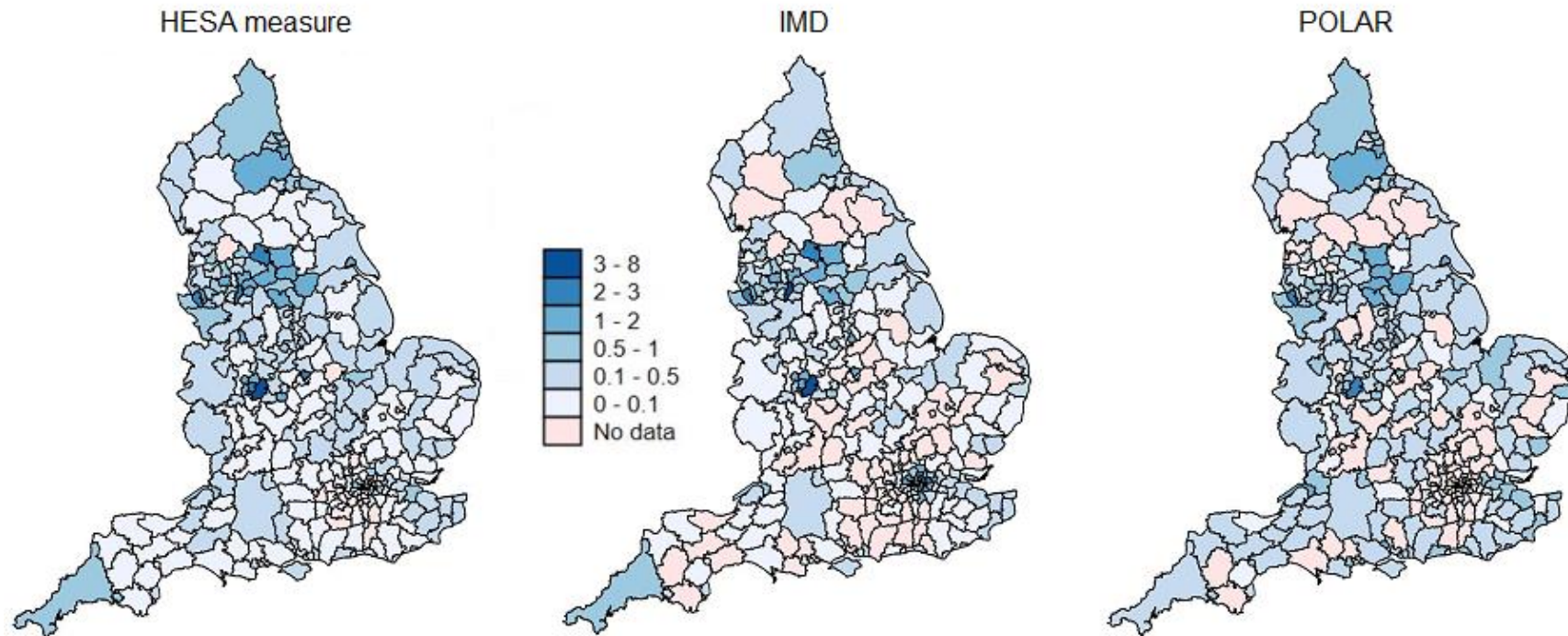
The examination illustrates how all three measures can have a part to play in supporting widening access, as well as the additional advantages our variable brings to complement existing area-level measures utilised within the sector. In particular, the measure is able to capture socioeconomic disadvantage more broadly across the UK and thereby overcome some of the known limitations of POLAR and IMD.

Below, we illustrate this through a series of maps. Using our population of interest (UK domiciled full-time first degree entrants aged 18-20 in the academic year 2011/12), we explore how the proportion of students from various localities differs across the three measures we investigate. This is done for each nation separately, with London additionally split out from the rest of England, given the lack of visibility of the capital in the national map.

A darker shade of blue indicates that a greater proportion of students in quintile 1 were domiciled in that part of the country, whereas a lighter shade shows the converse. A red area indicates that no students from that locality appeared in quintile 1 of the variable. Indeed, it is the lack of red areas in our measure that illustrates its potential to capture disadvantage across a greater span of the UK.

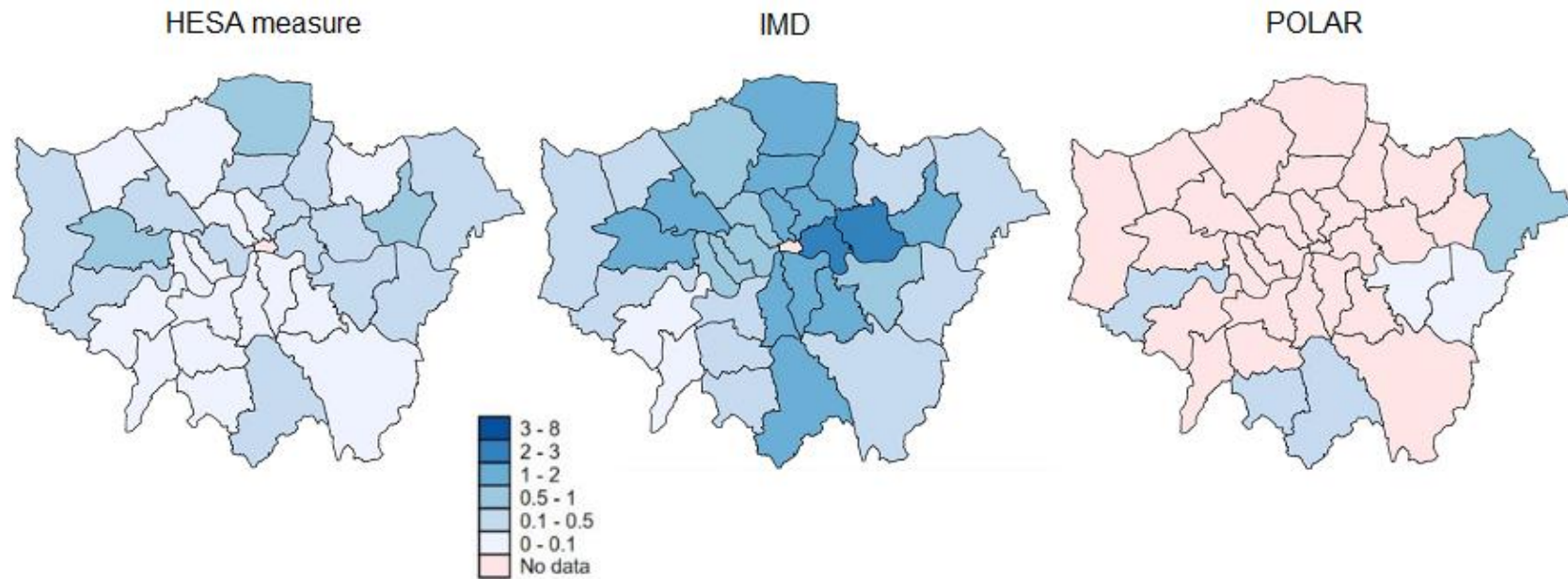
Our paper concludes by outlining limitations, as well as possible next steps in this programme of work.

Distribution of most disadvantaged students by different measures of disadvantage
 Proportion of all quintile 1 students in England from each local authority (%)



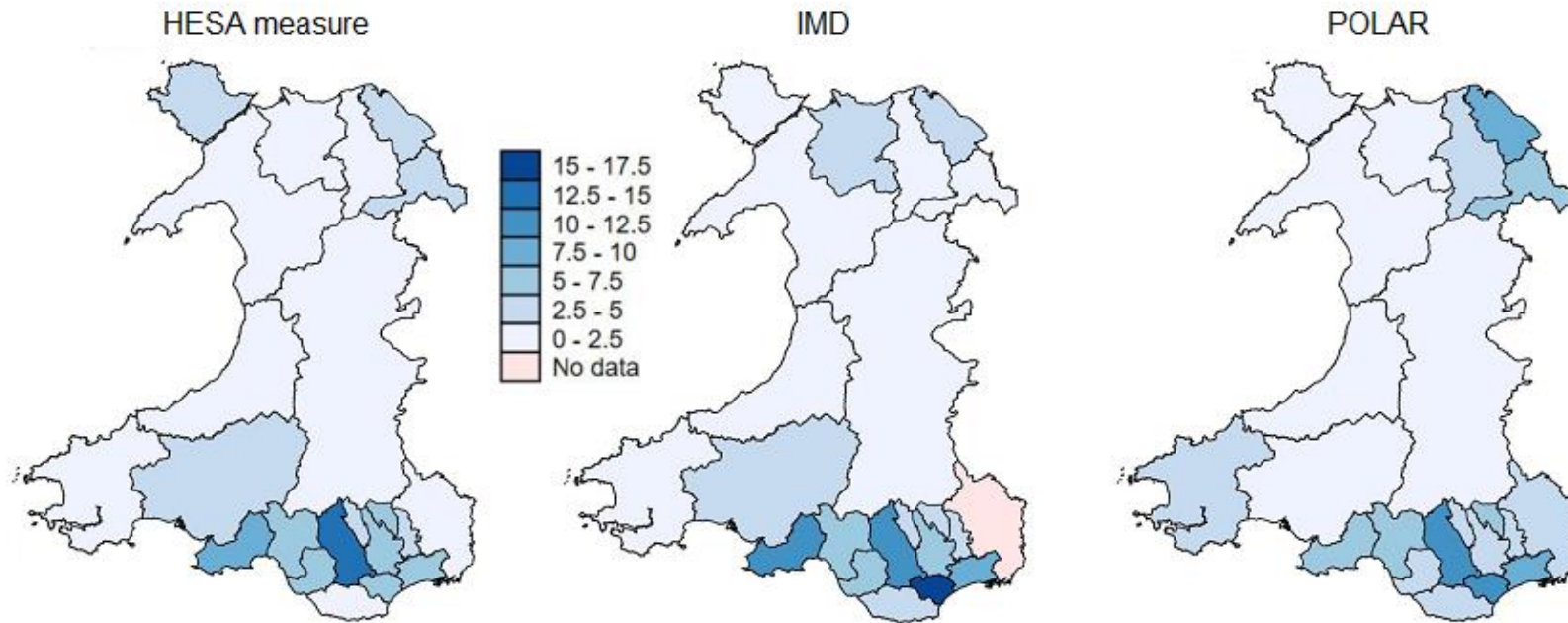
Map 1: Distribution of most disadvantaged students by different measures of disadvantage (England)

Distribution of most disadvantaged students by different measures of disadvantage
 Proportion of all quintile 1 students in England from each local authority (%)



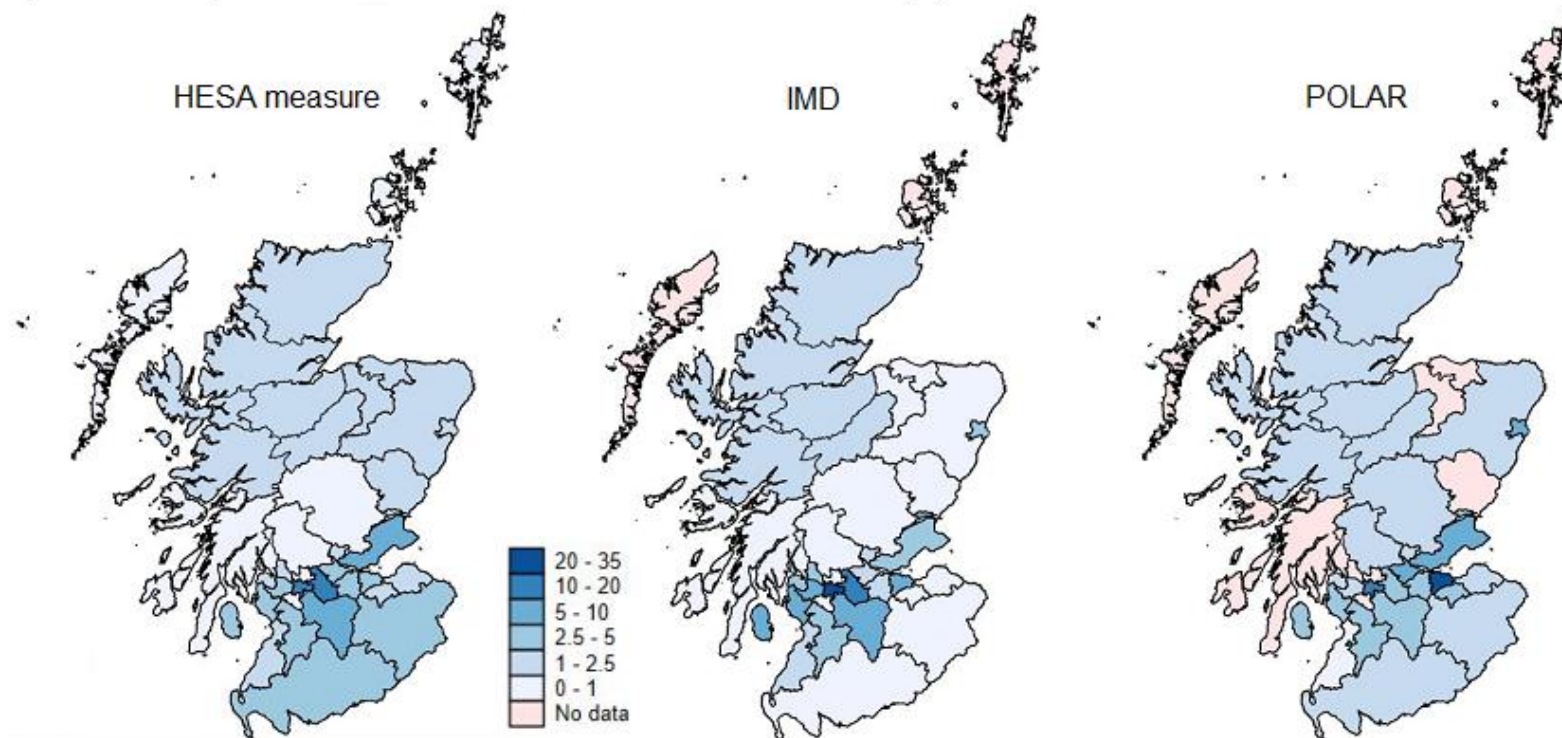
Map 2: Distribution of most disadvantaged students by different measures of disadvantage (London)

Distribution of most disadvantaged students by different measures of disadvantage
 Proportion of all quintile 1 students in Wales from each local authority (%)



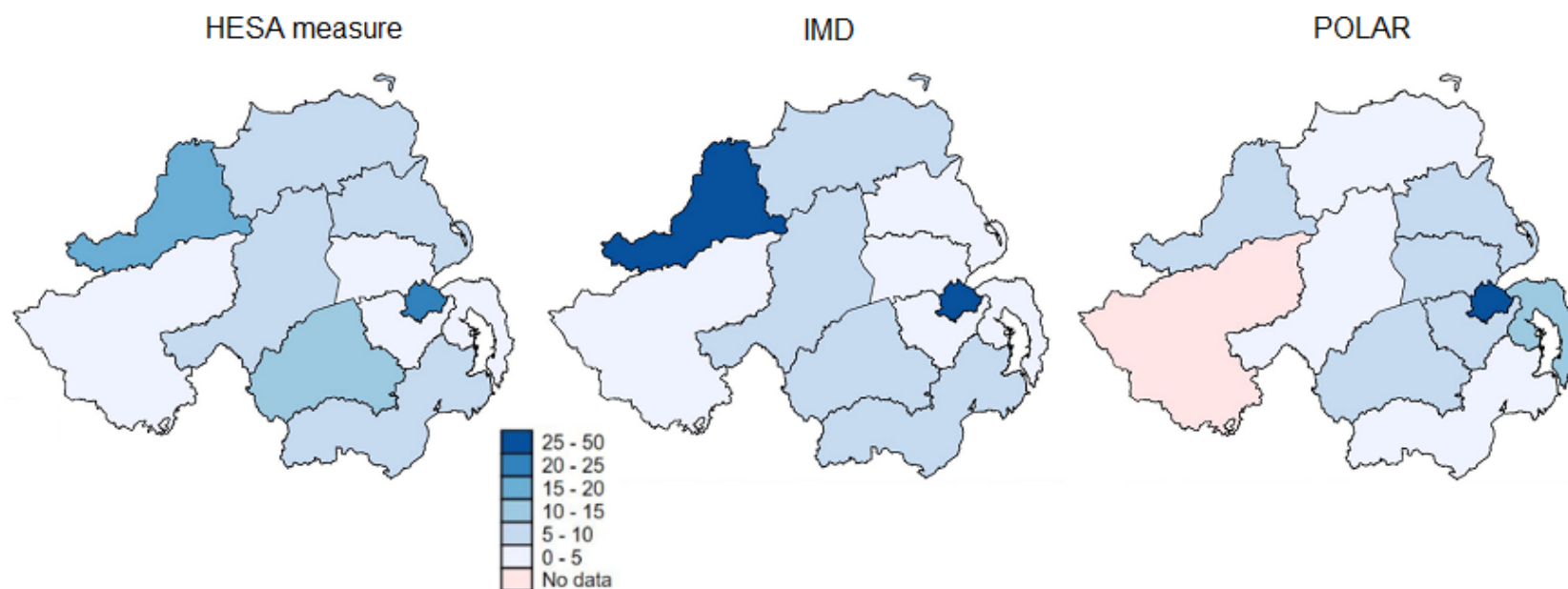
Map 3: Distribution of most disadvantaged students by different measures of disadvantage (Wales)

Distribution of most disadvantaged students by different measures of disadvantage
 Proportion of all quintile 1 students in Scotland from each council area (%)



Map 4: Distribution of most disadvantaged students by different measures of disadvantage (Scotland)

Distribution of most disadvantaged students by different measures of disadvantage
 Proportion of all quintile 1 students in Northern Ireland from each local government district (2014) (%)



Map 5: Distribution of most disadvantaged students by different measures of disadvantage (Northern Ireland)

1. INTRODUCTION AND POLICY CONTEXT

The fundamental purpose of this paper is to present the higher education sector with a new area-level measure of socioeconomic disadvantage based on Census (2011) data. We define individuals to be disadvantaged if they live in a UK output area that falls into the bottom 20%, after ranking such localities based on the qualifications and occupations held by residents. We then go on to supply evidence on how this can complement and provide additional advantages relative to existing area-level variables currently utilised in widening participation activity. In particular, we illustrate its potential UK-wide applicability, as well as its capability to support current policy objectives centred around opening up opportunity and increasing prosperity across all regions of the country.

While existing measures used in widening access such as the participation of local areas (POLAR) and state school marker can be produced at a UK-wide level, their relevance and usefulness vary across the UK. The result has been the adoption of different variables to support widening participation across the home nations. However, the ability to compare statistics across domains is one of the pillars of quality as set out in the European Statistical System Quality Assurance Framework.

Our duty as a producer of statistics is to continuously evaluate the value of our data to users. In its 2019 assessment of Great Britain, the Social Mobility Commission highlighted that 'Social mobility is fundamentally about ensuring that a person's occupation and income are not tied to where they started in life. Yet it is about much more than that. It is about fairness across society and ensuring that people of all backgrounds get equal opportunities and choices in early years, at school, in further education, in universities and at work.'² Though higher education is a devolved matter, all four nations have an agenda that aims to help under-represented groups (such as disabled students, care leavers and those from poorer households) consider and have access to higher education courses. In doing so, they seek to ensure there is equal opportunity for all and thereby support the advancement of social mobility. Given our measure relates to socioeconomic disadvantage, this is the under-represented group that is the focus of our paper.

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/798404/SMC_State_of_the_Nation_Report_2018-19.pdf

In England, the current Universities Minister, Michelle Donelan, highlighted that ‘We need to double down on eliminating equality gaps in higher education today...I want to be clear that as Universities Minister, this is my top priority’.³ Indeed, as part of the work towards this ambition, English universities are stipulated to submit access and participation plans to the Office for Students (OfS) – the regulator for higher education in England - if they wish to charge fees above the basic cap. These plans set out the policies and practices that will be executed by a provider to encourage greater entry into higher education among under-represented groups (one of which covers individuals from poorer backgrounds). In a similar vein, universities in Wales are also required to devise fee and access plans under the Higher Education (Wales) Act 2015. These are presented to the Higher Education Funding Council for Wales (HEFCW) for approval and outline how providers intend to widen access among those under-represented in higher education, including students from more socioeconomically deprived areas. More recently, the 2021 to 2026 Programme for Government in Wales sets out a promise to continue tackling educational inequality.⁴ The First Minister of Scotland, Nicola Sturgeon, stated in 2014 that ‘I want us to determine now that a child born today in one of our most deprived communities will, by the time he or she leaves school, have the same chance of going to university as a child born in one of our least deprived communities’.⁵ To achieve this aim, a Commission on Widening Access was created in 2015, with ‘A Blueprint for Fairness’ subsequently published, which outlines ways to achieve equal access.⁶ Moreover, the Scottish Funding Council’s (SFC) review of the coherence and sustainability of Scotland’s tertiary education sector sets out an ambition for continued progress in this area.⁷ ‘Access to Success’ – the strategy for widening participation in Northern Ireland - was disseminated by the Department for Employment and Learning in 2012 (higher education is now within the remit of the Department for the Economy) and states that ‘any qualified individual in Northern Ireland should be able to gain access to higher education, irrespective of their personal or social background.’⁸

Additionally, a policy goal in all four parts of the UK is for prosperity and opportunity to be distributed more evenly across all aspects of the country. In his first speech as Prime Minister,

³ <https://www.gov.uk/government/speeches/universities-minister-speaks-to-taso-conference>

⁴ Part of the Programme for Government - <https://gov.wales/programme-for-government-2021-to-2026-html> - will involve taking the Tertiary Education and Research (Wales) Bill through the Senedd, with the Bill highlighting a continued requirement on providers to develop Access and Opportunity Plans for endorsement.

⁵ <https://www.fairaccess.scot/framework-for-fair-access/>

⁶ <https://www.gov.scot/publications/blueprint-fairness-final-report-commission-widening-access/>

⁷ <http://www.sfc.ac.uk/web/FILES/Review/coherence-and-sustainability.pdf>

⁸ https://www.economy-ni.gov.uk/sites/default/files/publications/del/Access%20to%20Success-An%20integrated%20regional%20strategy%20for%20widening%20participation%20in%20HE_0.pdf

Boris Johnson outlined that 'levelling up' would be a key aim of his government, which would not only involve closing opportunity gaps, but also 'unleashing the productive power not just of London and the South East, but of every corner of England'.⁹ It was recently revealed that a White Paper is expected on this issue later in 2021, with the announcement accompanied by the government reaffirming its commitment to ensuring all have access to the same opportunities and living standards can be raised more broadly across the country.¹⁰ Following the statement on the publication schedule for the White Paper, the House of Lords Public Services Committee subsequently commented in a position paper that 'not only places, but the people who live in them should be at the heart of 'levelling up''.¹¹ A recommendation was made for the 'levelling up' strategy to include expenditure on 'social infrastructure' such as higher education institutions to help boost local skill levels. Also around this time, Lord Wharton (the new chair of the OfS) pointed out that 'We know that talent is spread across the country, but opportunity is not...By casting their nets wide, searching for talent where opportunity may be in short supply, universities have the power to transform lives.'¹² In 2017, the Welsh Government released the 'Prosperity for all' economic action plan within which they underline their wish to tackle regional inequality and support skills development among people from all backgrounds and places.¹³ Furthermore, the 2020 'A framework for regional investment in Wales' paper highlights that 'further and higher education and employers that are anchored in local communities have a significant role to play in upskilling and offering employment to people who often come from areas of high deprivation'.¹⁴ Scotland's Economic Strategy sets out its goal for inclusive growth, which is defined as 'growth that combines increased prosperity with greater equality, creates opportunities for all and distributes the benefits of increased prosperity fairly'.¹⁵ Moreover, the role of widening access to higher education in supporting the inclusive growth agenda is highlighted in Scotland's Labour Market Strategy.¹⁶ The 2012 Economic Strategy for Northern Ireland outlined the objective for more balanced growth across the country, noting that 'we will ensure that all sub regions are able to grow and prosper, whilst recognising the importance of Belfast and Derry/Londonderry as key drivers of economic growth'. Furthermore, a pledge was also made to 'ensure that no section of the community is left behind'. It was acknowledged that rebalancing the economy would necessitate improving skill

⁹ <https://www.gov.uk/government/speeches/boris-johnsons-first-speech-as-prime-minister-24-july-2019>

¹⁰ <https://www.gov.uk/government/news/government-to-publish-levelling-up-white-paper>

¹¹ <https://committees.parliament.uk/publications/5952/documents/67603/default/>

¹² <https://www.officeforstudents.org.uk/news-blog-and-events/press-and-media/new-ofs-chair-sets-out-priorities-in-first-speech/>

¹³ <https://gov.wales/sites/default/files/publications/2019-02/prosperity-for-all-economic-action-plan.pdf>

¹⁴ <https://gov.wales/sites/default/files/publications/2020-11/regional-investment-in-wales-framework.pdf>

¹⁵ <https://www.gov.scot/policies/economic-growth/inclusive-growth/>

¹⁶ <https://www.gov.scot/publications/scotlands-labour-market-strategy/pages/5/>

levels across the workforce, with higher education seen as a vital mechanism by which to achieve this.¹⁷

The compilation and distribution of relevant data on access to higher education is key to nations being able to monitor the extent to which these policy objectives are being met. One of our core aims at HESA is to disseminate data that advances knowledge about higher education, while also helping our key data users (e.g. higher education providers, policymakers, funding councils etc) in their decision-making. In line with our research strategy and the Code of Practice for Statistics, this work is designed to deploy an innovative and low-cost approach, which can enhance our data collection in this area and ultimately improve the value of the statistics that we are able to supply users on this topic, given their policy targets. Furthermore, as we are obtaining this data directly from published Census information, there is no additional collection burden placed on providers.

It should also be emphasised that we are not advocating for this alternative measure to displace existing area-level measures, which also have their merits, as we illustrate later in this report. Alongside the importance of developing national statistics on the journey of under-represented students (such as those from low socioeconomic backgrounds) through higher education, it should be recognised that universities will often carry out local initiatives in their attempts to widen participation. It is unlikely that any single area-level measure will adequately capture deprivation in all areas of the country, meaning providers in different locations may wish to have access to (and utilise) more than just one measure. Rather, this variable we have constructed could offer an additional tool that the likes of providers and policymakers may draw upon for their work on this matter.

The rest of this paper is structured as follows. Section 2 offers a brief overview of existing measures that are (or could be) used as part of the widening access agenda, alongside explaining why area-based measures are likely to continue to have a role in widening participation and how our work will contribute to the field. This is followed by a summary of our data sources, as well as the approach behind the creation of our measure. Results for each of the four nations are then presented where we examine how the composition of students differs across quintile 1 of various area-level measures used in widening participation activity. The study closes with further remarks and next steps.

¹⁷ https://www.northernireland.gov.uk/sites/default/files/publications/nigov/ni-economic-strategy-revised-130312_0.pdf

2. WIDENING PARTICIPATION: WHAT MEASURES ARE OR COULD BE AVAILABLE?

INDIVIDUAL-LEVEL MEASURES

Chapter 7 of the 1997 Dearing Report highlighted that ‘increasing participation in higher education is a necessary and desirable objective of national policy over the next 20 years. This must be accompanied by the objective of reducing the disparities in participation in higher education between groups’.¹⁸ While the likely need for performance indicators in the higher education sector dates back to the 1985 Jarratt Report¹⁹, it was shortly after the publication of the Dearing Report that the various funding councils of the UK began the development of suitable UK Performance Indicators (UKPIs) for the sector²⁰, with one of these revolving around access to higher education among under-represented groups. The majority of prospective undergraduate students will enter higher education following the submission of an application form to UCAS. As part of this process, individuals aged 18 to 20 are asked an optional question on the job title of their highest earning parent (with those who are 21 or above required to supply their own employment details). This information is then used to group workers into various categories based on the skills and qualifications demanded by the role, which are utilised to indicate one’s socioeconomic position according to the National Statistics Socio-economic Classification (NSSEC). Specifically, UCAS use the job title provided by each responding individual to assign them a four-digit unit group code of the Standard Occupational Classification (SOC), which is subsequently mapped to one of the fourteen functional or three residual operational categories of NSSEC. This is then collapsed into the eight-class version of NSSEC, before being supplied to HESA and stored within the Student record.²¹ From the outset, disparities by socioeconomic status were monitored through the production of UKPIs that examined the entry rates of those aged 18 to 20 whose (highest earning) parent was based in groups 4 to 7 of the eight-class categorisation of NSSEC.²²

Quality concerns with this field may arise through a number of channels. Firstly, there are different ways in which employment information can be collected and used to derive the NSSEC field. As

¹⁸ <http://www.educationengland.org.uk/documents/dearing1997/dearing1997.html#07>

¹⁹ <http://www.educationengland.org.uk/documents/jarratt1985/index.html>

²⁰ The 2022 UKPIs will be the last in their current form – see <https://www.hesa.ac.uk/blog/19-05-2021/measure-measures> for further information.

²¹ See

<https://www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc/soc2020/soc2020volume3thentionalstatistics socioeconomicclassificationnssecbasedonthesoc2020#toc> for further information.

²² NSSEC class 8 (long-term unemployed or never worked) were not included in the calculation.

noted by the Office for National Statistics (ONS), the procedure currently adopted by UCAS (known as the simplified method) will not lead to the same level of accuracy in coding as the full approach.²³ Furthermore, as the data is self-reported, there is the possibility that either respondents are unable to correctly recall this information regarding another individual or are unwilling to supply an answer. While the vast majority of full-time undergraduates aged between 18 and 20 on entry will have gone through the UCAS system, there will be a small proportion who will have directly applied to their provider (e.g. through submission of a record of prior acceptance or due to their chosen place of study not utilising the UCAS system route for their admission process). For those who enrol through such alternative pathways, we cannot be certain that they are asked the same question (if at all) on parental occupation. Such concerns led to the NSSEC field being withdrawn from use in the production of the UKPIs from 2017 onwards.

The UCAS application form also provides prospective students with the option to give details on whether or not their (step-) parents or guardians hold higher education qualifications. Data on this variable is then transferred to HESA on an annual basis. During the review of the UKPIs in 2007²⁴, this field was considered as a possible indicator of a student's background, but was ultimately not deemed suitable for use in the UKPI publications. Reasons for this included the fact that this variable has the same potential drawbacks as the information collected on parental occupation that we discuss above (aside from the NSSEC coding matter, which is specific to that variable).

Our own recent investigations into the quality of the parental education and occupation fields using linked HESA-Census 2011 data did, however, alleviate some of the worries around the potential accuracy of the information. That being said, we did note that for both variables, around 15% of students are still categorised as having 'missing information' in the most recent academic years we considered, with there also being some evidence to suggest that 'missing' data could be more of a concern among those from disadvantaged backgrounds.²⁵

As with NSSEC, state school marker was a variable utilised in the very first UKPI publication, given those from independent schools are disproportionately represented in higher education. The marker continued to be used in the latest dissemination of the UKPIs, though it too suffers from

²³ See, for example, section 13 at this webpage

<https://webarchive.nationalarchives.gov.uk/20160106042025/http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/soc2010-volume-3-ns-sec--rebased-on-soc2010--user-manual/index.html#13>

²⁴ https://dera.ioe.ac.uk/6804/1/07_14.pdf

²⁵ <https://www.hesa.ac.uk/insight/16-03-2021/quality-matters-census-widening-participation>

limitations.²⁶ For example, the variable is generated based on the last school attended by the student, which may be less helpful than information on schooling up to the age of 16.²⁷ In Northern Ireland, as fee paying schools will receive state funding, very few schools are classified as private, rendering the measure ineffective in this part of the UK.²⁸ Previous research by Gorard *et al.* (2017) has also noted that such a binary distinction fails to consider the level of heterogeneity within state and independent schools. For example, within the state sector, there are a number of selective schools where attainment is high and levels of disadvantage among its pupils are quite low.²⁹

AREA-LEVEL MEASURES

Following a review of the UKPIs in 2007, the original postcode-based measure (used along with NSSEC and state school marker)³⁰ was replaced with the introduction of POLAR. For the most recent iteration of this variable (POLAR4), this was derived by dividing the proportion of young people who enter higher education by age 18 or 19 in a particular area [Middle layer Super Output Areas (MSOAs) for England and Wales, Intermediate Zones (IZs) in Scotland and Super Output Areas (SOAs) in Northern Ireland] by the proportion of young people in that locality. Data from the academic years 2009/10 to 2013/14 was utilised to calculate this. Areas are then ranked before being placed into quintiles, with quintile 1 defining the lowest participation neighbourhoods. As the OfS highlight, this is not a measure of socioeconomic disadvantage of an individual or an area (though the initial research carried out on POLAR did indicate a positive correlation between low participation areas and the extent of socioeconomic disadvantage in such localities within England). Consequently, they encourage those trying to evaluate the background of a (prospective) student to do so using additional information alongside POLAR. Rather, this measure provides an insight into those parts of the country where participation remains low over time and can thus offer providers useful data to support the development of their outreach programmes when trying to increase participation among under-represented groups.³¹ Indeed, many providers in England do use POLAR in the implementation of their access and participation plans. Alongside state school marker, this has remained a variable that is drawn upon in the production of the widening participation UKPIs, though due to the high levels of participation in certain regions of the

²⁶ Please note that the state school marker does not form part of the Welsh widening access agenda.

²⁷ This was noted on page 27 of the report found at this link - https://dera.ioe.ac.uk/6804/1/07_14.pdf.

²⁸ See the notes at the following link <https://www.hesa.ac.uk/news/01-02-2018/widening-participation-summary>.

²⁹ <https://dro.dur.ac.uk/21874/1/21874.pdf?DDD34+DDD29+cwcw57+d700tmt>

³⁰ More information on this can be found under the 'Low-participation neighbourhoods (Super Profiles)' section of this webpage <https://www.hesa.ac.uk/data-and-analysis/performance-indicators/definitions>

³¹ <https://www.officeforstudents.org.uk/media/cd78246d-0072-4e2f-a25a-42ba54deea11/polar-and-tundra-faqs-september2020.pdf>

UK (particularly Scotland and London), few students from these parts of the country will be identified as being in the lowest quintile of the marker. It should be noted that POLAR data has been suppressed for Scotland in the final widening participation UKPI publications since 2007/08. One further point to make about the POLAR measure is that due to it being based on participation levels among those aged 18 or 19 in an area, it is less applicable when one wishes to undertake an analysis of mature students in higher education and hence an alternative approach is needed when investigating this group.

With some of the above measures having their limitations in particular parts of the UK, we have seen increasing use of country-specific measures in supporting the widening participation agenda, such as the Indices of Multiple Deprivation. For example, back in 2016, the Commission on Widening Access in Scotland set a target for 16 percent of first degree entrants to Scottish universities to be from the poorest 20% of areas of the country, based on the Scottish Index of Multiple Deprivation (SIMD).³² HEFCW also utilise the equivalent Welsh measure (WIMD) in evaluating access to higher education participation.³³ In each of the four nations, the final index is derived by bringing together several domains (while these vary slightly by country, common dimensions include income, education, health, employment and crime). Each of these elements is then assigned its own weight in the generation of the final composite variable. Areas (of various size) are then ranked according to the extent of deprivation they exhibit.³⁴ In England and Wales, lower layer super output areas (LSOAs) are utilised in the construction of the index, which average approximately 1,500 inhabitants. Data zones are the geography level employed in Scotland, which have populations of 500 to 1,000, while in Northern Ireland, SOAs will generally consist of around 2,000 people. Areas are partitioned into deciles or quintiles, through which those living in the most deprived parts of the country are identified. Aside from not being UK-wide, there are other limitations associated with IMD in each country. For example, in England and Scotland, concerns have been raised on the extent to which this measure can adequately capture deprivation in more rural parts of the country.³⁵

³² <http://www.sfc.ac.uk/news/2021/news-84865.aspx>

³³ <https://www.hefcw.ac.uk/en/statistics-and-data/postcode-data/>. Note that HEFCW are also currently consulting on the methodology for allocating the access and retention premium, with it being proposed that it should be based on WIMD (2019), as opposed to the Communities First programme (discussed later in this report).

³⁴ See, for example, <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>, <https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/>, <https://gov.wales/welsh-index-multiple-deprivation-full-index-update-ranks-2019> and <https://www.nisra.gov.uk/publications/nimdm17-results> for further information.

³⁵ See, for example, <https://ocsi.uk/2011/03/24/why-the-imd-is-still-important-in-the-open-data-age/> and <https://www.gov.scot/binaries/content/documents/govscot/publications/progress-report/2016/03/blueprint-fairness-final-report-commission-widening-access/documents/00496620-pdf/00496620-pdf/govscot%3Adocument/00496620.pdf>

RECENT DEVELOPMENTS

The limitations of existing individual and area-level variables have led to continued research in this field to understand whether better measures could be made available for the sector to utilise. Both Jerrim (2020)³⁶ and Gorard *et al.* (2017)³⁷ highlight the various advantages of utilising free school meal eligibility as a measure of socioeconomic disadvantage and endorse the use of the number of years an individual has been eligible for free school meals as a suitable individual-level variable to use in the contextualised admissions process. Indeed, UCAS have recently announced that, for English 18 and 19-year old applicants³⁸, access will be provided to free school meal status from the 2021 cycle.³⁹

However, the widening participation agenda extends beyond the contextual admissions process, as we have alluded to earlier in this paper. Indeed, there are instances where drawing upon measures based on individual-level data is not always possible or practical.⁴⁰ For example, providers will often conduct local outreach work within disadvantaged communities (e.g. to try and raise aspirations around education). Furthermore, given current UK policy objectives around equality of opportunity and equitable growth, as well as the role that higher education is expected to play in meeting these aims, it is important for providers to be able to locate those areas that would be most beneficial to support. In these circumstances, area-based measures can be helpful in enabling practitioners to identify the localities where they should prioritise their resources and are thus likely to continue assisting the widening participation agenda.

We depart from previous work in this area as follows. Firstly, while we also construct an area-level measure, we rely on a smaller geographic domain than both POLAR and IMD (regardless of which nation we are analysing), where average population sizes are generally in the hundreds. Moreover, we illustrate how our measure has potential UK-wide applicability, as well as the value it can add alongside existing area-level variables that are used in widening participation policy.

³⁶ <https://www.suttontrust.com/wp-content/uploads/2021/05/Measuring-Disadvantage.pdf>

³⁷ <https://www.tandfonline.com/doi/full/10.1080/02671522.2017.1402083>

³⁸ <https://www.ucas.com/providers/good-practice/emerging-cohorts/students-receipt-free-school-meals-fsm>

³⁹ While variables such as free school meal eligibility and IMD are also incorporated into the Multiple Equality Measure and Association Between Characteristics of Students (ABCS) measures developed by UCAS and OfS respectively, these are not discussed in detail here as they do not solely relate to socioeconomic disadvantage.

⁴⁰ See, for example, this blog by Mark Cover for further discussion around such matters - <https://wonkhe.com/blogs/polar-mem-and-equality-you-dont-have-to-choose/>.

3. DATA

DATA SOURCE 1: CENSUS 2011

The Census is a UK-wide collection that occurs every ten years and is mandatory for all households to complete. It is administered by the ONS in England and Wales, while the Northern Ireland Statistics and Research Agency (NISRA) and National Records of Scotland gather the relevant data for Northern Ireland and Scotland, respectively. Alongside there being a very high level of coverage across the population, there is consistency (as far as possible) in the way questions are asked across all four nations.⁴¹ A wide range of topics are covered such as employment, education, as well as home and vehicle ownership.

The smallest geographic domain at which data is subsequently released to the general public is at output area level (or 'small areas' in Northern Ireland). In England and Wales, the aspiration was for output areas to contain approximately 125 households, while also being as homogenous as possible (based on tenure and dwelling type).⁴² In Scotland, no such requirement was set on homogeneity, with output areas expected to contain between 20 and 78 households.⁴³ Small areas in Northern Ireland average around 160 households/400 individuals and are intended to be socially similar.⁴⁴ Note that output areas in England and Wales can be grouped to LSOAs, which themselves can be further aggregated to MSOAs. The latter consist of between 5,000 and 15,000 residents, with the closest comparable grouping in Scotland being Intermediate Zones (IZs), which have a population size ranging from 2,500 to 6,000.⁴⁵

Our starting point was to therefore download key statistics at output area level from the 2011 Census across all nations relating to four aspects that one may believe to be associated with disadvantage.⁴⁶ These were:

- Qualifications
- NSSEC

⁴¹ Please see <https://census.ukdataservice.ac.uk/use-data/censuses/forms.aspx> for sample questionnaires from each nation.

⁴² <https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography>

⁴³ <https://www.scotlandscensus.gov.uk/about/2011-census/2011-census-geographies/>

⁴⁴ <https://www.ninis2.nisra.gov.uk/public/documents/NISRA%20Geography%20Fact%20Sheet.pdf>

⁴⁵ <https://www.nrscotland.gov.uk/files/geography/2011-census/geography-bckground-info-comparison-of-thresholds.pdf>

⁴⁶ These were sourced from https://www.nomisweb.co.uk/census/2011/bulk/r2_2#KeyStatistics <https://www.scotlandscensus.gov.uk/census-results/download-data/census-table-data/> and <https://www.nisra.gov.uk/statistics/2011-census/results/key-statistics>

- Tenure (i.e. whether one owns or (socially/private) rents their accommodation)
- Car or van availability

These were then transformed to create the following variables:

- Proportion of residents in an output area aged 16 and over with below level 4 qualifications⁴⁷
- Proportion of residents in an output area aged 16 to 74 in NSSEC groups 3 to 8 (those that couldn't be classified were excluded from the calculation)⁴⁸
- Proportion of households in an output area living in (rented) social housing
- Proportion of households in an output area without a car or van

DATA SOURCE 2: ONS SMALL AREA INCOME ESTIMATES

In order to increase understanding about poverty and deprivation, there has been a long-standing requirement among government departments and policymakers for income data. Sensitivity concerns and the potential impact on non-response have precluded questions on income appearing in the Census. As an alternative, the ONS have generated small area income estimates (at MSOA level) for England and Wales using a model-based approach, which draws upon the Family Resources Survey (FRS) and various administrative data sources (including the 2011 Census).⁴⁹ The final dataset created by the ONS that we utilise in this study is based on the financial year 2011/12⁵⁰ and consists of four income measures (where equivalised figures take into account household composition)⁵¹;

- Total household weekly income (unequivalised)
- Net household weekly income (unequivalised)
- Net household weekly income before housing costs (equivalised)

⁴⁷ Level 4 qualifications (or above) comprise of those who hold a degree, professional qualification or other equivalent higher education qualifications.

⁴⁸ NSSEC 3 to 8 covers intermediate occupations, small employers and own account workers, lower supervisory and technical occupations, semi-routine occupations, routine occupations and those who have never worked (or are long-term unemployed).

⁴⁹ More information on the method can be found at

<https://webarchive.nationalarchives.gov.uk/20160106025130/http://www.ons.gov.uk/ons/rel/ness/small-area-model-based-income-estimates/2011-12/index.html>

⁵⁰ More recently, ONS have started to develop admin-based income estimates, with further information on this available at <https://www.ons.gov.uk/census/censustransformationprogramme/administrativedatacensusproject/administrativedatacensusresearchoutputs/populationcharacteristics/adminbasedincomestatisticsenglandandwalestaxyearending2016>

⁵¹ This data source can be found at

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/smallareaincomeestimatesformiddletolayersuperoutputareaseotlandandwales>

- Net household weekly income after housing costs (equivalised)

As the ONS note in the accompanying statistical bulletin, such estimates carry their own uncertainty and given the more aggregated geographic level at which such data is available (as well as being limited to England and Wales only), we do not consider this in our derivation of a UK-wide measure of disadvantage. However, these various measures of income that have been generated by the ONS also highlight the complexities with using income (or any measure derived from this) in determining disadvantage, such as establishing the most appropriate definition of income. More importantly in this research, the ONS dataset also contains variables such as local authority name, which prove most useful in our analysis – as will become clear later in this paper. To assist in understanding data at MSOA level, we also merge in MSOA names provided by the House of Commons Library.⁵²

DATA SOURCE 3: SCOTTISH INTERMEDIATE ZONES

Public Health Scotland publish a range of open data covering various issues. Under the Health and Care theme, one is able to access a range of geography codes and associated labels. This file allows one to obtain the label names for the 1,279 IZs in 2011 within Scotland, as well as the associated higher level geographies, with council area name being of particular interest to us in this study.⁵³

DATA SOURCE 4: NORTHERN IRELAND LOOK UP TABLE

In a similar fashion to Public Health Scotland, Northern Ireland also disseminate information that highlights how small areas map to larger geographical domains, such as wards and local government districts (LGDs). Furthermore, there is also a variable which summarises the extent to which an area is urban or rural, which allows us to assess whether the area-level measures that we examine capture rural parts of Northern Ireland.⁵⁴ As this data source provides the 1992 LGDs/wards, we also utilise an additional file supplied by NISRA to obtain the updated 2014 LGDs.

⁵² <https://houseofcommonslibrary.github.io/msoanames/>

⁵³ This data source can be found at <https://www.opendata.nhs.scot/dataset/geography-codes-and-labels/resource/e3e885cc-2530-4b3c-bead-9eda9782264f>

⁵⁴ This data source can be found at <https://www.nisra.gov.uk/support/geography/northern-ireland-super-output-areas>. Note that small areas are allocated a Settlement (2015), which is utilised to develop the (2015) urban-rural indicator.

Within this, there is supplementary detail on how 2014 District Electoral Areas (DEAs) match up to the 2014 LGDs.⁵⁵

DATA SOURCE 5: URBAN-RURAL IDENTIFICATION IN ENGLAND, WALES AND SCOTLAND

Given the presence of an urban-rural marker in the data for Northern Ireland, we explored whether similar information was available for the other nations of the UK. In England and Wales, a grouping has been developed by the Department for Environment, Food and Rural Affairs (DEFRA) and we examine the more detailed 10-fold classification when conducting our analysis for these two countries. In Scotland, the relevant data is supplied through Public Health Scotland. We again choose to utilise the most granular categorical variable provided, which consists of eight categories.⁵⁶

DATA SOURCE 6: HESA DATA

Our population of interest in the HESA Student record is UK domiciled full-time first degree entrants aged 18 to 20 in the academic year 2011/12. Some existing measures used in widening participation policy, such as POLAR or parental occupation (collected through the UCAS application form) relate specifically to young entrants. Given part of this study will be focusing on assessing the similarities and differences of our variable to existing measures, it is important that we restrict our attention to a comparable group. From the Student record, we extracted any individual-level data that has been considered to be of use in assessing access to higher education (e.g. a derived POLAR marker, parental education/occupation, state school marker etc), alongside fields relating to demographic and course characteristics, as well as prior qualifications. Using an individual's postcode information, we then link this bespoke dataset to information gathered from the ONS postcode directory, which enables us to obtain the output area and MSOAs (IZs) in which one lives prior to commencing higher education study and an additional measure of disadvantage (IMD).⁵⁷

⁵⁵ The excel file can be found at <https://www.nisra.gov.uk/publications/small-area-look-tables-and-guidance-documents> and is called 'District Electoral Areas 2014 Lookup Tables'.

⁵⁶ The data sources for the other nations can be found at <https://www.gov.uk/government/statistics/2011-rural-urban-classification-lookup-tables-for-all-geographies> and <https://www.isdscotland.org/Products-and-Services/GPD-Support/Geography/Urban-Rural-Classification/>.

⁵⁷ We use 2015 IMD for England, 2014 IMD for Wales, 2012 IMD for Scotland and 2010 IMD for Northern Ireland.

It is on the basis of the output area and MSOA (IZ) codes in the various sources outlined above that we are able to create a linked file that matches HESA records with these external datasets.

4. THE DERIVATION OF A NEW MEASURE OF DISADVANTAGE

Prior to outlining our approach to developing a new area-based measure of disadvantage, it is perhaps useful at this stage to summarise the contribution we wish to make to this field. As well as the requirement for a UK-wide measure of disadvantage, current measures such as IMD and POLAR are argued to not sufficiently capture this in particular parts of the UK (as discussed in section 2 of this paper). Present policy objectives centre around equality of opportunity and ensuring nobody is left behind, alongside the desire for more even growth. As we note in section 1, higher education and/or employers have been highlighted as key mechanisms through which this can be achieved. In supporting these policy aims, providers are likely to implement outreach activity, which will often (but not always) be based in their local region. We have already highlighted that area-based measures of disadvantage have their merits in such a sphere, though this still leaves a need for providers to have access to data that assists them in identifying the disadvantaged communities in their locality, which may not always be possible with existing measures. As such, we believe it would be helpful for the higher education sector to have a UK-wide variable available to them that can complement existing measures by helping to overcome some of their known limitations.

The focus in this study is on socioeconomic disadvantage, so a natural question that arises is what Census data may best capture this and simultaneously help us with meeting the goals sketched out in the previous paragraph. In the UK, Section 1 of the Equality Act 2010 was never commenced by the national government, though both Scotland and Wales have introduced legislation around this in recent years.⁵⁸ Indeed, the consultation run within Scotland prior to its implementation illustrates the difficulty in trying to define socioeconomic disadvantage, though it is noted that low income/wealth, material deprivation (e.g. access to internet) and socioeconomic background (encompassing aspects such as parental education/employment) are all likely to play a part.⁵⁹ The UK Equalities Office also indicated the role of income/poverty in socioeconomic

⁵⁸ <https://www.gov.scot/publications/fairer-scotland-duty-interim-guidance-public-bodies/pages/2/> and <https://gov.wales/sites/default/files/publications/2021-03/a-more-equal-wales.pdf>

⁵⁹ <https://www.gov.scot/publications/consultation-socio-economic-duty-analysis-responses/pages/2/>

disadvantage, alongside other factors such as housing, education and family background.⁶⁰ As noted earlier, there is no income data contained within the Census, though car/home ownership do potentially offer an indication of wealth. Meanwhile, education and employment data can supply an insight into socioeconomic background, though there is little information available in the Census on material deprivation.

Our starting point was to firstly assess the suitability of each of the four transformed variables for use in the creation of a measure of socioeconomic disadvantage through analysis of the final linked dataset. For example, while housing may be an indicator of wealth, the functioning of the UK housing market varies substantially across regions. Indeed, the ability of a household to obtain social housing will be influenced by the supply and demand for such accommodation in their area, which is known to vary regionally (with higher stock levels found particularly in London).⁶¹ Furthermore, there will be localities in the country where socioeconomically disadvantaged households are unable to access social housing as a consequence of limited supply and are therefore required to rely upon the private sector. Accordingly, in the Census data, we are likely to see large variation in the proportion of households in social housing by region and this is illustrated in Figure 1. This therefore draws into question the usefulness of such a variable in developing a UK-wide measure of disadvantage, as we will be unable to, for example, adequately capture disadvantaged households in areas where social housing is in restricted supply (resulting in them being unable to obtain such accommodation despite a demand for it).

⁶⁰

<https://www.equalrightstrust.org/ertdocumentbank/Tackling%20Socio%20Economic%20Disadvantage%20Making%20Rights%20Work.pdf>

⁶¹ <https://researchbriefings.files.parliament.uk/documents/CBP-8963/CBP-8963.pdf>

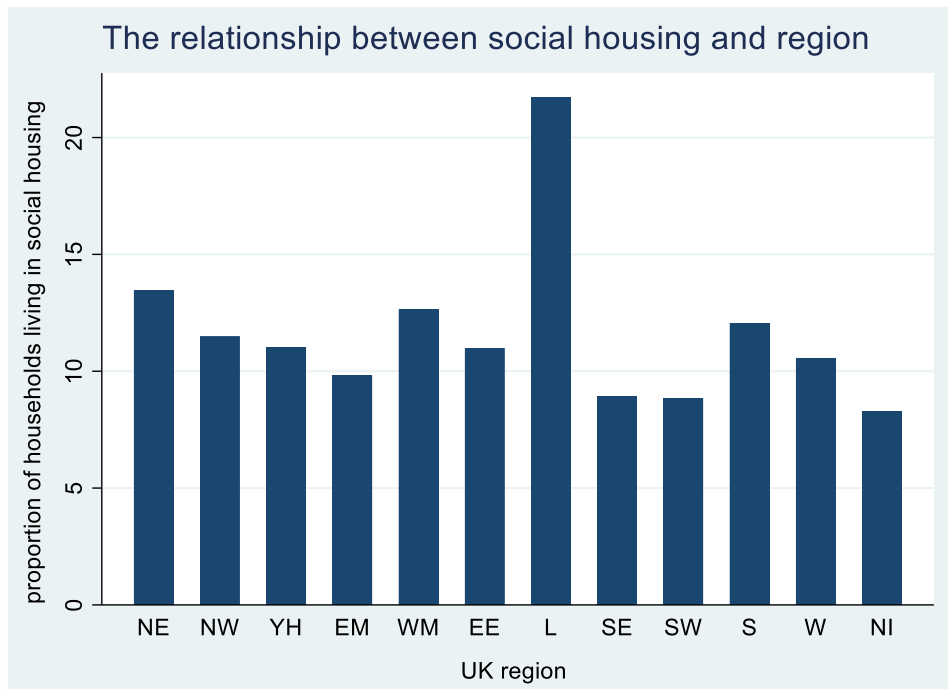


Figure 1: The relationship between social housing and region⁶²

With respect to vehicle ownership, the unique transport network in London reduces the need to own a car or van (as Figure 2 demonstrates). Conversely, in rural areas with limited public transport, purchasing a vehicle may be a necessity even among poorer households.⁶³ This consequently also raises doubts over the appropriateness of this variable too. For these reasons, it was concluded that these two Census variables we had created should not be used in devising our measure.

⁶² NE = North East, NW = North West, YH = Yorkshire and The Humber, EM = East Midlands, WM = West Midlands, EE = East of England, L = London, SE = South East, SW = South West, S = Scotland, W= Wales and NI = Northern Ireland.

⁶³ <https://www.sciencedirect.com/science/article/pii/S1353829216300156>

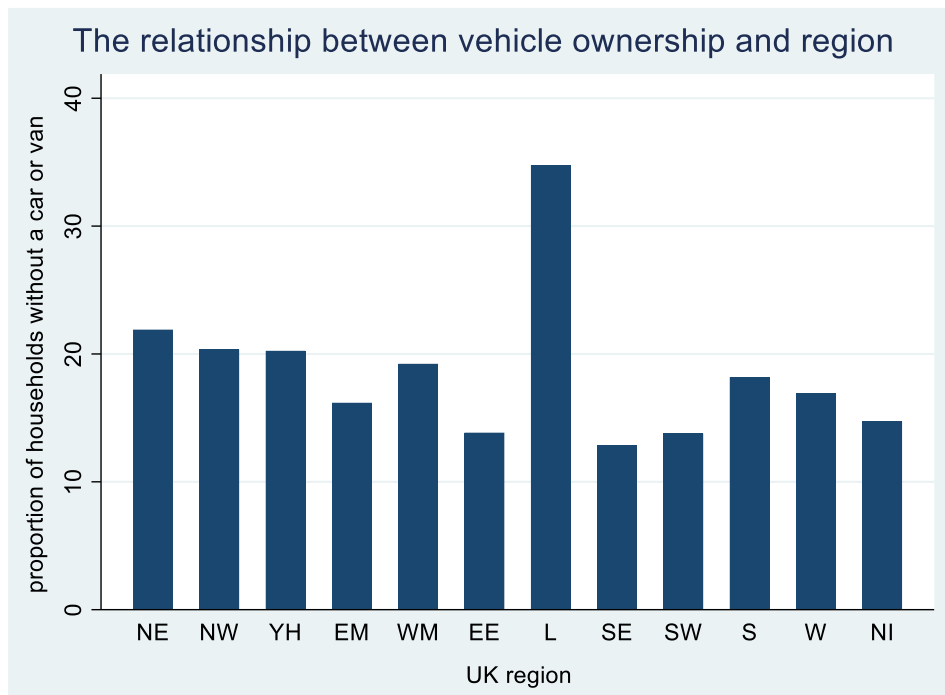


Figure 2: The relationship between vehicle ownership and region

Figure 3 displays the association between qualification levels/NSSEC and region. Though there is variation across the different regions of the UK, with a greater proportion of residents in central/northern England, Wales and Northern Ireland holding below level 4 qualifications or being based in an occupation that falls under NSSEC categories 3 to 8, we do not witness the more extreme patterns observed with housing and vehicle ownership. With education and employment identified as potential contributing factors to socioeconomic disadvantage and given our aims to develop a UK-wide measure that overcomes known limitations of existing variables by better capturing deprivation throughout the country, these two variables were deemed suitable for inclusion in generating our measure. Furthermore, with education and employment expected to play an important part in achieving more equal opportunity and even growth across the UK, our measure is directly relevant to current policy objectives.

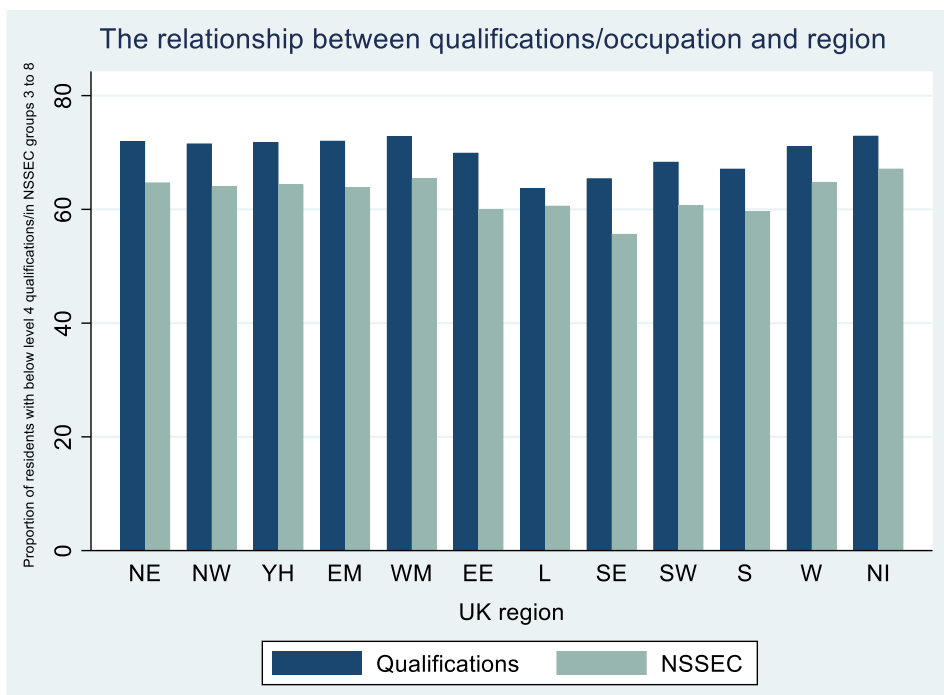


Figure 3: The relationship between qualifications/occupation and region

We therefore reverted to our original Census file (data source 1) and assessed the correlation between the transformed qualifications and occupation variables. This was found to be highly positive (0.92), with the linear relationship highlighted in Figure 4. To create a single measure based on these variables, one may employ data reduction methods, such as principal components analysis. For example, such a procedure was utilised by Bourne (2016) when developing a cognitive ability measure in the Next Steps birth cohort study using Key Stage English and Maths scores.⁶⁴ However, when we implemented such a strategy in this instance, we found both variables would essentially contribute equally to the composite variable. For simplicity purposes, we therefore created our measure of disadvantage by taking an average of these two proportions for each of the 274,611 output areas in the UK. These were then ranked, with those areas that were situated within the bottom 20% (based on having the highest average proportions of residents with below level 4 qualifications/in occupations that fell within NSSEC groups 3 to 8) identified as disadvantaged localities.

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https://www.spi.ox.ac.uk/sites/default/files/spi/documents/media/bourne_2016_measuring_cognitive_ability_in_the_ncds_bcs70_lsyp_and_alspac.pdf

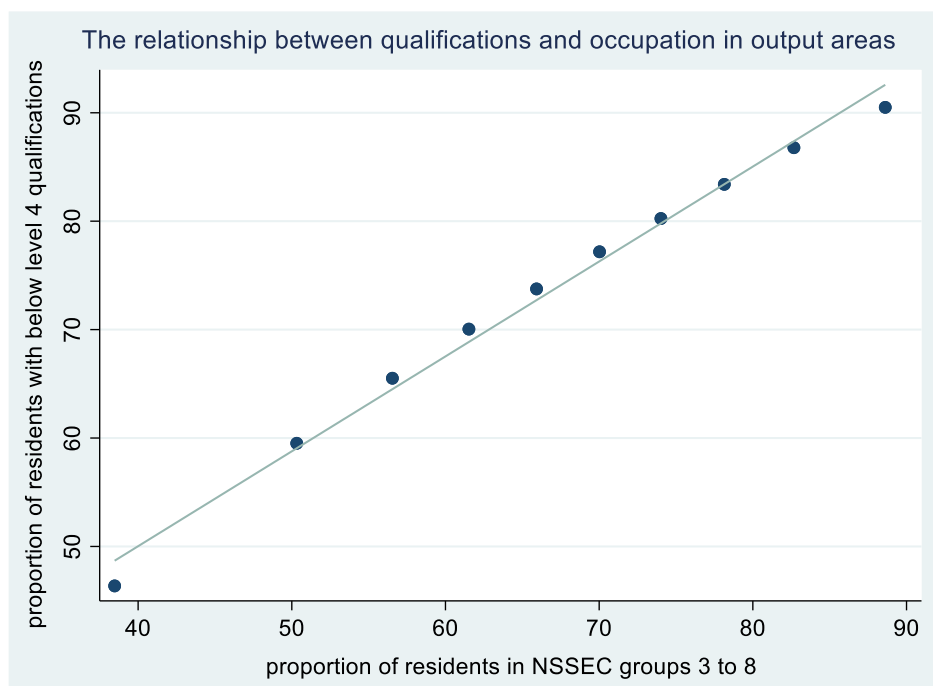


Figure 4: The relationship between qualifications and occupation within UK output areas

In what follows, we utilised our linked dataset to undertake an assessment of our measure in the context of higher education. In particular, we were interested in how the composition of students that are classified as falling within the bottom quintile of three area-level measures relevant to widening participation policy varies across the UK.⁶⁵ The data we hold on POLAR in the HESA record informs us of the quintile group a particular individual sits in. It is this feature of our data that contributed to our choice of focusing on the bottom quintile in our analysis. One of the key variables missing from the Census that would have been helpful to evaluate in the creation of our socioeconomic disadvantage measure is income. In its absence, we have ensured that throughout our discussion of the results, we have referred to external data/reports to assess whether our measure (as well as POLAR and IMD) is picking up those areas that have greater levels of poverty or have been identified as having experienced economic decline/low levels of social mobility.

5. RESULTS

⁶⁵ There may be some output areas that do not emerge at all in our analysis of data linked to HESA records, as a result of no students being in higher education from these parts of the country in the 2011/12 academic year.

In this section, we therefore compare and contrast the measure we have defined above to POLAR and IMD to understand more about how they differ. While POLAR is not a measure of socioeconomic disadvantage, it is useful to include this in our investigation here given the original research on the variable highlighted a correlation between low participation and socioeconomic disadvantage, as well as its ongoing use within widening access activity. To do so, we must conduct our examination on a country-by-country basis, given that IMD is not applicable at a UK-wide level. As illustrated in the first two tables of appendices 1 to 4, when cross-tabulating our measure against POLAR and IMD (separately), we tend to find a very high proportion (over 90% across all instances) of those who fall in quintiles 2 to 5 under our methodology also do so according to POLAR and IMD. However, when considering quintile 1 of our measure, we see far lower proportions of individuals sitting within the lowest POLAR or IMD quintile.

To explore this further, we generated a range of summary statistics using demographic characteristics in our linked dataset. In the forthcoming discussion, we pay particular attention to the disparities in the localities that feature within the quintile 1 group across these three variables, but also the extent to which they appear to correlate with other published information relating to deprivation.

ENGLAND

Appendix 1 provides the findings for England. Looking firstly at region, we see that under the POLAR definition, very few individuals from London fall into quintile 1, as expected. However, almost 30% of students in the lowest IMD quintile in our dataset resided in the capital prior to starting higher education. It is likely that those from London feature so predominantly under this measure, as a result of the region's relatively worse performance on specific domains of the IMD. Housing affordability, crime and living conditions do tend to be worse here than in other areas within England.⁶⁶ Almost four-tenths of those in POLAR quintile 1 were from southern parts of the country (East of England, London, South East and South West), whereas under our measure, this proportion is just below 25%. In comparison, our variable consists of a far higher proportion of students from the North and Midlands. Having linked in local authority name data supplied by the ONS into our dataset, we are able to look more finely at the exact vicinities each of these variables is picking up.

⁶⁶ <https://www.londoncouncils.gov.uk/members-area/member-briefings/local-government-finance/indices-deprivation-2019>

Beginning with our measure, we see that towns and cities in central/northern England, which have previously been identified in other research as having experienced economic decline and/or increasing deprivation feature high on the list. This includes areas such as Oldham, Bolton, Rochdale, Sandwell and Walsall.⁶⁷ Though it is the case that the south has experienced superior economic outcomes in relative terms over recent decades, there remain numerous localities experiencing deprivation and/or where social mobility levels remain low. Back in 2016, a Social Mobility Index was released that highlighted the parts of the UK that were ‘cold spots’ for social mobility.⁶⁸ POLAR quintile 1 appears to better capture some of these cold spots in parts of the south, including coastal areas. Examples include Norwich, Poole and Thanet. We also assessed the exact places within these areas that students in POLAR quintile 1 tended to be located before enrolling into university. In Thanet, we found them to be principally from MSOAs such as Dane Valley, Newington, Salmestone and Cliftonville West, which are known for high levels of deprivation where a key local focus is improving education and employment opportunities.⁶⁹ Earlham, University and Avenues, as well as Catton Grove and Airport were all examples of the main MSOAs in Norwich that appear when analysing the residences of students from this part of the country – all localities that have below average incomes (relative to England and Wales).⁷⁰ In Poole, POLAR quintile 1 students were commonly from areas such as Hamworthy, Newtown, Canford Heath East and Rossmore (Alderney), with nearly all being associated with higher levels of income poverty.⁷¹ Hence, while the POLAR marker in itself is not a measure of socioeconomic disadvantage like our own variable or IMD, there are parts of England where it appears to be correlated with it and may therefore be useful in widening participation among those from low socioeconomic backgrounds. Finally, when looking at IMD, in the initial tables by region, we see quite high percentages appear in the North West and West Midlands, alongside London. This additional breakdown illustrates that it is the major cities of these areas (e.g. Birmingham, Manchester and Liverpool) that appear to primarily account for this. Indeed Table A7 in Appendix 1 demonstrates that IMD in England largely captures major and minor conurbations, with very few rural areas emerging in the bottom quintile.

⁶⁷ See, for example, https://barrowcadbury.org.uk/wp-content/uploads/2019/02/NPI-The-State-of-Economic-Justice-in-Birmingham-and-the-Black-Country_lo-res-for-web.pdf and https://www.jrf.org.uk/sites/default/files/jrf/files-research/tackling_declining_cities_report.pdf

⁶⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/496103/Social_Mobility_Index.pdf

⁶⁹ https://www.kpho.org.uk/_data/assets/pdf_file/0010/58834/Thanet-Profile.pdf

⁷⁰ https://www.norwich.gov.uk/downloads/file/6917/gambling_act_2005_-_local_area_profile

⁷¹ <https://democracy.bcpccouncil.gov.uk/Data/Poole%20Cabinet/201504141900/Agenda/att23405.pdf>

One of the potential worries about both our measure and POLAR is that they are both based on data collected/generated a decade or so ago. However, the research reports we refer to in the previous paragraph are all more recent publications. To address this possible concern further, we add supplementary context to the results by looking at child poverty statistics as reported by the Health Foundation.⁷² These figures relate to the years 2014-2019 and are based on data from the Department for Work and Pensions, as well Her Majesty's Revenue and Customs. We see that areas such as Wolverhampton, Sandwell and Walsall have some of the highest rates in the Midlands region, alongside Birmingham. In the North, the vicinities of Oldham, Bolton, Rochdale and Bradford are examples of areas with particularly large proportions of child poverty. While levels appear lower in the south more generally, places like Thanet and Norwich all have relatively large poverty rates, which our analysis has shown are picked up under the POLAR marker.

The above exploration illustrates the importance in remembering that all of these measures can play a part in helping providers and policymakers in widening opportunity throughout the country and meeting the ambition of more equitable growth across the regions. Access and participation plans devised by providers will often entail local elements, such as undertaking outreach activities within the community, with such programmes making use of area-level measures in determining the most effective strategy. Within such localised settings, there will be instances where an area-level measure that can be used by providers in assessing socioeconomic disadvantage in one part of the country may not be deemed appropriate for use in other areas. We have already discussed the high participation levels in London resulting in few students from the city falling into POLAR quintile 1. Yet, given Poole's relative affluence, IMD and our own measure may not sufficiently catch local deprivation here. Indeed, very few students in this locality were based in the bottom IMD quintile in our analysis. Consequently, providers around the south coast that wish to encourage participation among those from areas of socioeconomic disadvantage in the region may find IMD a less useful tool than POLAR.

WALES

Relevant tables for Wales can be found in Appendix 2. Firstly, focusing on our measure, we note that areas such as Rhondda, Caerphilly and Carmarthenshire all feature more prominently here than in the tables by POLAR and WIMD. Looking more closely at the MSOAs that make up these

⁷² <https://www.health.org.uk/evidence-hub/money-and-resources/poverty/map-of-child-poverty>

local authorities, we find that Ystrad & Llwynypia (Rhondda), Tonypandy East (Rhondda), Llanelli South (Carmarthenshire), Pengam & Cefn Fforest (Caerphilly), Bargoed (Caerphilly) and Risca East (Caerphilly) are some of the most common localities that students from these areas lived in before they began tertiary education. Though no longer running, these were also the types of places that were targeted as part of the Communities First programme first established by the Welsh Government in 2001 to tackle poverty, in which eligibility was largely determined by the 2000 WIMD.⁷³

There are also some noticeable differences in the areas within the cities that seem to be caught by these three measures. For example, in Swansea, we see Landore – a known area of deprivation – is the most common MSOA for both IMD and our own variable, but it does not emerge at all in the POLAR4 measure.⁷⁴ However, Townhill, Penderry and Bon-y-maen are found to be examples of some of the other most featured areas of Swansea across all three measures. Meanwhile, within Cardiff, there are also discrepancies in the distribution of MSOAs picked up by these three variables. Of the students from Cardiff who live in a POLAR4 quintile 1 area, half are from either Adamsdown, Llanrumney North, Llanedeyrn, Cathays North or Pentywn. The latter three localities either do not feature or do so in smaller numbers under our measure and IMD when analysing the city. In the case of IMD, the highest proportions are found to be for Adamsdown, South Riverside, Grangetown (North and South), Llanrumney South, Trowbridge and Ely East. Around one third of students from Cardiff who were in the bottom quintile of our measure were from the final three vicinities discussed in the previous sentence, though very few were found to be from Adamsdown. Previous research has indicated that Ely, Llanrumney, Fairwater, Caerau and Adamsdown all have high levels of poverty (according to 2015 CACI Paycheck data).⁷⁵ However, it appears that Fairwater (North and South) is not captured at all under POLAR.

Another distinction we note between the three variables in Wales is that the POLAR measure has a greater number of students from areas such as Pembrokeshire and Monmouthshire. Indeed, Monmouthshire does not emerge under IMD. When we look at the MSOAs that students lived in within these counties, we find that Pembroke Dock, Haverfordwest (North) and Milford Haven West are the localities covered by POLAR within Pembrokeshire, which have been identified as areas

⁷³ Relevant cluster maps can be found here <https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Communities-First/Cluster-Maps>

⁷⁴ <https://democracy.swansea.gov.uk/documents/s17587/Anti%20Poverty%20Append%203.pdf>

⁷⁵ <https://www.caerdydd.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Vulnerable%20Children%20and%20Families%20Programme%20Intelligence%20Report.pdf>

with higher levels of deprivation.⁷⁶ Abergavenny North and Caldicot South are the two places of residence for students in POLAR quintile 1 from Monmouthshire, with the former having once been part of the Communities First initiative. As we saw in England therefore, there appear to be instances where POLAR is correlated with socioeconomic disadvantage (despite itself not being a variable that seeks to capture this), with no single area-level measure adequately picking up deprivation in all regions of the country. An additional similarity to the findings for England is that IMD again generally picks up predominantly urban parts, with both quintile 1 of our measure and POLAR encompassing a greater proportion of rural areas.

SCOTLAND

While we do have IZ names for Scotland, breakdowns at this level lead to very small numbers, so we concentrate on data at the council area level. The limitations of POLAR in Scotland have been discussed earlier, though we do provide further detail using this variable. As Appendix 3 shows, the number of Scottish students classified in POLAR quintile 1 is very low, whereas the other two measures do comprise a much greater overall count. Furthermore, another issue with POLAR in Scotland is that over a third of those in the lowest quintile are from Scotland's two major cities and thus this measure seems restricted in the extent to which it can identify those who are disadvantaged across the country.

However, a similar argument could be made against IMD, where students from Glasgow, Edinburgh and Dundee account for almost half of those in the lowest IMD quintile. Contrary to POLAR, it is now Glasgow that emerges as the dominant city to be picked up by the measure, whereas it was Edinburgh in the case of POLAR. In section 2 of this paper, we noted concerns that SIMD does not sufficiently capture deprivation in rural parts of the country. The key discrepancy between our measure and IMD is the coverage across the country within the lowest quintile, including within rural areas and remote small towns (as Table C6 illustrates). Falkirk, Angus, Dumfries and Galloway, as well as the Scottish Borders are all examples of areas that feature in greater numbers under our measure. Modelled income estimates generated by Heriot-Watt University relating to the year 2008/09 are available in the public domain.⁷⁷ Analysis of these figures indicates that the areas such as Dumfries and Galloway and the Scottish Borders also tended to have estimated net median incomes (irrespective of whether housing costs and family

⁷⁶ <https://www.pembrokeshire.gov.uk/local-development-plan-review/equality-impact-assessment>

⁷⁷ <https://statistics.gov.scot/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fdata%2Fincome-and-poverty-modelled-estimates>

composition were considered) that fell below the average in the country. Furthermore, looking at the child poverty statistics reported by the Health Foundation, we see that child poverty rates are high in areas such as Glasgow, North Ayrshire and North Lanarkshire. As with England and Wales where we have tried to add further context using recent related statistics to mitigate concerns around the usefulness of our measure today (and its correlation with income), it does appear that the definition we have created using 2011 Census data does comprise of areas that continue to experience poverty and deprivation.

NORTHERN IRELAND

In a similar fashion to what we see in Scotland, both the lowest POLAR and IMD quintiles tend to be more dominated by a major city relative to our measure. Despite this difference between the three variables, we do find that they all seem to pick up similar areas of the capital. The four most common DEAs that emerge in all three measures are Black Mountain, Collin, Court and Oldpark. Though Belfast is the LGD containing the highest proportion of students in all instances, there are clear discrepancies thereafter between our measure, IMD and POLAR.

Firstly, we note that while the ordering of LGDs is not too dissimilar between our measure and IMD, we do see a more even division across LGDs under our variable. As in Scotland therefore, one of the distinguishing features of our measure is its ability to encompass parts of the country that lie outside the major cities. Within our data for Northern Ireland, we also have a proxy rural-urban marker, which indicates that just 4% of those in POLAR quintile 1 are from a rural part of the country. This rises to 11% under IMD and 24% under our own measure. The distribution across LGDs under the POLAR measure differs quite noticeably to both our measure and IMD. A far smaller proportion of those in quintile 1 of POLAR are from Derry/Londonderry City and Strabane, with Ards and North Down featuring far more prominently. In particular, it is the Bangor (central/west) and Newtownards DEAs within the latter LGD that POLAR appears to encapsulate. Furthermore, Fermanagh and Omagh is not captured at all, with the most likely cause of this being the relatively high levels of higher education participation in this district.⁷⁸

In 2003, the government of Northern Ireland launched the Neighbourhood Renewal programme, designed to improve the quality of life among some of the most deprived parts of the country

⁷⁸ <https://www.fermanaghomagh.com/app/uploads/2019/10/Fermanagh-and-Omagh-Strategy-Review-to-Support-Community-Planning-Final-Draft-07102015.pdf>

through interventions implemented by Neighbourhood Partnerships (consisting of, for example, those from the voluntary and private sector, as well as the community). The objectives involved community, economic, social and physical renewal, with education seen to play an important role in delivering these targets.⁷⁹ Derry/Londonderry Outer North (containing wards such as Shantallow in the Ballyarnett DEA⁸⁰) and Triax Cityside⁸¹ (comprising wards such as Brandywell and Creggan that are part of The Moor DEA⁸²), as well as Strabane were chosen to be in the initiative from the north western region of the country.⁸³ Meanwhile, places such as Newry and Armagh also featured in the project. These programmes have continued to be administered over the last decade, with relevant action plans and annual reports published on aims and progress.⁸⁴ We note that these are all vicinities within Northern Ireland that are covered in our measure of disadvantage based on 2011 Census data. Wards such as Upper Springfield, Whiterock (both part of Black Mountain) and Ardoyne (Oldpark) were all parts of Belfast that were included in the programme, hence all three measures do seem to be picking up some of the most deprived neighbourhoods of the capital.

6. FURTHER REMARKS AND NEXT STEPS

This paper has supplied the rationale and methodology behind a new area-level measure of socioeconomic disadvantage for potential use within the higher education sector. In particular, we have illustrated its possible UK-wide applicability, as well as the ways in which it complements and offers additional benefits to existing area-level variables in this field.

It is, however, important to recognise that – as with all (individual and area-level) measures of disadvantage – our variable is not without limitations. The main criticism of area-level measures, such as POLAR and IMD, is the level of heterogeneity in family circumstances across neighbourhoods, meaning localities classified as relatively advantaged will still consist of pockets of deprivation and vice-versa. We have tried to mitigate this in the generation of our measure by relying upon the smallest geography level available. However, as our summary statistics in the appendix illustrate, there are still individuals living in output areas that we classify as disadvantaged who report that they have a parent with a higher education qualification or that is

⁷⁹ <http://archive.niassembly.gov.uk/io/research/2008/12408.pdf>

⁸⁰ [https://www.derrystrabane.com/getmedia/4cd42d07-6434-45d4-ae01-c1bead779373/Deprivation-\(Ward\).pdf](https://www.derrystrabane.com/getmedia/4cd42d07-6434-45d4-ae01-c1bead779373/Deprivation-(Ward).pdf)

⁸¹ <https://www.communities-ni.gov.uk/sites/default/files/publications/communities/triax-cityside-nra-annual-report-2018-19.PDF>

⁸² <https://growderrystrabane.com/wp-content/uploads/2019/10/30776-Local-Growth-Plan-Moor-Amended-LOW-RES.pdf>

⁸³ <https://www.communities-ni.gov.uk/publications/neighbourhood-renewal-annual-reports-201819-north-west>

⁸⁴ See, for example, https://www.newrymouredown.org/media/uploads/neighbourhood_renewal_3_year_action_plan_2017-2020.pdf and <https://www.communities-ni.gov.uk/publications/neighbourhood-renewal-annual-reports-201819-areas-outside-belfast-and-north-west>

working in a professional occupation. Furthermore, while the Census is obligatory for households to complete, the data collected is still self-reported and could therefore be subject to the types of errors that exist for the parental education/occupation fields that are available in the HESA Student record via UCAS. Indeed, the ONS completed a Census Quality Survey between May and August 2011, in which volunteers were requested to participate in a face-to-face interview. Those who agreed were subsequently asked the same questions that they responded to approximately two to five months earlier, with the key difference being the mode of survey completion. Agreement rates were generally found to be lower (around two-thirds) for questions around occupation and qualification for reasons such as respondents giving different job titles or individuals struggling to remember the educational certificates they attained.⁸⁵

Next steps in this programme of work are as follows. Firstly, we invite feedback and comments from all parts of the UK on the perceived usefulness of this measure. Should a positive response be received from our data users, we would then look to engage with user groups regarding incorporating this data into our collection and then distributing relevant extracts to practitioners and policymakers. We are aware that in this paper we have focused more on potential use of this variable among providers and policymakers. However, we appreciate there is also a need for suitable measures of socioeconomic disadvantage among the research community and in the analysis of policy initiatives/questions, as Jerrim (2020) highlights.⁸⁶ He cites the possible creation of an index that brings together both individual and area-level data to generate a continuous variable for socioeconomic disadvantage, which could offer the dual benefit of greater granularity and being less disclosive in nature. Consequently, if there is general approval for this UK-wide area-based measure, further exploration could involve examining whether an appropriate (UK and/or country-specific) index can be formulated that brings together our area-based measure with appropriate individual-level information, which we can then supply to data users.

Furthermore, with the 2021 Census having recently been submitted by citizens in England, Wales and Northern Ireland (with the Scottish Census taking place next year), we will have access to the latest area data over the course of the next few years. Throughout this paper, we have tried to alleviate any concerns over the applicability of our measure in present circumstances given it is based on 2011 Census data and change may occur over time. We have done this by illustrating

⁸⁵ <https://webarchive.nationalarchives.gov.uk/20160108085257/http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-user-guide/quality-and-methods/assessing-accuracy-of-responses--census-quality-survey-/index.html>

⁸⁶ <http://repec.ioe.ac.uk/REPEc/pdf/qsswp2009.pdf>

that it captures areas that continued to report high levels of deprivation across the last decade. 2021 Census data will offer us the opportunity to update our measure and undertake a detailed investigation into the stability of the findings across the decade, particularly given that one of the aims of the Census is to maintain the ability to compare over time (e.g. through the use of consistent questions⁸⁷).

To allow us to assess how the composition of students varies across POLAR, IMD and our measure, we have had to restrict our focus here to young entrants to higher education. However, as our measure is based on all adults aged over 16, it is potentially suitable in assisting mature entry into higher education as well (a current limitation of some area-based measures, such as POLAR). Should we receive a positive response on this measure we have developed, we would also be happy to introduce an analysis of mature students when updating our work using the 2021 Census.

Finally, we recognise that we are currently unable to explore higher education provision in further education colleges through our data, which is a particular issue when examining Scotland due to the sizeable proportion of higher education delivered through such establishments. This will also be an area that we shall aim to address in forthcoming years.⁸⁸

⁸⁷ See, for example, https://consultations.ons.gov.uk/external-affairs/ons-2021-census-output-geography-policy-products-a/results/2021geographyoutputsconsultation_response_v5.pdf, <https://www.scotlandscensus.gov.uk/media/k2oa5vkb/scotlands-census-2022-sdc-and-outputs-census-outputs-strategy.pdf> and https://www.nisra.gov.uk/sites/nisra.gov.uk/files/publications/2021-census-outputs-strategy-consultation-for-northern-ireland-document_0.pdf

⁸⁸ While HESA do collect data on alternative providers, this process began in the middle part of the previous decade, preventing them from being included in this analysis. Future work will be able to incorporate this group into the exploration.

APPENDIX 1: ENGLISH DOMICILED FULL-TIME FIRST DEGREE ENTRANTS AGED 18 TO 20 IN THE ACADEMIC YEAR 2011/12⁸⁹

Table A1: Cross-tabulation of HESA measure and POLAR

	POLAR quintile 2 to 5 (%)	POLAR quintile 1 (%)	Total
HESA measure quintile 2 to 5	94.0	6.0	241,985
HESA measure quintile 1	55.7	44.3	26,530

Table A2: Cross-tabulation of HESA measure and IMD

	IMD quintile 2 to 5 (%)	IMD quintile 1 (%)	Total
HESA measure quintile 2 to 5	92.4	7.6	242,125
HESA measure quintile 1	32.8	67.2	26,535

Table A3: Geographic distribution of quintile 1 students by region of domicile and measure of disadvantage (%)

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
North East	8.1	7.6	5.1
North West	22.3	16.3	21.1
Yorkshire and The Humber	15.0	13.1	11.0
East Midlands	10.0	10.8	5.9
West Midlands	19.4	13.0	15.9
East of England	7.7	11.5	4.4
London	6.2	1.4	28.7
South East	6.6	16.2	4.4
South West	4.8	10.3	3.5
Total	26,535	26,355	36,230

Table A4: Geographic distribution of most disadvantaged students by local authority (top 50 by proportion) – Quintile 1 of HESA measure (%)

Birmingham	6.9
Bradford	2.8
Leicester	2.5
Liverpool	2.1
Manchester	2.1
Sandwell	2.1
Leeds	1.7
Sheffield	1.6
Kirklees	1.6
Walsall	1.6

⁸⁹ Please note that in appendices 1 to 4, totals may not align as expected in some instances due to the exclusion of missing data.

County Durham	1.5
Stoke-on-Trent	1.4
Bolton	1.4
Sunderland	1.4
Wolverhampton	1.4
Rochdale	1.2
Oldham	1.2
Wakefield	1.2
Doncaster	1.2
Coventry	1.1
Dudley	1.1
Kingston upon Hull, City of	1.1
Tameside	1.1
Knowsley	1.0
Nottingham	1.0
Rotherham	0.9
Wirral	0.9
Blackburn with Darwen	0.9
Luton	0.9
Sefton	0.9
Salford	0.8
Wigan	0.8
Derby	0.8
Barnsley	0.8
Halton	0.8
Newcastle upon Tyne	0.7
Barking and Dagenham	0.7
Enfield	0.7
Pendle	0.6
Preston	0.6
Calderdale	0.6
Peterborough	0.6
St. Helens	0.6
Plymouth	0.6
Cornwall	0.6
Blackpool	0.6
Stockton-on-Tees	0.6
Middlesbrough	0.6
Cheshire West and Chester	0.6
Ealing / South Tyneside	0.5

Table A5: Geographic distribution of most disadvantaged students by local authority (top 50 by proportion) – Quintile 1 of POLAR (%)

Birmingham	2.4
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Liverpool	2.1
Leeds	2.0
Bristol, City of	1.8
Sheffield	1.8
Manchester	1.7
Stoke-on-Trent	1.7
Doncaster	1.6
Wakefield	1.3
County Durham	1.3
Nottingham	1.3
Kingston upon Hull, City of	1.3
Barnsley	1.2
Sunderland	1.1
Southampton	1.1
Wirral	1.0
Portsmouth	1.0
Halton	1.0
King's Lynn and West Norfolk	0.9
Dudley	0.9
Plymouth	0.9
Thurrock	0.9
Knowsley	0.9
Tameside	0.9
Medway	0.9
Walsall	0.9
Basildon	0.8
South Gloucestershire	0.8
Wigan	0.8
Cheshire West and Chester	0.8
Bradford	0.8
Derby	0.8
Northampton	0.8
Sandwell	0.7
Swindon	0.7
Norwich	0.7
Northumberland	0.7
Rotherham	0.7
Brighton and Hove	0.7
Stockton-on-Tees	0.7
Salford	0.7
Coventry	0.7
Thanet	0.7
Ipswich	0.6
Ashfield	0.6

Telford and Wrekin	0.6
Peterborough	0.6
Wolverhampton	0.6
Nuneaton and Bedworth	0.6
Middlesbrough / Poole	0.6

Table A6: Geographic distribution of most disadvantaged students by local authority (top 50 by proportion) – Quintile 1 of IMD (%)

Birmingham	7.6
Manchester	3.3
Liverpool	2.7
Bradford	2.4
Tower Hamlets	2.2
Newham	2.1
Hackney	1.9
Haringey	1.8
Southwark	1.8
Leeds	1.8
Enfield	1.7
Sandwell	1.7
Barking and Dagenham	1.5
Lewisham	1.5
Waltham Forest	1.4
Leicester	1.4
Sheffield	1.4
Lambeth	1.4
Wolverhampton	1.3
Ealing	1.2
Bolton	1.2
Nottingham	1.2
Walsall	1.2
Croydon	1.1
Islington	1.1
Brent	1.1
Kirklees	1.1
Rochdale	1.0
Greenwich	1.0
Stoke-on-Trent	1.0
Westminster	1.0
Coventry	1.0
Knowsley	0.9
Wirral	0.9
Oldham	0.9
County Durham	0.9

Sefton	0.9
Salford	0.8
Tameside	0.8
Bristol, City of	0.8
Camden	0.8
Sunderland	0.7
Derby	0.7
Blackburn with Darwen	0.7
Luton	0.7
Kingston upon Hull, City of	0.7
Hammersmith and Fulham	0.7
Wakefield	0.7
Kensington and Chelsea	0.6
Newcastle upon Tyne	0.6

Table A7: Distribution of quintile 1 students by urban-rural classification and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Rural hamlets and isolated dwellings	0.2	0.9	0.2
Rural hamlets and isolated dwellings in a sparse setting	0.0	0.0	0.0
Rural town and fringe	3.9	3.9	1.4
Rural town and fringe in a sparse setting	0.3	0.1	0.1
Rural village	0.7	1.1	0.2
Rural village in a sparse setting	0.1	0.0	0.0
Urban city and town in a sparse setting	0.3	0.2	0.1
Urban city and town	42.5	60.0	28.7
Urban major conurbation	46.5	26.3	65.2
Urban minor conurbation	5.6	7.4	4.2
Total	26,535	26,355	36,230

Table A8: Distribution of quintile 1 students by NSSEC and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
NSSEC groups 1 or 2	22.3	32.5	25.3
NSSEC groups 3 to 8	55.4	49.7	50.2
Missing information	22.3	17.9	24.5
Total	26,535	26,355	36,230

Table A9: Distribution of quintile 1 students by parental education and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Parent has HE qualification	20.7	28.1	25.8
Parent doesn't have HE qualification	56.5	50.8	50.8

Don't know	8.9	8.7	9.1
Information refused	13.9	12.3	14.3
No response given	0.0	0.0	0.0
Total	26,535	26,355	36,230

APPENDIX 2: WELSH DOMICILED FULL-TIME FIRST DEGREE ENTRANTS AGED 18 TO 20 IN THE ACADEMIC YEAR 2011/12

Table B1: Cross-tabulation of HESA measure and POLAR

	POLAR quintile 2 to 5 (%)	POLAR quintile 1 (%)	Total
HESA measure quintile 2 to 5	91.8	8.2	11,580
HESA measure quintile 1	52.8	47.2	1,680

Table B2: Cross-tabulation of HESA measure and IMD

	IMD quintile 2 to 5 (%)	IMD quintile 1 (%)	Total
HESA measure quintile 2 to 5	95.4	4.6	11,585
HESA measure quintile 1	47.9	52.1	1,680

Table B3: Geographic distribution of most disadvantaged students by local authority – Quintile 1 of HESA measure (%)

Rhondda Cynon Taf	14.2
Swansea	8.4
Caerphilly	7.5
Cardiff	7.4
Neath Port Talbot	7.0
Newport	6.1
Bridgend	5.6
Blaenau Gwent	5.1
Carmarthenshire	4.8
Flintshire	4.2
Wrexham	4.2
Merthyr Tydfil	3.8
Torfaen	3.8
Isle of Anglesey	2.7
Denbighshire	2.5
The Vale of Glamorgan	2.4
Conwy	2.4
Pembrokeshire	2.4
Powys	2.0
Gwynedd	1.7
Monmouthshire	1.3
Ceredigion	0.6
Total	1,680

 Table B4: Geographic distribution of most disadvantaged students by local authority – Quintile 1 of POLAR
 (%)

Cardiff	11.6
Rhondda Cynon Taf	11.3
Flintshire	7.9
Newport	7.7
Wrexham	6.4
Swansea	6.3
Neath Port Talbot	5.4
Blaenau Gwent	5.2
Bridgend	5.0
Caerphilly	5.0
Pembrokeshire	4.1
Torfaen	4.1
The Vale of Glamorgan	3.3
Monmouthshire	3.1
Denbighshire	2.9
Merthyr Tydfil	2.8
Isle of Anglesey	2.0
Powys	2.0
Carmarthenshire	1.4
Conwy	1.0
Gwynedd	1.0
Ceredigion	0.8
Total	1,740

 Table B5: B5: Geographic distribution of most disadvantaged students by local authority – Quintile 1 of IMD
 (%)

Cardiff	15.8
Rhondda Cynon Taf	11.1
Swansea	11.1
Newport	7.8
Caerphilly	7.3
Neath Port Talbot	7.3
Bridgend	5.6
Blaenau Gwent	4.8
Conwy	4.1
Merthyr Tydfil	3.8
Torfaen	3.6
Carmarthenshire	3.1
The Vale of Glamorgan	3.1
Flintshire	2.7
Isle of Anglesey	2.5
Wrexham	2.3

Denbighshire	1.7
Pembrokeshire	0.9
Gwynedd	0.6
Powys	0.6
Ceredigion	0.4
Monmouthshire	0.0
Total	1,405

Table B6: Distribution of quintile 1 students by urban-rural classification and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Rural hamlets and isolated dwellings	0.2	0.8	0.4
Rural hamlets and isolated dwellings in a sparse setting	0.1	0.2	0.2
Rural town and fringe	13.6	14.5	8.6
Rural town and fringe in a sparse setting	2.2	1.2	0.2
Rural village	1.7	2.5	0.9
Rural village in a sparse setting	1.3	0.0	0.2
Urban city and town in a sparse setting	2.6	3.4	2.6
Urban city and town	78.4	77.5	86.9
Urban major conurbation	0.0	0.0	0.0
Urban minor conurbation	0.0	0.0	0.0
Total	1,680	1,740	1,405

Table B7: Distribution of quintile 1 students by NSSEC and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
NSSEC groups 1 or 2	21.7	31.6	24.5
NSSEC groups 3 to 8	52.9	44.7	50.8
Missing information	25.3	23.8	24.7
Total	1,680	1,740	1,405

Table B8: Distribution of quintile 1 students by parental education and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Parent has HE qualification	20.6	29.6	24.0
Parent doesn't have HE qualification	39.8	34.2	39.1
Don't know	13.9	12.7	11.4
Information refused	24.6	22.5	24.4
No response given	1.1	1.0	1.1
Total	1,680	1,740	1,405

APPENDIX 3: SCOTTISH DOMICILED FULL-TIME FIRST DEGREE ENTRANTS AGED 18 TO 20 IN THE ACADEMIC YEAR 2011/12

Table C1: Cross-tabulation of HESA measure and POLAR

	POLAR quintile 2 to 5 (%)	POLAR quintile 1 (%)	Total
HESA measure quintile 2 to 5	98.4	1.6	12,890
HESA measure quintile 1	81.8	18.2	1,930

Table C2: Cross-tabulation of HESA measure and IMD

	IMD quintile 2 to 5 (%)	IMD quintile 1 (%)	Total
HESA measure quintile 2 to 5	96.7	3.3	12,905
HESA measure quintile 1	54.7	45.3	1,930

Table C3: Geographic distribution of most disadvantaged students by council area – Quintile 1 of HESA measure (%)

Glasgow City	16.5
North Lanarkshire	11.0
Fife	6.1
South Lanarkshire	5.9
City of Edinburgh	4.5
West Lothian	4.4
Falkirk	4.1
North Ayrshire	4.1
Renfrewshire	3.8
East Ayrshire	3.7
Dumfries and Galloway	2.6
Scottish Borders	2.6
Aberdeen City	2.5
West Dunbartonshire	2.4
Midlothian	2.4
Dundee City	2.3
Highland	2.3
Aberdeenshire	2.2
East Lothian	2.2
Angus	2.1
Inverclyde	2.1
South Ayrshire	2.1
Moray	2.0
Clackmannanshire	1.3

Perth and Kinross	1.0
Argyll and Bute	0.9
East Renfrewshire	0.9
Stirling	0.8
East Dunbartonshire	0.6
Shetland Islands	0.4
Orkney Islands	0.2
Na h-Eileanan Siar	0.1
Total	1,930

Table C4: Geographic distribution of most disadvantaged students by council area – Quintile 1 of POLAR (%)

City of Edinburgh	21.9
Glasgow City	13.7
Fife	8.3
Aberdeen City	6.3
Falkirk	5.9
Midlothian	4.9
Dundee City	4.7
West Lothian	4.1
North Ayrshire	3.1
North Lanarkshire	3.1
South Lanarkshire	2.9
East Ayrshire	2.7
East Lothian	2.3
Renfrewshire	2.3
Highland	2.0
Scottish Borders	2.0
Stirling	2.0
Aberdeenshire	1.8
Perth and Kinross	1.8
Inverclyde	1.6
Clackmannanshire	1.1
Dumfries and Galloway	1.1
South Ayrshire	0.5
Angus	0.0
Argyll and Bute	0.0
East Dunbartonshire	0.0
East Renfrewshire	0.0
Moray	0.0
Na h-Eileanan Siar	0.0
Orkney Islands	0.0
Shetland Islands	0.0
West Dunbartonshire	0.0

Total	555
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Council Area	Percentage (%)
Glasgow City	30.6
North Lanarkshire	10.3
City of Edinburgh	6.2
South Lanarkshire	5.6
Dundee City	5.3
Renfrewshire	5.3
North Ayrshire	5.1
Fife	4.1
Inverclyde	3.1
Aberdeen City	3.0
East Ayrshire	2.9
West Dunbartonshire	2.8
West Lothian	2.4
Highland	2.0
Falkirk	1.9
South Ayrshire	1.9
Clackmannanshire	1.6
Argyll and Bute	0.9
East Renfrewshire	0.9
Angus	0.8
Dumfries and Galloway	0.6
East Lothian	0.5
Scottish Borders	0.5
East Dunbartonshire	0.5
Perth and Kinross	0.5
Stirling	0.4
Aberdeenshire	0.2
Midlothian	0.2
Moray	0.2
Na h-Eileanan Siar	0.0
Orkney Islands	0.0
Shetland Islands	0.0
Total	1,295

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Large urban areas	33.8	50.0	55.9
Other urban areas	42.6	37.1	31.8
Accessible small towns	11.0	7.2	6.1

Remote small towns	3.0	1.3	0.6
Very remote small towns	1.4	0.0	1.2
Accessible rural areas	5.4	3.2	3.3
Remote rural areas	2.0	1.3	1.2
Very remote rural areas	0.9	0.0	0.1
Total	1,930	555	1,295

Table C7: Distribution of quintile 1 students by NSSEC and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
NSSEC groups 1 or 2	24.5	29.1	26.4
NSSEC groups 3 to 8	54.8	49.6	50.7
Missing information	20.7	21.2	22.9
Total	1,930	555	1,295

Table C8: Distribution of quintile 1 students by parental education and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Parent has HE qualification	28.6	31.1	30.5
Parent doesn't have HE qualification	47.1	47.7	42.3
Don't know	9.6	9.4	9.7
Information refused	14.8	11.9	17.5
No response given	0.0	0.0	0.0
Total	1,930	555	1,295

APPENDIX 4: NORTHERN IRISH DOMICILED FULL-TIME FIRST DEGREE ENTRANTS AGED 18 TO 20 IN THE ACADEMIC YEAR 2011/12

Table D1: Cross-tabulation of HESA measure and POLAR

	POLAR quintile 2 to 5 (%)	POLAR quintile 1 (%)	Total
HESA measure quintile 2 to 5	96.1	3.9	9,920
HESA measure quintile 1	66.0	34.0	1,385

Table D2: Cross-tabulation of HESA measure and IMD

	IMD quintile 2 to 5 (%)	IMD quintile 1 (%)	Total
HESA measure quintile 2 to 5	97.1	2.9	9,920
HESA measure quintile 1	47.1	52.9	1,385

Table D3: Geographic distribution of most disadvantaged students by local government district (2014) – Quintile 1 of HESA measure (%)

Belfast	24.6
Derry/Londonderry City and Strabane	17.1
Armagh City, Banbridge and Craigavon	11.2
Causeway Coast and Glens	9.2
Mid Ulster	9.1
Newry, Mourne and Down	8.3
Mid and East Antrim	5.2
Fermanagh and Omagh	4.3
Antrim and Newtownabbey	3.9
Lisburn and Castlereagh	3.6
Ards and North Down	3.5
Total	1,385

Table D4: Geographic distribution of most disadvantaged students by local government district (2014) - Quintile 1 of POLAR (%)

Belfast	45.3
Ards and North Down	11.2
Armagh City, Banbridge and Craigavon	9.2
Mid and East Antrim	7.5
Antrim and Newtownabbey	6.4
Derry/Londonderry City and Strabane	6.2
Lisburn and Castlereagh	5.6
Causeway Coast and Glens	4.4
Newry, Mourne and Down	3.0
Mid Ulster	1.1

Fermanagh and Omagh	0.0
Total	855

Table D5: Geographic distribution of most disadvantaged students by local government district (2014) - Quintile 1 of IMD (%)

Belfast	34.8
Derry/Londonderry City and Strabane	28.3
Newry, Mourne and Down	8.0
Armagh City, Banbridge and Craigavon	6.2
Mid Ulster	6.0
Causeway Coast and Glens	5.1
Fermanagh and Omagh	4.6
Mid and East Antrim	2.6
Antrim and Newtownabbey	1.6
Ards and North Down	1.6
Lisburn and Castlereagh	1.4
Total	1,020

Table D6: Distribution of quintile 1 students by NSSEC and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
NSSEC groups 1 or 2	18.2	21.5	17.9
NSSEC groups 3 to 8	58.7	56.3	59.3
Missing information	23.1	22.2	22.8
Total	1,385	855	1,020

Table D7: Distribution of quintile 1 students by parental education and measure of disadvantage

	HESA measure quintile 1	POLAR quintile 1	IMD quintile 1
Parent has HE qualification	17.7	21.1	19.3
Parent doesn't have HE qualification	33.5	33.6	32.9
Don't know	8.4	7.8	9.1
Information refused	38.0	35.2	37.0
No response given	2.3	2.2	1.7
Total	1,385	855	1,020



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