



23rd January 2020

Distribution of institution earnings before and after adjusting for region of residence

This experimental statistical release investigates how accounting for graduates' region of residence can influence the calculation of average graduate earnings outcomes for each higher education provider.

Figure 1 does this by comparing, for all higher education institutions (HEIs) in Great Britain, their raw median graduate earnings outcome (five years after graduation) with a median adjusted to control for differences in the regional destinations of their graduates. The HE institutions have been sorted by their regionally adjusted medians.

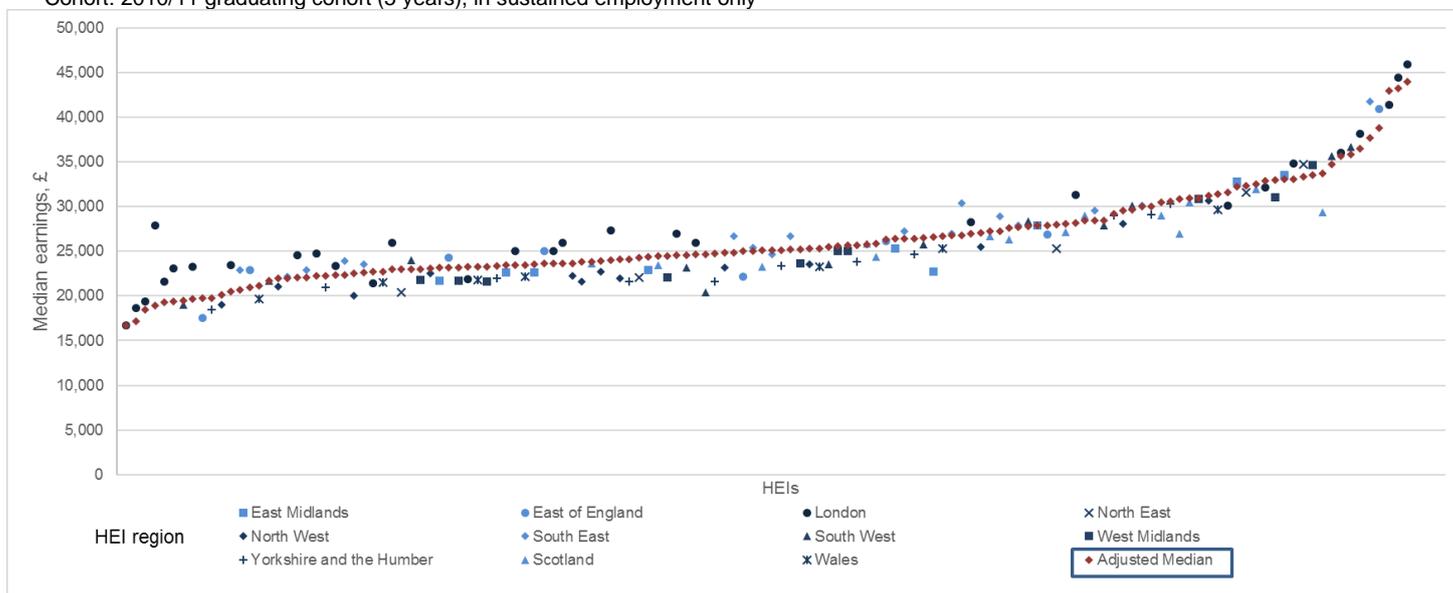
After adjusting for region, there is still variation in the median earnings between HE institutions, with 25% of institutions having average adjusted graduate earnings of £23,200 or below and 25% of institutions having adjusted graduate earnings of £28,500 or above.

However, at the individual institution level, controlling for regional destination can make a significant difference for some institutions; 16.9% of institutions see a change of 10% or more in their median earnings. The chart shows that for the majority of HE institutions in London, such an adjustment reduces their average outcomes, while institutions in the North West, Wales and Yorkshire and the Humber typically saw the biggest increases in earnings.

Figure 1: Institution level raw and regional adjusted median earnings, five years after graduation

Coverage: Matched UK domiciled first degree graduates from HEIs in Great Britain (GB).

Cohort: 2010/11 graduating cohort (5 years), in sustained employment only



It should be noted that the data presented here does not control for many other factors that can influence graduate outcomes e.g. prior attainment, subject studied and other characteristics. It should also be noted that a higher education will have a range of personal and societal benefits that extend beyond earnings, which by its nature are not captured in the statistics presented here.

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About this release

This experimental statistics publication provides additional analysis at provider level using recently obtained data on the geographical location of graduates in the 2016/17 tax year.

The main tables and underlying data can be found in the excel and csv workbooks accompanying this release.

Further details on the new regional data in LEO and LEO data/definitions used can be found in the Graduate outcomes (LEO): regional outcomes 2016 to 2017 publication on the [18th July 2019](#) and in the accompanying [methodology document](#) from previous HE LEO releases.

In future it is anticipated that the data in this release will be included in the Department's 'Subject by Provider' statistical release published in June each year.

Feedback

We welcome feedback on this analysis. You can email us at HE.LEO@education.gov.uk

A summary of the feedback received following the publication on the 18th July 2019 (Graduate Outcomes (LEO): Regional Outcomes, 2016 to 2017) and our response can be found in Annex B of this publication.

1. Introduction

In Great Britain the process of gaining a degree and then entering the labour market can be a cause of regional migration. While many choose to study and work in the region they grew up, for others obtaining a degree and subsequently moving into the labour market is associated with moving location. This is not an entirely random process; certain courses may only be available in certain areas; in moving to study in an area an individual may develop an affinity for that area and stay; or certain providers may be better at supporting entry into certain types of job that have a particular regional concentration.

Going to university therefore plays a role not just in increasing the overall skill levels of a country but also in the regional distribution of those skills. It also means that, as wages across different regions vary, this has the potential to influence the average earnings outcomes of different HE providers – those more likely to serve higher paying labour markets are more likely to see higher average outcomes than those that don't.

The geographic mobility associated with degree study and the influence of region on institutions' average earnings outcomes was explored in [Graduate outcomes \(LEO\): Regional outcomes 2016 to 2017](#),

published on the 18th July 2019. This used a newly developed version of LEO incorporating information on graduates' current region of residence.

In our previous publication we asked for views on ways in which the data might be presented so that users could make comparisons by provider and region. The feedback we received is summarised in Annex B.

Following this feedback we have decided to publish outcomes for all Government Office Regions by provider (rather than just London, region of provider and 'other' as originally proposed) so that users have greater flexibility in using the data. We will also, alongside median earning outcomes, publish provider outcomes reweighted as if the graduate destinations of each provider were reflective of the geographic distribution of all graduates.

Methodology

This experimental statistics publication provides new analysis using recently obtained data on the geographical location of graduates in the 2016/17 tax year (referred to as 'current region' in this publication) which has then been combined with the main LEO dataset.

The geographical location data is based on the latest address that DWP has recorded for each individual on their Customer Information System (CIS). The LEO dataset does not contain the actual address or postcode for each individual, we currently have data on the Government Office Region (GOR) and Local Authority District where the individual lives at the end of the 2016/17 tax year. In future this will be updated with data for previous tax years and will also be updated with each annual data feed.

The CIS is primarily updated when an individual notifies DWP or HMRC of a change of address or through the individual interacting with a tax or benefit system. Individuals who have not been matched to the CIS will not have geographical information. This does not have an adverse effect on the data analysis as 'unmatched' graduates are excluded from employment and earnings outcomes.

For those matched to CIS, address data is available in nearly all cases (over 99.8%), however for those who are not in receipt of benefits or contributing to the tax system then this information could be out of date. Even when contributing to the tax system, employee address is not a mandatory field in the data submitted to HMRC via employers HR systems. It is also possible that in the years soon after leaving university graduates may still use their parents address if they are moving frequently between rented accommodation. More work is needed to try and understand how big an impact this has on the address data held on CIS.

This publication concentrates on the same cohorts and providers contained in our June 2019 publication i.e. outcomes in 2016/17 for those who graduated 1, 3 and 5 years previously.

It should be noted that the data presented here is in its raw form, that is to say it does not control for the many things that can influence a graduates outcome beyond institution attended and region of residence e.g. prior attainment, subject studied and other characteristics. This is a very important caveat when comparing graduate salaries across providers. It should also be noted that a higher education will have a range of personal and societal benefits that extend beyond earnings, which by its nature are not captured in the statistics presented here.

2. Results

Within this release we provide data, for the first time, which shows graduates earnings outcomes by the provider they attended and the region they now live in. These are contained in the accompanying table 'provider by region'. The accompanying table contains data for Higher Education Institutions (HEIs) in Great Britain and Further Education Colleges (FECs) and Alternative Providers in England. The graphs and tables in this summary document only refer to HEIs as adjusted median earnings could only be calculated for HEIs (see Annex A for more detail).

Earnings outcomes across HE institutions based on current region

Figure 2 provides a summary of this new data – showing the distribution of institutions' average earnings outcomes by region of graduates' current residence. This is shown for earnings five years after graduation.

These distributions have been obtained from the median earnings of graduates currently in each region for each institution. They are not to be confused with the earnings distributions of graduates of a given current region. For example, when looking at the distribution for London, this shows that when looking at graduates currently living in London grouped by the institution they graduated from, half of the institutions had median earnings of less than £29,400. Figure 3 provides further guidance on how to interpret the chart in Figure 2.

Figure 2 shows that within each region there is a wide variation in the median earnings outcomes of each HE institution. It also shows that some current regions have a wider range of median earnings between institutions' outcomes than others. For example, all HE institutions whose graduates currently reside in Scotland had median earnings five years after graduation of between £8,100 and £50,500. By contrast, the median earnings for those institutions whose graduates currently reside in the North East showed significantly less variation, ranging from £17,300 to £40,200.

When looking at HE institutions whose graduates now live in London, half had median earnings of £29,400, five years after graduation. This was the highest across all current regions. In Yorkshire and the Humber this figure was less, at £23,650.

Figure 2 would generally suggest that within region differences are greater than those across region.

Note: these are raw outcome figures – they do not control for differences in subject taken, attainment and other student characteristics. The degree of variation seen will be a product of all these factors, not just variations in how providers support future earnings outcomes.

Figure 2: Median earnings across HE institutions and current region

Coverage: Matched UK domiciled first degree graduates from GB HEIs.

Cohort: 2010/11 graduating cohort (5 years), in sustained employment only

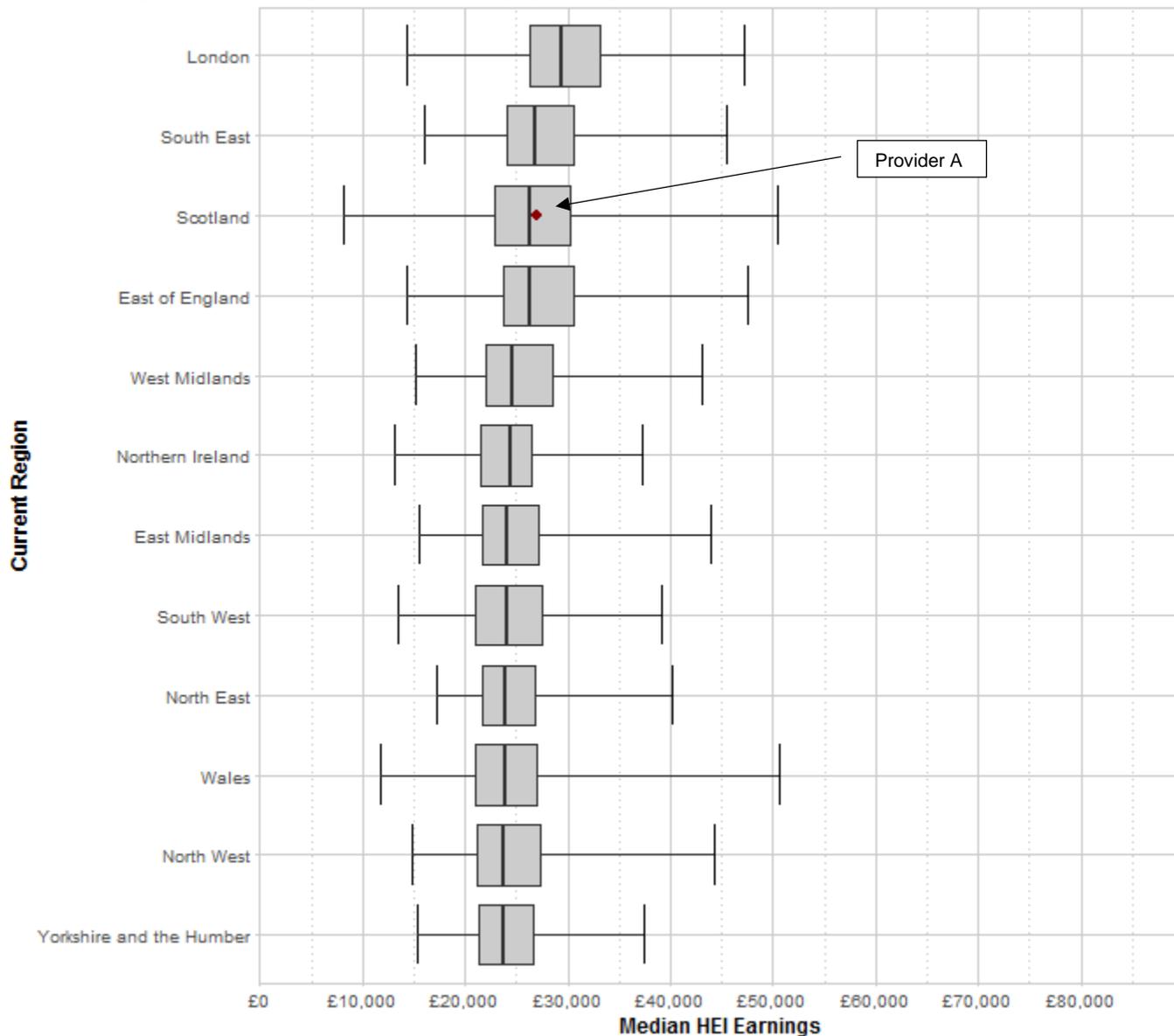
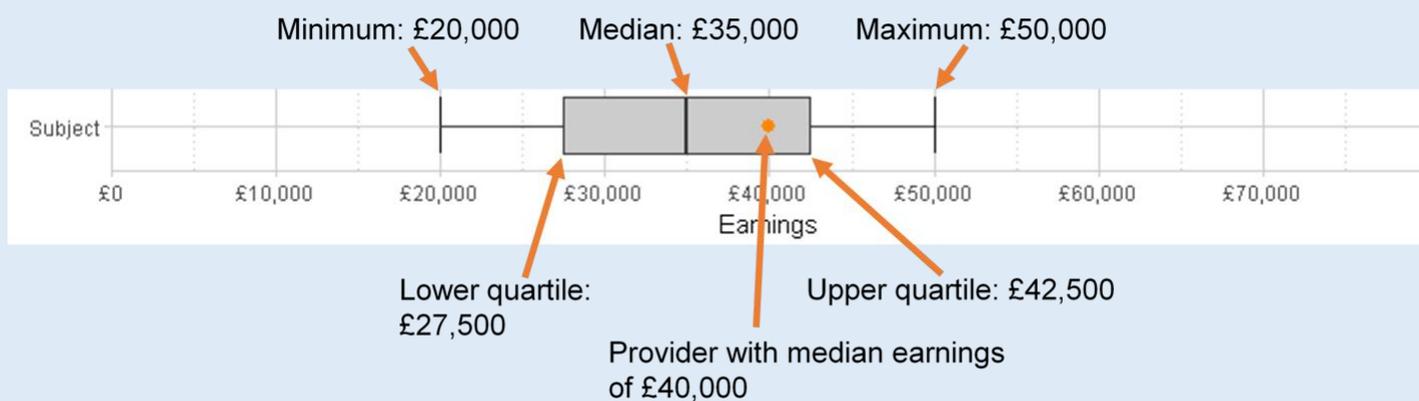


Figure 3: How to read earnings boxplots in this publication



The median earnings is calculated by ranking all institutions' by the median annualised earnings of their graduates in each region and taking the value at which half of providers fall above and half fall below. In particular, the median displayed here is not the same as the median for all graduates (as institutions will have different numbers of graduates now living in different areas).

The lower quartile earnings is calculated by ranking all institutions' median annualised earnings in each region and taking the value at which three quarters of providers fall above and one quarter fall below.

The upper quartile earnings is calculated by ranking all institutions' median annualised earnings in each region and taking the value at which one quarter of providers fall above and three quarters fall below.

Earnings outcomes across HE institution based on institution region and current region

For each region in Figure 2 the distribution of individual HE institutions can also be plotted by the region where the HE institution is located. This is done, by way of illustration, in figures 4 and 5, for graduates currently living in the North East and London, five years after graduation. As well as seeing the variation that exists within and between the regions, it also shows how the number of HE institutions with graduates in each region varies – with more institutions having graduates living in London than the North East¹.

¹ Institution medians are only displayed if the data has not been suppressed to protect confidentiality. There are graduates from Wales living in the North East but no institutions from this area had enough graduates included in the earnings calculations to allow publication of their data.

Figure 4: Median earnings across HEIs five years after graduation in current region, North East.

Coverage: Matched UK domiciled first degree graduates from GB HEIs.
 Cohort: 2010/11 graduating cohort (5 years), in sustained employment only

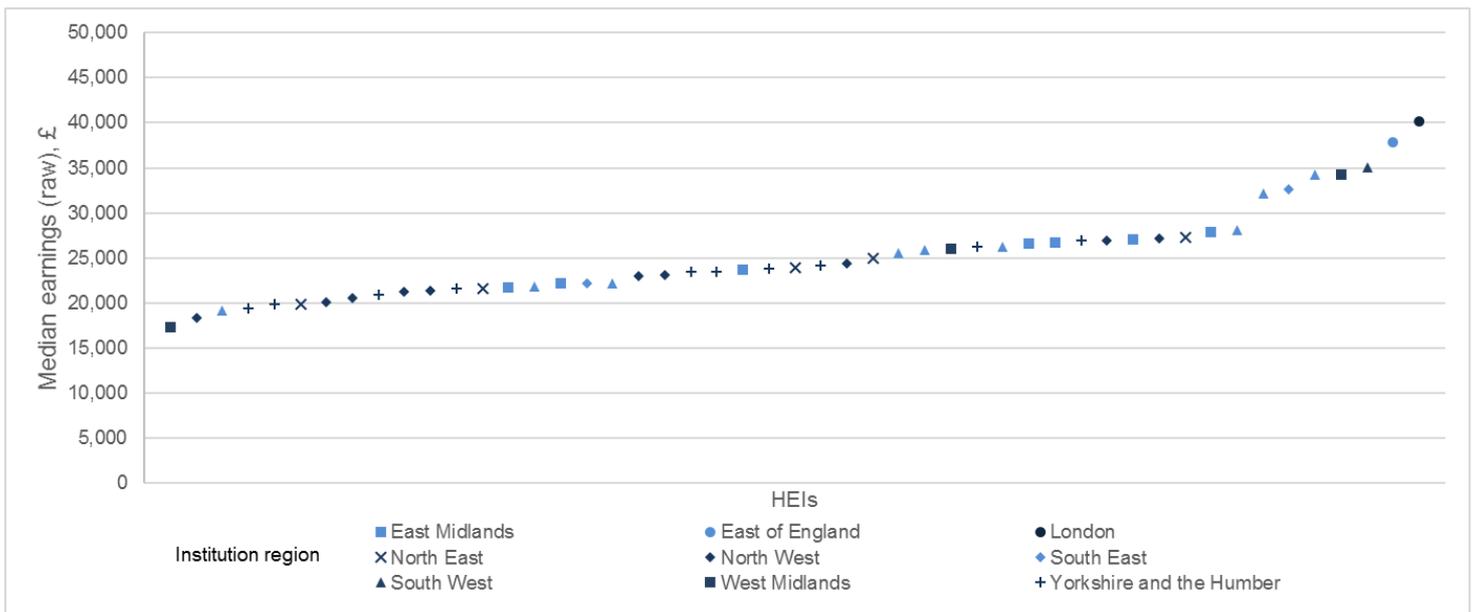
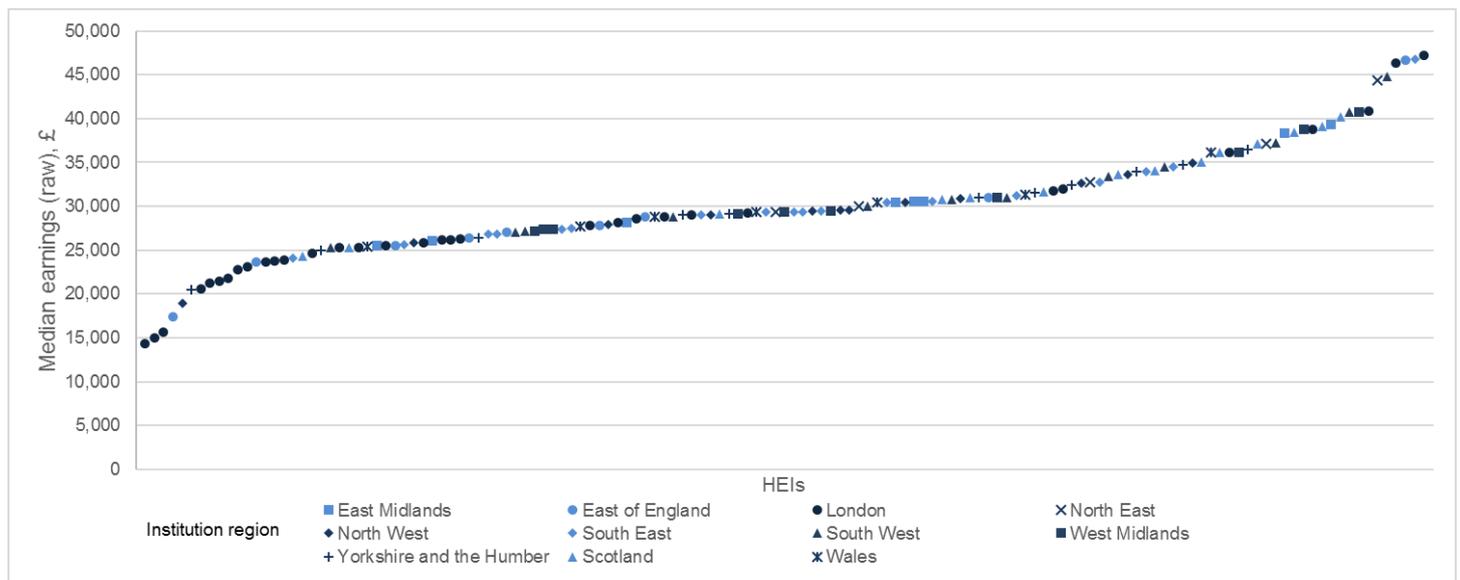


Figure 5: Median earnings across HEIs five years after graduation in current region, London.

Coverage: Matched UK domiciled first degree graduates from GB HEIs.
 Cohort: 2010/11 graduating cohort (5 years), in sustained employment only



3. Impact of region at institution level

Our [previous publication](#) on 18th July 2019 showed that different regions have different average earnings levels and that this has an influence on institutions average earnings outcomes, even after controlling for other factors (e.g. variation in subject and student characteristics).

To quantify the impact of region, Figure 6 reweights the graduate population of each institution so that it matches the overall regional distribution of all graduates and looks at the difference this has on the

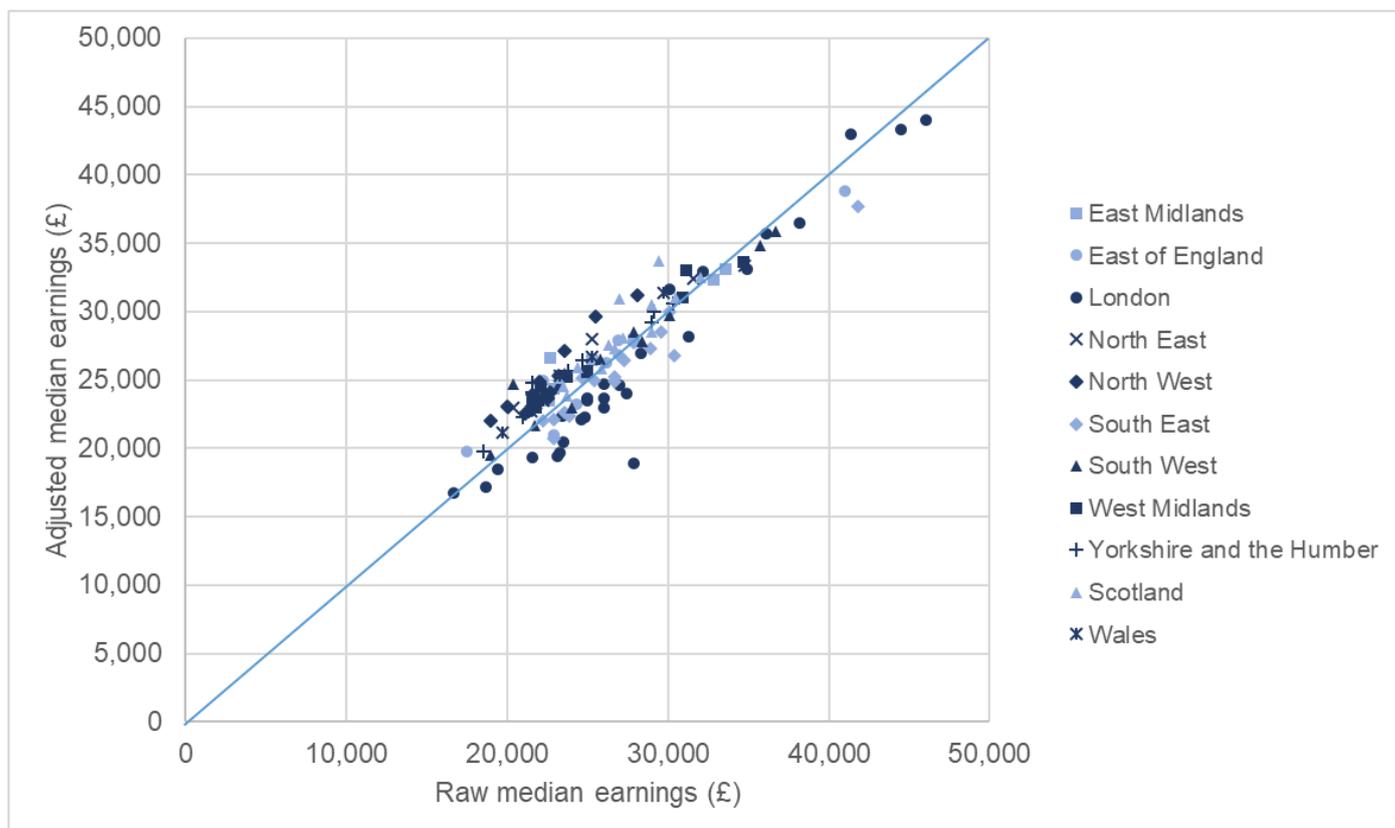
institutions average earnings outcomes five years after graduation². The methodology behind this calculation is given in more detail in Annex A.

If an institution falls below the blue line, then their actual median earnings are higher than they would be compared to if their graduates were distributed around the country in the same pattern as all graduates nationally.

We can see that many institutions are located close to the line – meaning the regional destination of their graduates has little impact on their raw outcome. But for some, the effect is more significant and there are some consistent differences. For example, it can be seen that institutions in London, the South East and East of England are more likely to fall below the blue line (in London 57% of institutions have an actual median that is over 5% more than the adjusted median – see table 1). Similarly, we see large proportions of institutions in the North East, North West, Yorkshire and Humber, West Midlands and Wales who have actual medians more than 5% less than their medians once adjusted to be representative of the typical distribution of graduates in Great Britain.

Figure 6: Median institution earnings compared to adjusted median institution earnings

Coverage: Matched UK domiciled first degree graduates from GB HEIs.
Cohort: 2010/11 graduating cohort (5 years), in sustained employment only



² This chart was produced in our previous publication but is now extended to cover all of Great Britain rather than just England. We have also published the underlying data in the accompanying csv file.

Table 1: Difference between actual institution median and adjusted institution median

Coverage: Matched UK domiciled first degree graduates from GB HEIs.

Cohort: 2010/11 graduating cohort (5 years), in sustained employment only

Note: Some totals may not sum to 100 due to rounding.

Institution region	Actual median over 5% more than adjusted median	Actual median within 5% of adjusted median	Actual median over 5% less than adjusted median
	%	%	%
North East	0	40	60
North West	0	23	77
Yorkshire and The Humber	0	27	73
East Midlands	0	67	33
West Midlands	0	40	60
East of England	38	38	25
London	57	37	7
South East	41	59	0
South West	0	75	25
Scotland	0	71	29
Wales	0	0	100
Total	20	45	35

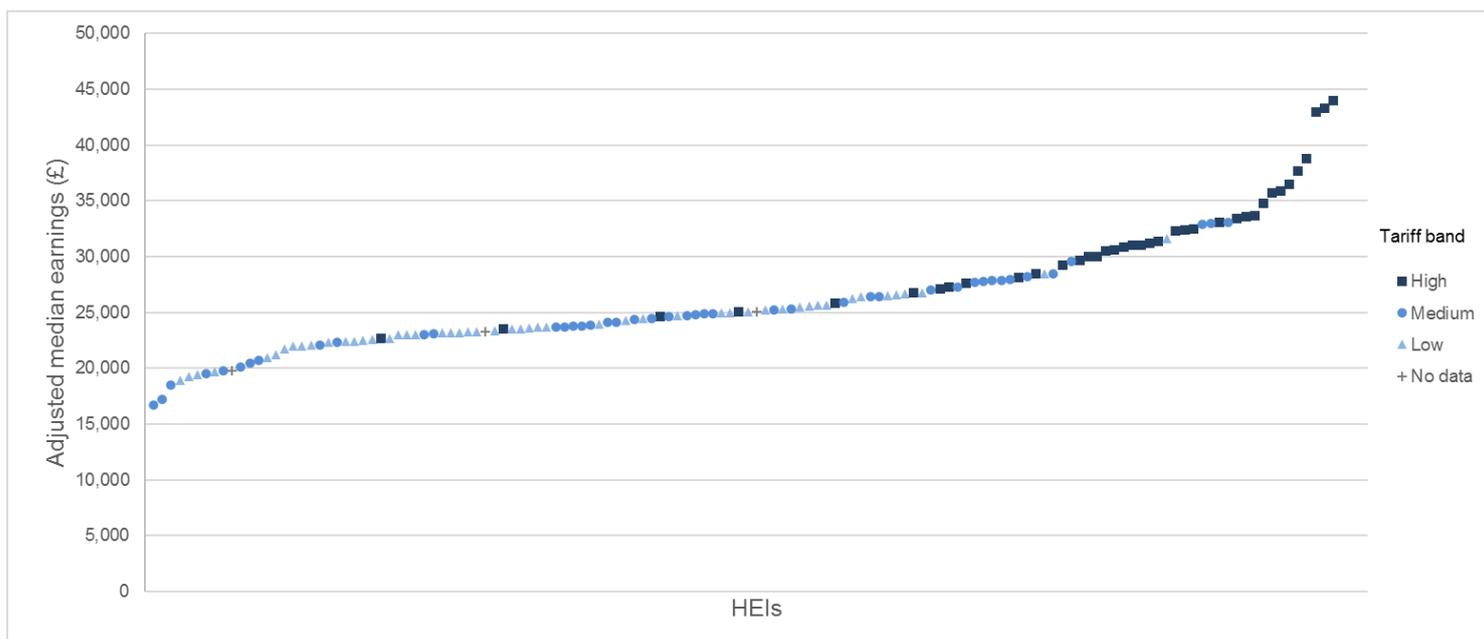
4. Adjusting for region within tariff band

This section uses the tariff band of each institution to compare the impact of adjusting for region within each tariff band³. When sorting the adjusted median earnings of each HE institution, high tariff HE institutions are generally to the right hand side of the graph, although there are some exceptions which tend to be the specialist arts and drama institutions. There is more overlap between medium and low tariff HE institutions (see figure 7).

³ The tariff bands are taken from the '[Widening participation in higher education: 2019](#)' publication. The tariff band for the most up to date academic year has been used as the coverage was best at this time point. Whilst the majority of HEI's stay within the same tariff band from one year to the next there is movement between the categories so it's possible some HEI's would have been in a different category if the tariff band was available for the year in which the 2010/11 graduating cohort entered the institution.

Figure 7: Adjusted Median Earnings by HE institution tariff

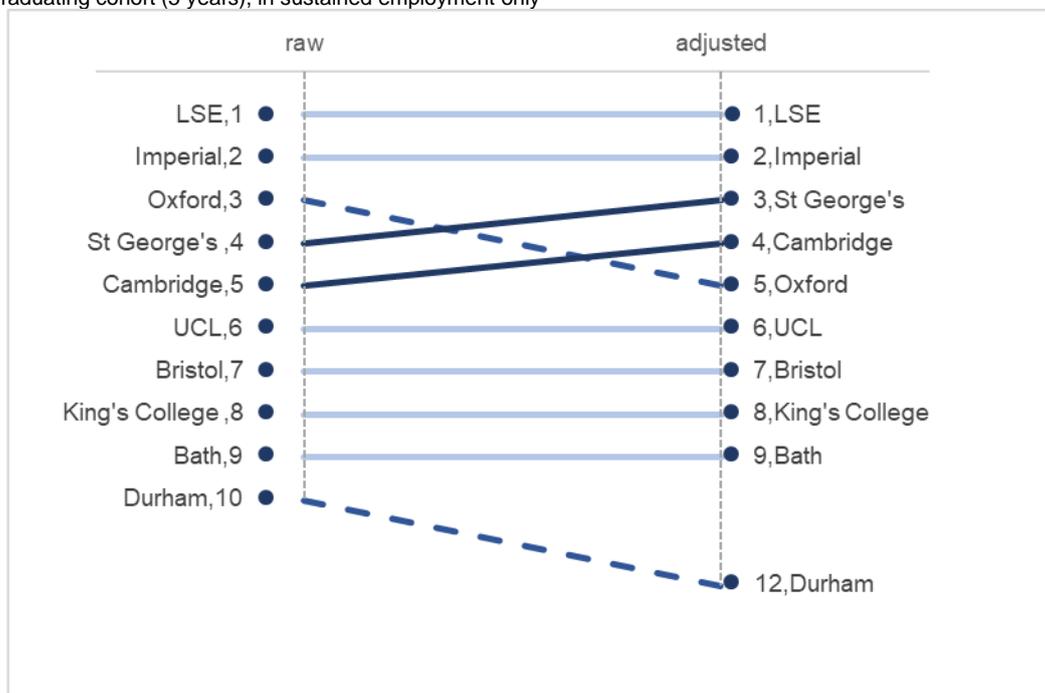
Coverage: Matched UK domiciled first degree graduates from GB HEIs.
 Cohort: 2010/11 graduating cohort (5 years), in sustained employment only



The impact of adjusting for region varies between the tariff bands, for high tariff institutions there is little change to the ordering when comparing 'raw' median earnings to 'regionally adjusted' median earnings (see figure 8). Of the top 10 institutions (based on raw earnings), 9 are still in the top 10 when looking at the adjusted earnings.

Figure 8: Difference in institution ordering when comparing 'raw' median earnings and regionally adjusted median earnings (high tariff institutions)⁴

Coverage: Matched UK domiciled first degree graduates from 'high tariff' GB HEIs.
 Cohort: 2010/11 graduating cohort (5 years), in sustained employment only



⁴ Institution names have been abbreviated/shortened in figures 7, 8 and 9 to aid readability. Full names are contained in the csv/excel files accompanying this release.

However, as you move further down the distribution, where there is less difference in the raw median earnings between institutions, then adjusting for region has more of an impact on the ordering (see figures 9 and 10). For medium tariff institutions 7 are in the top 10 for both measures and for low tariff institutions 5 are in the top 10 for both.

Figure 9: Difference in institution ordering when comparing 'raw' median earnings and regionally adjusted median earnings (medium tariff institutions)

Coverage: Matched UK domiciled first degree graduates from 'medium tariff' GB HEIs.
 Cohort: 2010/11 graduating cohort (5 years), in sustained employment only

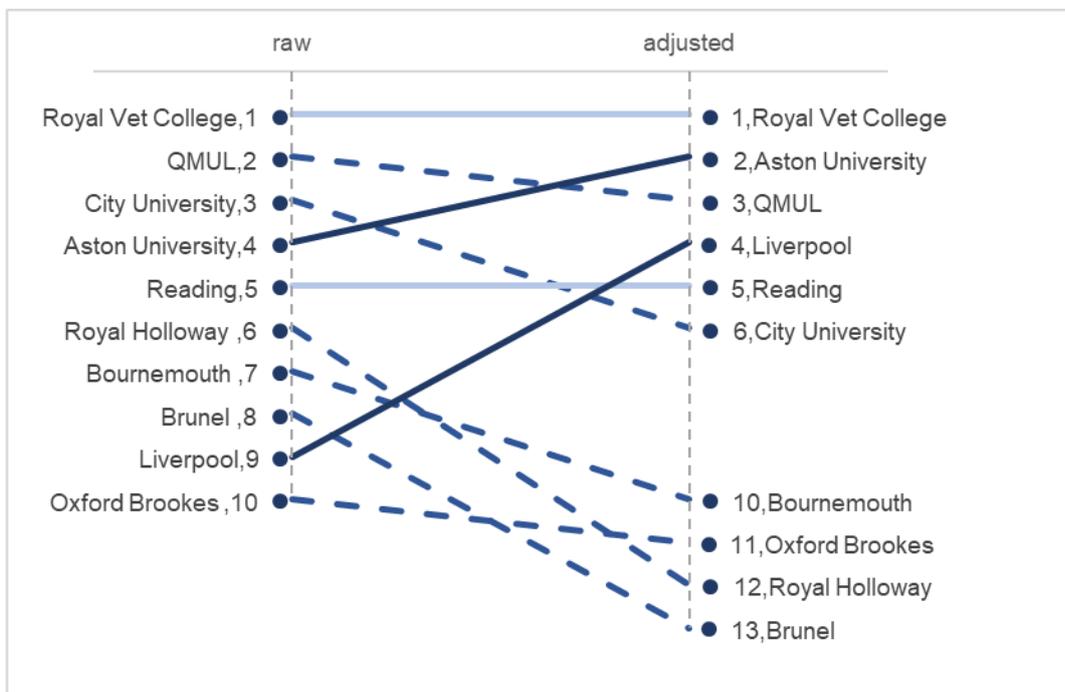
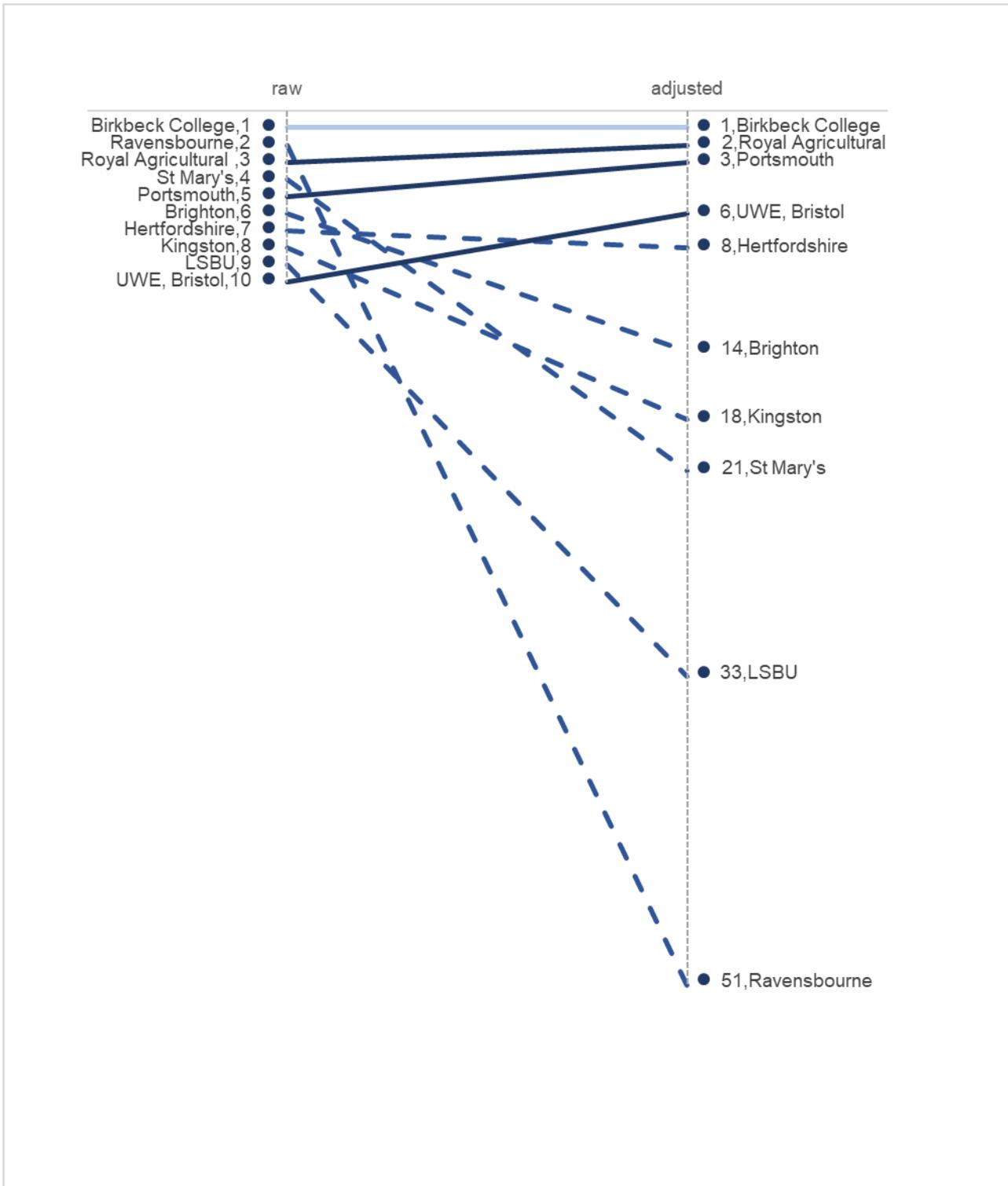


Figure 10: Difference in institution ordering when comparing 'raw' median earnings and regionally adjusted median earnings (low tariff institutions)

Coverage: Matched UK domiciled first degree graduates from 'low tariff' GB HEIs.
 Cohort: 2010/11 graduating cohort (5 years), in sustained employment only



5. Annex A – Adjusted Median Methodology

The adjusted median is calculated by weighting each university's graduates so that the distribution of graduates in that HE institution is the same as that nationally. For example, if university A has 3% of its graduates living in the East Midlands compared to 7% nationally then graduates in the East Midlands at that university will be given a weighting of 2.3. This adjusted median can then be compared to the actual median of the institution to give an indication of how the regional distribution of their graduates influences their institution level figures.

For this calculation to produce meaningful results then each HE institution should have a reasonable number of graduates in each of the regions. However, as this is not the case for some HE institutions the adjusted medians have been suppressed in these cases. For this reason, we have only been able to produce adjusted medians for HE institutions as the majority of Further Education Colleges have graduates distributed across a small number of regions.

To maximise the number of institutions for which we are able to publish data we combined the regions into 6 larger groups based on the similarity of their overall earnings figures. This resulted in the following groups that formed the basis of our weighting calculations:

Government Office Region	Number of graduates in earnings calculation	Median earnings	Group
London	47,040	30,700	1
South East	28,335	27,400	2
East of England	18,105	26,800	3
Scotland	15,170	26,500	3
West Midlands	16,880	24,400	4
South West	15,960	24,300	4
East Midlands	13,170	24,000	4
North West	23,165	23,400	5
Yorkshire and the Humber	15,500	23,400	5
North East	7,150	23,200	6
Wales	8,655	23,000	6
Northern Ireland	1,275	22,800	6

It should be noted that whilst this method can produce adjusted median earnings that are either higher or lower than the actual raw median earnings for each institution, this methodology is likely to result in more institutions having higher adjusted median earnings than raw median earnings. This is because the national distribution of graduates is concentrated in London and the South-East and when applying this weighting to all institutions, graduates in these areas (who on average will be higher earners) are likely to account for a higher proportion of the institutions adjusted earnings data.

6. Annex B – Responses to Feedback

Overall we received five responses to our call for feedback (some responses were from organisations representing multiple parties). This section summarises the issues raised and outlines our initial response.

- 1. Users would prefer to see a complete regional breakdown as opposed to the catch-all ‘Leave (for non-London)’ category. This is due to variations in earnings between other regions and interest in the movement of graduates around the country after leaving the provider.**

We will be publishing data for the individual regions. This would result in an increase in the number of suppressed cells (to protect confidentiality) particularly for Further Education Colleges (FEC's). However, we agree that there are benefits in making more detailed regional data available where possible.

- 2. One respondent expressed concern about publishing the overall provider total, given this figure is unadjusted for the regional distribution and other graduate characteristics that influence earnings.**

We still favour publishing the overall provider level data as this is the simplest figure to understand and we believe it is useful for many users. It is also consistent with the practice for many other HE outcomes data, for example student satisfaction and continuation rates. Furthermore, our analysis to date has not ruled out that graduate destination is independent of the employment prospects experienced by some graduates after attending that provider. For example, some providers might be better at supporting students into certain types of occupation or labour market, and these might have a regional concentration. However, as our analysis has shown, the regional destination of graduates can influence providers' average earnings outcomes and for this reason we believe it important to provide data by provider and graduate's region of residence. This should give users the ability to construct measures most relevant to the comparison they want to draw.

- 3. It would be useful to see the overall weighted total for each provider.**

We had not originally considered publishing the weighted total as we thought prospective students may not understand this measure. However, our publications are also used by academic and analytical organisations who might find this data useful and the weighted total also helps mitigate the issue raised in point 2.

- 4. Sub-regional data would be useful as the Local Authority District data published showed there are differences in earnings within a region.**

We haven't looked at this. We will continue to explore possible clusterings where it would be sensible to combine areas but the need to suppress cells with small numbers and publish areas that are meaningful to users may mean this is not possible at provider level.

We will be receiving data at census output area so it might be possible to group these areas into quintiles/deciles to create comparison areas where there is less variation than you see within a region. However, if the data are to be used by prospective students this has a significant downside of producing data that is not meaningful e.g. an individual might have an idea that they want to live in London so have an interest in likely earnings in this region but earnings for those living in 'quintile 1' is not necessarily such a meaningful geography.

- 5. One respondent was not keen on the calculation of the ‘difference from average’ column⁵ as they felt this did not take into account the fact that those moving to a region have on average higher salaries than those staying in that region.**

We have decided to remove the ‘difference from average’ column. As we have published tables showing the median salaries for those who move/stay in each regional combination then users can pick the most relevant figure to compare to. We also didn’t want to focus overly on providers with large positive/negative values in this column.

- 6. Cost of living data would add useful context to the published figures.**

While we can see the value of this, we are not currently aware of regional data that would provide a reliable indication of this. This is something we will continue to explore.

- 7. Some respondents would like to see more use of contextual data, particularly around socio-economic status (SES) and expressed an interest in exploring how this linked to the likelihood of moving region after graduation.**

We have not split the data in this provider level publication further to account for socio economic status. Breaking down the data by both region and SES would result in a large number of cells with very small numbers of graduates in.

We will, however, look to publish further analysis exploring the link between SES and regional movement and use this to inform future changes to the provider level publication.

7. Experimental Official Statistics

Experimental statistics are new official statistics that are undergoing evaluation. These statistics are being published as experimental statistics in order to involve users and stakeholders in their development and as means to further improve the use of the new regional LEO data in the future.

The Department has a set of [statistical policies](#) in line with the Code of Practice for Official Statistics.

8. Get in touch

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⁵ See page 18 from the publication on 18th July 2019 <https://www.gov.uk/government/statistics/graduate-outcomes-leo-regional-outcomes-2016-to-2017>



Department for Education

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download <https://www.gov.uk/government/collections/statistics-higher-education-graduate-employment-and-earnings>

Reference: Graduate Outcomes (LEO): Region by Provider, 2016 to 2017



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