

Research insight from HESA, part of Jisc

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Link to HESA research: <https://www.hesa.ac.uk/insight/28-11-2023/getting-real-about-graduate-earnings>

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## Getting Real About Graduate Earnings

### Summary

- To date, published Graduate Outcomes salary data has referred to earnings without taking into account the effects of inflation.
- High levels of inflation in recent years have adversely affected spending power, meaning that a focus on reported earnings paints an incomplete picture of graduate financial circumstances.
- We have therefore analyzed trends in real earnings (i.e., pay taking into account inflation) for graduates responding to the first four years of the Graduate Outcomes survey.
- Analysis of real earnings by occupation suggests that graduates in professional and managerial roles have seen the greatest decline in real wages in recent years.
- These findings from the Graduate Outcomes survey align with data collected from employers in which wage growth appears to have been slowest in professional and managerial occupations.<sup>1</sup>
- This is likely to be driven by the high proportion of graduates in professional and managerial occupations working in the education and health industries, which are among those experiencing the greatest declines in real wages.
- Relatively large falls in real earnings in the education and health industries could be due to a high proportion of jobs in these industries being in the public sector, where pay rises have been relatively low in recent years.
- To test this hypothesis, we used NHS employment as a proxy for public sector employment in the health industry and found that that NHS workers have experienced greater declines in real wages than non-NHS health workers, who are more likely to be employed in the private sector.

### Introduction

The Graduate Outcomes survey collects data on a range of different metrics. The survey asks graduates about what they are doing, how they feel about their activities, and how they feel about their lives more generally; for those graduates who are working, the survey also asks what kind of work they are doing and how much they are paid. All of these measures contribute in different ways to our understanding of graduate success.

Although we have seen a growing interest in less tangible outcomes in recent years, employment status, level of employment, and salary continue to be of particular interest to many users of

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<sup>1</sup> See

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2022> and

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2021>.

graduate outcomes data. Higher education is often viewed both as a driver of economic growth and, for individual graduates, as a stepping stone on the way to good jobs and financial stability.<sup>2</sup> Graduates typically earn more than non-graduates, and the existence of this 'graduate premium' is often used to support arguments about the value for money delivered by higher education.<sup>3</sup>

Given the ongoing policy focus on the value of higher education, previous HESA research on graduate salaries has investigated trends in the graduate premium. An [initial study](#), carried out in partnership with Warwick University, compared two cohorts born twenty years apart, and found that the graduate premium for graduates born in 1990 was less than that enjoyed by graduates born in 1970. A [subsequent study](#) looked at the impact of degree classification on this trend, finding that the decrease in the graduate premium was particularly marked for graduates with a lower second class degree or below.

While research into the graduate premium helps us understand how graduates are doing relative to non-graduates, it is also important to consider how graduates are doing overall in the current economic climate. Our statistical outputs have so far focused on nominal wages, which represent graduate salaries without taking into account the effects of inflation. As prices rise, however, the same nominal wages do not go so far towards paying for goods and services; if the cost of housing goes from £10,000 to £15,000, for example, a graduate earning £20,000 will no longer have as much left over after covering their housing costs. When we have published data on graduate salaries, our figures therefore have not reflected the changes in purchasing power that come with rising prices.

Since the start of 2021, inflation has risen rapidly, from 0.9% in January 2021 to a peak of 9.6% in October 2022; the most recent Office for National Statistics data shows that, as of October 2023, inflation stood at 4.7%.<sup>4</sup> While nominal earnings have risen over this period, pay rises in most sectors have not kept pace with increasing costs.<sup>5</sup> Many households are struggling to keep up with rising prices, with the cost of living consistently occupying the top spot when survey participants are asked about the most important issues facing the UK today. As they finish their degrees and move into the workforce, the high cost of living is prompting some graduates to rethink their plans about where to live and what kinds of jobs to consider.<sup>6</sup>

In light of the policy focus on the cost of living in the current economic climate, we felt that it was time for us to examine trends in real earnings in the Graduate Outcomes data. Section V1.5 of the Code of Practice for Statistics states that 'Statistics producers should consider whether to produce new statistics to meet identified information gaps'.<sup>7</sup> As real and nominal earnings in many sectors have diverged, our previous practice of publishing only nominal earnings data leaves a gap in the information available about graduate earnings fifteen months after qualifying. By investigating the trajectory of real earnings for graduates since the start of the Graduate

<sup>2</sup> On the link between higher education and economic growth, see Holland *et al.* (2013): [BIS RESEARCH PAPER NO. 110: The relationship between graduates and economic growth across countries \(publishing.service.gov.uk\)](#). Funding and regulatory bodies across the UK include graduate employment in their strategic priorities; see, e.g., [Skills and employability | HEFCVW](#), [Our strategy - Office for Students](#), [Our strategic plan \(sfc.ac.uk\)](#).

<sup>3</sup> The [Department for Education's Graduate labour market statistics](#) publication for the 2022 calendar year shows that the median nominal salary premium for graduates over non-graduates was £11,500.

<sup>4</sup> Inflation based on the Consumer Prices Index including owner occupiers' housing costs (CPIH). See [CPIH ANNUAL RATE 00: ALL ITEMS 2015=100 - Office for National Statistics \(ons.gov.uk\)](#).

<sup>5</sup> See recent reports from the Resolution Foundation ([Feeling poor and working more - again • Resolution Foundation](#)) and the Office for National Statistics ([Professional and scientific industry the only one where pay continues to match rising prices - Office for National Statistics \(ons.gov.uk\)](#)).

<sup>6</sup> See [Rising cost of living is influencing how young people think about their careers | ISE](#) and also <https://www.theguardian.com/business/2022/aug/06/uk-graduates-cost-of-living-crisis-job-prices-rent>.

<sup>7</sup> See [V1: Relevance to users – Code of Practice for Statistics \(statisticsauthority.gov.uk\)](#)

Outcomes survey, we hope to shed some light on how graduates are faring financially in a changing economic climate.

## Data and methodology

In the Graduate Outcomes survey, which is administered approximately fifteen months after graduation, salary data is collected both for those graduates who report that they are in paid work for an employer and for those who are self-employed or freelancing. In the question about salary, graduates are asked to report the annual earnings (before tax) of their main employment during census week.

We examined four years of Graduate Outcomes data, covering graduates who finished their studies from the 2017/18 academic year up to and including the 2020/21 academic year. For each year of the survey, we restricted our sample to graduates who reported that they were in full-time employment in the UK, with salaries paid in British pounds. Given our focus on earnings, we excluded those in unpaid or voluntary work. We also remove a small proportion of salary data at the top and bottom end of the distribution, where salaries are more likely to be reported with error. See Appendix A for further detail on our treatment of salary outliers.

The salary which a graduate reports to the Graduate Outcomes survey represents their nominal earnings; their real earnings are their pay after accounting for inflation. To calculate real earnings, we use a Consumer Price Index, which measures the speed at which prices are rising or falling relative to a particular time period, which is referred to as the base year. The base year is assigned a price index value of 100, and values for subsequent years are calculated based on changing prices relative to the base year.

Consumer Price Indices are based on the changing prices of a typical basket of goods and services. Let us assume, for example, that a basket of goods and services consisting of housing and food cost £10,000 in our base year and £15,000 in a subsequent year. Since £15,000 is 150% of £10,000, the price index for the second year will be 150.

For this analysis, we use the Consumer Prices Index including owner occupiers' housing costs (CPIH), which is the preferred measure of inflation for the Office for National Statistics.<sup>8</sup> The CPIH uses 2015 as a base year, meaning that the CPIH assesses price changes relative to 2015 prices. We calculate real earnings from reported graduate salaries using the CPIH according to the following formula:

$$\text{Real earnings} = \frac{\text{Nominal earnings}}{\text{Price Index}/100}$$

In our calculations, we use the relevant Price Index for the point at which a graduate reported their salary. For example, a 2017/18 graduate who finished their course between May and July of 2018 will have been surveyed circa 15 months later, from September to November of 2019, and we therefore use the 2019 CPIH value to calculate their real earnings.

| Year of graduation | Year of reported salary | Price Index (CPIH) |
|--------------------|-------------------------|--------------------|
| 2017/18            | 2019                    | 107.8              |
| 2018/19            | 2020                    | 108.9              |
| 2019/20            | 2021                    | 111.6              |

<sup>8</sup> For further detail on Consumer Price Indices, see [Consumer Price Indices: A brief guide - Office for National Statistics](#)

|         |      |       |
|---------|------|-------|
| 2020/21 | 2022 | 120.5 |
|---------|------|-------|

By our formula, a graduate from the 2020/21 academic year earning a nominal salary of £30,000 fifteen months later in 2022 will be receiving the following real earnings in 2015 terms:

$$\text{Real earnings} = \frac{\pounds 30,000}{120.5/100} = \pounds 24,896$$

## Key findings

When we look at mean nominal earnings fifteen months after graduation, we see that mean earnings have increased from £27,052 for 2017/18 graduates to £29,699 for 2020/21 graduates (Figure 1). This represents an increase in nominal earnings of nearly 10% over the four years of our data.

### Figure 1 - The Change in Mean Nominal/Real Earnings Over Time | HESA

When we look at real earnings over the same time period, however, a different story emerges. When they were surveyed in 2019, graduates from the 2017/18 academic year were earning, on average, £25,095 per year indexed to 2015 prices. Three years later in 2022, graduates from the 2020/21 academic year were earning only £24,647 in terms of 2015 prices. This represents a decrease in real earnings of nearly 2%. We see this decrease in real earnings only in the most recent year of our data; real earnings for graduates from the 2018/19 and 2019/20 academic years were very slightly higher than those for 2017/18 graduates. In 2022, however, rising prices meant that, even though graduates from the 2020/21 cohort were receiving higher wages from their employers, their purchasing power was lower when compared with previous graduate cohorts.

In order to understand whether the trend in real earnings which we saw at the population level applied equally to all graduates, we split our sample according to the kind of work graduates were doing. We first grouped our sample by [Standard Occupational Classification \(SOC\)](#), a classification system which organizes jobs into nine major groups according to the level of skill required to do a job. The majority of graduates in our study are employed in the top three major groups, with 3.7% working in managerial roles, 59% working in professional roles, and 20.6% working in associate professional roles.

When we look at graduate earnings split by SOC major group, we see that the decline in real earnings which we saw in our whole population was driven in large part by decreases in real earnings for graduates employed in the higher skill groups in which most graduates are employed (Figure 2). Graduates from the 2020/21 academic year with occupations classified as 'Managers, directors and senior officials' saw a 5% decline in real earnings compared with graduates from 2019/20 working in the same major group. Similarly, 2020/21 graduates working in 'Professional occupations' saw a 4% decline in real earnings compared to the previous year. For graduates working in lower skilled occupations, however, real earnings have remained stable or even increased slightly, with 2020/21 graduates working in 'Caring, leisure and other service occupations' seeing a 1% increase in real earnings and graduates working in 'Elementary occupations' seeing a 5% increase.

### Figure 2 - The Change in Mean Nominal/Real Earnings Over Time by Standard Occupational Classification and Skill Marker | HESA



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It seemed likely that the different trends in real earnings for graduates in different SOC major groups would reflect trends in earnings in different industries over the same time period. For example, 53% of graduates in the 'Elementary occupations' SOC major group work in the accommodation and food service industries, which have seen labour shortages driving strong wage growth in recent years (Appendix B, Table 1). By contrast, many graduates in professional roles work in industries such as education and healthcare, which have seen workers struggling with below-inflation pay rises.<sup>9</sup>

In order to test our hypothesis that trends in real earnings by SOC were indicative of trends in real earnings for graduates working in different industries, we next split our sample by industrial sector, using the [Standard Industrial Classification \(SIC\)](#) system. When we look at trends in real earnings by industry, we see considerable variation, as expected (Figure 3).<sup>10</sup> For example, 2020/21 graduates working in 'Accommodation and food service activities' see a 7% increase in real earnings compared to 2019/20 graduates working in the same industry; 2020/21 graduates working in 'Wholesale or retail trade; repair of motor vehicles or motorcycles' see a smaller, 2% increase in real earnings. On the other hand, real wages for graduates working in the 'Human health and social work activities' and 'Education' industries have declined, with 2020/21 graduates in those industries seeing declines of 3% and 4%, respectively, when compared with 2019/20 graduates working in the same industries.

### [Figure 3 - The Change in Mean Nominal/Real Earnings Over Time by Standard Industrial Classification | HESA](#)

While occupation and industry are different aspects of employment, they are not completely disconnected, and the relationships between the two can help us to understand the trends in real earnings which we see in our population. Within some SOC major groups, certain industries are much more prominent than others (Appendix B, Table 1). In particular, 28% of graduates in professional roles work in the 'Human health and social work activities' industry, and another 25% work in the 'Education' industry. Among graduates working in caring, leisure and other services roles, 41% work in the 'Human health and social work activities' industry and another 33% work in the 'Education' industry.

Although they are both dominated by the health and education industries, the professional and caring SOC groups show different trends in real earnings, as discussed above (Figure 2). We therefore considered what might be driving the different outcomes for graduates working in these two SOC groups. Analysis from the Office for National Statistics has suggested that some of the industries with the lowest wage growth in recent years have been industries with a high proportion of public sector workers.<sup>11</sup> Although our dataset does not directly allow us to identify workers in the public sector, we can identify those who work for the NHS, and we can use this information as a proxy measure of public sector employment in the 'Human health and social work activities' industry. When we look at 2020/21 graduates in professional occupations working in the 'Human health and social work activities' industry, we see that 91% work for the NHS; of 2020/21 graduates in caring, leisure and other services roles in the same industry, 45% work for the NHS (Appendix B, Table 2).

<sup>9</sup> For a discussion of recent trends in wage growth (or lack thereof) in different industries, see [Professional and scientific industry the only one where pay continues to match rising prices - Office for National Statistics \(ons.gov.uk\)](#).

<sup>10</sup> In Figure 3, we have suppressed data for graduates working in the 'Activities of extraterritorial organisations and bodies' due to very low numbers of graduates working in this industry.

<sup>11</sup> See [Professional and scientific industry the only one where pay continues to match rising prices - Office for National Statistics \(ons.gov.uk\)](#).



When we look at real earnings over time for graduates working in the 'Human health and social work activities' industry, the trend varies depending on whether or not graduates are employed by the NHS (Figure 4). For those graduates who do not work for the NHS, we see a 1% decline in real earnings between 2019/20 graduates and those who finished their degrees in the 2020/21 academic year. For those who work for the NHS, however, we see a 3% decline in real earnings.

[Figure 4 - The Change in Mean Nominal/Real Earnings Over Time Within The Human Health and Social Work Activities Industry. | HESA](#)

Taken together, the different trends in real earnings for graduates in the health industry by NHS employment status and the different rates of NHS employment by SOC major group can shed some light on the trends in real earnings for graduates in different SOC groups. Although both the professional occupations group and the caring, leisure and other services group contain a high proportion of health workers, health workers in professional occupations are more likely to be working for the NHS than those in caring roles (Appendix B, Table 2). The high proportion of NHS workers – who have recently been involved in high-profile disputes around below-inflation pay rises – in the professional SOC group is likely to play a part in explaining the fall in real earnings experienced by that group. Health workers in caring roles, on the other hand, are more likely to be employed in the private sector, where there have been higher pay increases in recent years.

Although our data does not allow us to distinguish between public and private sector employment in the education industry, it seems likely that a similar pattern holds true. The majority of professional roles in education are likely to belong to teachers, many of whom work in the public sector. Caring roles in the education sector, on the other hand, are likely to be in childcare and early years education, much of which takes place in the private sector.<sup>12</sup>

## Concluding remarks

High levels of inflation in the UK – and around the world – in recent years have contributed to an increasing divergence between real and nominal earnings for many workers. Our examination of real earnings data based on the Graduate Outcomes survey has shown that graduates working in different industries and occupations have experienced different trends in real earnings over the four years of survey data.

Graduates working in professional occupations have seen the biggest decreases in real earnings, while graduates working in lower skilled occupations have continued to see their real earnings increase. It seems likely that this discrepancy is driven in part by the large numbers of graduates in professional roles who are employed in the public sector, where real terms pay has struggled to keep up with inflation. Since growth has remained strongest in the occupational groups in which relatively few graduates are employed, it is possible that this may play a part in explaining the gradual decline of the graduate premium identified in previous HESA research.<sup>13</sup>

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<sup>12</sup> Based on analysis of the roles listed in the SOC2020 hierarchy: [CascotWeb \(warwick.ac.uk\)](http://CascotWeb(warwick.ac.uk))

<sup>13</sup> In our March 2020 study ([Return-to-degree-by-class-20200310.pdf\(hesa.ac.uk\)](#)), we note that since 2014 non-professional occupational groups have seen the strongest wage growth. For further detail, see [Employee earnings in the UK – Office for National Statistics \(ons.gov.uk\)](#)

, which shows stronger wage growth in lower skilled occupational groups such as sales and customer service and elementary occupations.

Two of the four years of data included in this study were collected during the COVID-19 pandemic, while the government furlough scheme was in place.<sup>14</sup> While furloughed graduates responding to the Graduate Outcomes survey were given guidance instructing them to report themselves as employed, they did not receive guidance as to whether to report their furloughed salary or the salary they would have been earning had they not been furloughed.<sup>15</sup> This lack of guidance is likely to have caused some uncertainty in our data, particularly in industries such as accommodation and food service which were largely shut down through most of the pandemic.

Our most recent year of data, on graduates who finished their courses in the 2020/21 academic year, takes us close to the end of the 2022 calendar year in terms of reported earnings. In 2022, public sector pay disputes were at a peak, with prominent strikes on the part of workers in the health, education, and transport industries.<sup>16</sup> While industrial action continued into 2023, many public sector workers have reached pay settlements over the course of 2023. After these settlements, it is possible that the divergence between real and nominal earnings in industries dominated by the public sector might decrease if we were to update our analysis in future years.

Despite these limitations, our analysis provides a more nuanced picture of graduate salary data than that which is available looking at nominal earnings alone. Although nominal earnings have continued to grow, real earnings have lagged behind nominal earnings for many graduates in the most recent cohort, meaning that the purchasing power of their salaries fifteen months after graduation has decreased. Our preliminary investigations, using NHS employment as a proxy for public sector employment in the health industry, have suggested that graduates working in the public sector are particularly likely to be experiencing a decline in real earnings. Further research – including the development of a more comprehensive means of identifying public sector employment in our data – could deepen our understanding of how the graduate experience may be changing under challenging economic circumstances.

## Appendix A: Treatment of salary outliers

At the lower extreme, we exclude graduates who report an annual salary below the UK national minimum wage for those aged 21-24 which applied during the census period. We base our calculations of the minimum wage on the assumption that a graduate in full-time work will be working 30 hours per week, 52 weeks out of the year. Some 2018/19 and 2019/20 graduates will have been furloughed on 80% pay during the COVID-19 pandemic; for these cohorts of graduates, we exclude graduates earning less than 80% of the applicable national minimum wage.

| Year of graduation | Minimum wage date       | Minimum hourly wage | Salary cut off                |
|--------------------|-------------------------|---------------------|-------------------------------|
| 2017/18            | April 2018 – March 2019 | £7.38               | £11,513                       |
| 2018/19            | April 2019 – March 2020 | £7.70               | £9,610 (80% of minimum wage)  |
| 2019/20            | April 2020 – March 2021 | £8.20               | £10,233 (80% of minimum wage) |
| 2020/20            | April 2021 – March 2022 | £8.36               | £13,042                       |

<sup>14</sup> For details on the Coronavirus Job Retention Scheme, see the House of Commons Library briefing paper: [FAQs: Coronavirus Job Retention Scheme \(parliament.uk\)](#).

<sup>15</sup> More detail about the guidance which we issued around furlough during the pandemic can be found in the relevant section of the Graduate Outcomes user guide: [Comparability and time series | HESA](#).

<sup>16</sup> [The impact of strikes in the UK - Office for National Statistics \(ons.gov.uk\)](#)

At the upper extreme, we excluded graduates reporting salaries of more than £85,000, who represent the top 1% of earners. This aligns with the practice of the Office for National Statistics in recent publications on earnings.<sup>17</sup>

## Appendix B: Additional tables

Table 1 - The distribution of the industries in which graduates work by Standard Occupational Classification | HESA

Table 2 - The proportion of graduates working in human health and social work activities who are employed within/outside the NHS | HESA

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<sup>17</sup> See, e.g., [Ethnicity pay gaps - Office for National Statistics \(ons.gov.uk\)](#).