The economic and social impact of The Open University in 2018-19

Final Report for The Open University

LE London Economics

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Table of Contents

Table of Contents

Executive Summary

London Economics were commissioned to analyse the economic and social impact of The Open University across the United Kingdom in 2018-19. To capture the economic impact of the University, we generated estimates of the economic benefits associated with the University's **formal teaching and learning** activity associated with the 2018-19 cohort of UK-domiciled Open University students. We also estimated the economic impact associated with a wide range of **informal learning activity** delivered by The Open University via online channels including **OpenLearn, FutureLearn**, and the **OU YouTube channel**. In addition, we assessed the impact of The Open University's **research activities**, the impact of **educational exports** generated by the University's overseas students, as well as the **direct, indirect and induced** impact associated with the University's physical and digital footprint. Finally, on top of these purely economic impacts, there are a multitude of non-quantifiable **societal impacts** associated with the University's activities generated at home and abroad, which were identified through a survey of Open University alumni.

The aggregate economic impact of The Open University

The total economic impact associated with The Open University's activities in 2018-19 across the UK economy stood at **£2,771 million**.

Table 1 Aggregate economic impact of The Open University's activities in the UK in 2018-19 (£m and % of total)

Type of impact	£m	%
Impact of teaching and learning	**£1,673.0m**	**60%**
Impact on students	£1,050.4m	38%
Impact on the Exchequer	£619.4m	22%
UK validation activities	£3.2m	0%
Impact of informal teaching and learning	**£24.2m**	**1%**
OpenLearn	£5.2m	0%
OU YouTube Channel	£0.2m	0%
FutureLearn	£18.8m	1%
Impact of research	**£71.8m**	**3%**
Net direct impact	£5.9m	0%
Spillover impact	£65.9m	2%
Impact of exports	**£18.2m**	**1%**
Tuition fee income	£13.7m	1%
Non-tuition fee income	£2.2m	0%
Income from validated programmes	£2.2m	0%
Direct, indirect and induced impacts	**£983.4m**	**36%**
Direct impact	£437.5m	16%
Indirect and induced impacts	£545.9m	20%
Total economic impact	**£2,771m**	**100%**

Note: All estimates are presented in 2018-19 prices, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding.
Source: London Economics' analysis

In terms of the components of this aggregate economic impact, the value of the University's **formal teaching and learning** activities stood at approximately **£1,673 million** (**60%** of total), while the University's **informal teaching and learning** activities accounted for **£24 million** (**1%**). In terms of **research** activity, the analysis identified an economic contribution to the UK economy of approximately **£72 million** (**3%**). The economic contribution associated with the **direct, indirect and induced impact** associated with the University's expenditures throughout the UK economy was

estimated at **£983 million** (**36%**). The remaining **1%** of identified economic impact (**£18 million**) was associated with the University's contribution to **educational exports**.

Compared to the University's total operational costs of approximately **£450 million** in 2018-19[1], the total economic contribution of The Open University's activities to the UK in the 2018-19 academic year was estimated to be **£2,771 million**, which corresponds to a benefit to cost ratio of **6.2:1**. This is considerably higher than the ratios associated with many other higher education institutions (e.g. the average benefit-to-cost ratio among Russell Group institutions stands at only approximately **5.5:1**[2]).

Aggregate economic impact of The Open University – broken down by Home Nation location

Excluding those elements or strands of activity that cannot be split by Home Nation (i.e. research and educational exports (amounting to a total of approximately **£90 million**)), the total impact on the UK economy associated with The Open University's activities in **England** was estimated to be approximately **£2,239 million**. This corresponds to approximately **84%** of the total attributable economic impact generated by the University.

At least in part as a result of the scale and range of the University's operations, The Open University's activities in Scotland, Wales and Northern Ireland also generate significant benefits to the UK economy. In particular, the analysis identified that the economic impact to the UK economy associated with The Open University's activities in **Wales** was **£174 million** (**6%**); the impact generated by the OU's activities in **Scotland** stood at **£217 million** (**8%**); and the impact associated with OU activities in **Northern Ireland** was estimated at **£50 million** (**2%**).

Table 2 Aggregate economic impact of The Open University's activities in the UK in 2018-19, by Home Nation (£m)

Type of impact	England	Wales	Scotland	Northern Ireland
Impact of teaching and learning	**£1,339.0m**	**£140.6m**	**£160.4m**	**£33.1m**
Impact on students	£833.0m	£94.9m	£101.2m	£21.3m
Impact on the Exchequer	£502.8m	£45.7m	£59.2m	£11.8m
UK validation activities	£3.2m	-	-	-
Impact of informal teaching and learning	**£20.7m**	**£1.0m**	**£2.0m**	**£0.6m**
OpenLearn	£4.4m	£0.2m	£0.5m	£0.1m
OU YouTube Channel	£0.2m	£0.0m	£0.0m	£0.0m
FutureLearn	£16.0m	£0.8m	£1.5m	£0.5m
Impact of research				
Impact of exports				
Direct, indirect and induced impacts	**£879.5m**	**£32.1m**	**£55.0m**	**£16.8m**
Direct impact	£392.5m	£14.4m	£23.1m	£7.5m
Indirect and induced impacts	£487.0m	£17.7m	£32.0m	£9.2m
Total economic impact	**£2,239.1m**	**£173.6m**	**£217.4m**	**£50.4m**

Note: All estimates are presented in 2018-19 prices, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding. Gaps arise where a given type of impact could not be disaggregated across the different Home Nations.
Source: London Economics' analysis

[1] Including depreciation, and any expenditures incurred by the University outside the UK, but excluding one-off non-cash expenditure relating to USS pension deficit provisions.
[2] See London Economics (2017).

The impact of The Open University's formal teaching and learning activities

The analysis of the impact of the University's formal teaching and learning activities estimates the **enhanced employment and earnings benefits** to graduates, and the **additional taxation receipts** to the Exchequer associated with higher education qualification attainment at The Open University[3]. The analysis is adjusted for the characteristics of the **44,800** UK-domiciled students who started a qualification or credit-bearing module at the University in the 2018-19 academic year.

Incorporating both the costs and benefits to students, the analysis suggests that the **net graduate premium** achieved by a representative student in the 2018-19 cohort completing a **part-time first degree** at the OU (with GCE A-Levels as their highest level of prior attainment) is approximately **£55,000** (in 2018-19 money terms, on average across men and women studying with the OU anywhere in the UK). Taking account of the costs and benefits to the public purse, the analysis indicates that the corresponding **net Exchequer benefit** achieved by representative students completing a part-time first degree at the OU stands at **£29,000**.

Table 3 Impact of the OU's formal teaching and learning activities associated with the 2018-19 cohort (£m), by type of impact, beneficiary and domicile/location of study

Type of impact and beneficiary	Domicile/location of study				
	England	Wales	Scotland	Northern Ireland	Total
Students	**£833.0m**	**£94.9m**	**£101.2m**	**£21.3m**	**£1,050.4m**
'Traditional' prior attainment	£384.8m	£39.7m	£54.1m	£11.4m	**£490.0m**
'Non-traditional' prior attainment	£448.2m	£55.3m	£47.1m	£9.9m	**£560.4m**
Exchequer	**£502.8m**	**£45.7m**	**£59.2m**	**£11.8m**	**£619.4m**
'Traditional' prior attainment	£186.9m	£11.4m	£24.4m	£4.8m	**£227.6m**
'Non-traditional' prior attainment	£315.8m	£34.2m	£34.8m	£7.0m	**£391.8m**
UK validation activities	**£3.2m**	-	-	-	**£3.2m**
Total	**£1,339.0m**	**£140.6m**	**£160.4m**	**£33.1m**	**£1,673.0m**

Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding. 'Non-traditional' prior attainment includes individuals in the 2018-19 cohort who enrolled in OU qualifications/modules with qualifications at GCSE or below (i.e. RQF Level 2 or below) as their highest level of prior attainment (including no formal qualifications). 'Traditional' prior attainment includes individuals who enrolled with qualifications of at least A-levels or equivalent (i.e. at RFQ Level 3 or above) as their highest level of attainment. ***Source: London Economics' analysis***

The impact of The Open University's formal teaching and learning activities in 2018-19 was estimated at £1.673 billion.

The net graduate premiums and net Exchequer benefits (by students' gender, study mode, study level, domicile/location of study and prior attainment, and adjusted for the subject mix of the cohort) were combined with information on the number of students starting qualifications at the University in 2018-19, and expected completion rates. The analysis suggests that the aggregate economic impact generated by The Open University's teaching and learning activities associated with the 2018-19 cohort stood at approximately **£1.673 billion**. Approximately

[3] The estimation of the net graduate premiums and net Exchequer benefits is based on a detailed econometric analysis of the Labour Force Survey. The analysis considers the impact of higher education qualification attainment on earnings and employment outcomes; however, as no information is specifically available on the particular higher education institution attended, the analysis is not specific to Open University alumni. Rather, the findings from the econometric analysis are adjusted to reflect the characteristics of The Open University cohort in 2018-19 (for instance in terms of mode of study, level of study, subject mix, domicile, gender, average age at enrolment, duration of qualification and average completion rates).

£1,050.4 million (**63%**) of this impact is accrued by students undertaking qualifications at the University, and **£619.4 million** (**37%**) is accrued by the Exchequer (and a total of **£3.2 million** associated with the OU's validation activities in the UK).

The impact of The Open University's informal teaching and learning activities

The analysis of the impact of the University's informal teaching and learning activities considers the benefits to the wider population from the OU's education content provided on the OU's **YouTube channel**, and the wide range of open online courses provided through **OpenLearn** and **FutureLearn**.

The impact of the OU's informal teaching and learning activities in 2018-19 was estimated at £24.2 million.

To estimate the economic impact of these informal learning activities, our analysis focuses on the opportunity cost of time devoted to informal learning with The Open University. As such, we calculate the total time devoted to learning with each of the above informal learning channels in the 2018-19 academic year (separately in each Home Nation) and combine this with the estimated value of leisure time per hour (estimated at one-third of the average hourly wage rate, which follows the standard approach adopted across central government). The estimated value of leisure in each Home Nation stands at **£5.66** in England, **£4.79** in Wales, **£5.39** in Scotland, and **£4.83** in Northern Ireland. The analysis identified that **44,000 hours** were dedicated to viewing content on the OU's YouTube channel in 2018-19, **936,000** hours were spent engaged with OpenLearn courses, and in excess of **3.4 million hours** of study were completed with FutureLearn short courses[4].

The aggregate economic impact generated by The Open University's informal teaching and learning activities in 2018-19 stood at approximately **£24.2 million**. Broken down by Home Nation, of this total, **£20.7 million** was estimated to be generated in England (**85%** of total), **£1.0 million** in Wales (**4%**), **£2.0 million** in Scotland (**8%**) and **£0.6 million** in Northern Ireland (**2%**). In terms of the source of impact, the majority of this impact (**£18.8 million, 77%**) was associated with the wide range of courses offered on FutureLearn, while **£5.2 million** (**22%**) and **£0.2 million** (**1%**) were associated with the courses offered on OpenLearn and the content published on the University's YouTube channel, respectively.

Table 4 Impact of informal education provision by the OU, £m in 2018-2019, by location of study

Type of impact	England	Wales	Scotland	Northern Ireland	Total
OpenLearn	£4.4m	£0.2m	£0.5m	£0.1m	**£5.2m**
YouTube	£0.2m	£0.0m	£0.0m	£0.0m	**£0.2m**
FutureLearn	£16.0m	£0.8m	£1.5m	£0.5m	**£18.8m**
Total	**£20.7m**	**£1.0m**	**£2.0m**	**£0.6m**	**£24.2m**

Note: All values are presented in 2018-19 prices, rounded to the nearest £0.1 million, and may not add up precisely to the totals indicated due to rounding. ***Source: London Economics' analysis***

[4] For FutureLearn, note that our analysis only includes the hours of study of individuals who *completed* short courses, rather than all learners enrolled on FutureLearn short courses. The real figure for hours of study, inclusive of learners who take part in a short course but do not complete (as well as learners studying degree courses on FutureLearn) is therefore higher than the figure quoted in this report.

The impact of the University's research activities

To estimate the **direct** economic impact associated with The Open University's research activities, we used information on the total research-related income accrued by the University in 2018-19, including **research grants and contracts** (e.g. provided by the UK Research Councils and charities; UK government, Local Authorities and health and hospital authorities; UK industry, or EU and non-EU sources) and quality related **recurrent research grant funding** provided by Research England.

The analysis indicates that the total research-related income from these sources accrued by The Open University in 2018-19 stood at **£22.5 million**. The majority of this income was received through recurrent research grant funding provided by Research England (**£8.8 million, 39%**), from other UK research grants and contracts (**£4.7 million, 21%**), and from the UK Research Councils (**£4.0 million, 18%**). Another relatively large share (**£3.5 million, 16%**) was received from EU sources (i.e. government bodies and organisations).

To arrive at the net impact of the University's research activities, we deduct the public costs of funding the University's research (including the recurrent research grants and funding from the UK Research Councils and UK central government bodies). Together, these public costs amounted to **£16.5 million** in 2018-19, implying a **net direct research impact** of **£5.9 million** generated by the University in 2018-19.

Existing econometric research[5] suggests that there is strong evidence of the existence of **productivity spillovers** from public investment in university research. Our analysis implies a spillover multiplier of approximately **2.94** associated with The Open University's research income (in the 2018-19 academic year). In other words, **every £1 million invested in research at the University results in an additional economic output of £2.94 million across the UK economy**.

The impact of The Open University's research activities in 2018-19 was estimated at £71.8 million.

Combining the **net direct economic value** of the University's research activities (**£5.9 million**) with the resulting **productivity spillovers** accrued by other organisations across the UK (**£65.9 million**), the total economic impact of research conducted by The Open University in 2018-19 was estimated to be **£71.8 million**.

Table 5 Total impact of The Open University's research activities in 2018-19, £m

Type of impact	£m
Net direct research impact	£5.9m
Spillover impact	£65.9m
Total	**£71.8m**

Note: All values are presented in 2018-19 prices, and are rounded to the nearest £0.1 million. Totals may not add up precisely due to rounding. ***Source: London Economics' analysis***

[5] See Haskel and Wallis (2010), and Haskel et al. (2014).

The University's contribution to educational exports

Overseas trade, or international trade, is the sale of goods and services across international borders. With Open University qualifications being an attractive option for many overseas students, this form of higher education delivery represents a tradeable activity with imports and exports like any other tradeable sector.

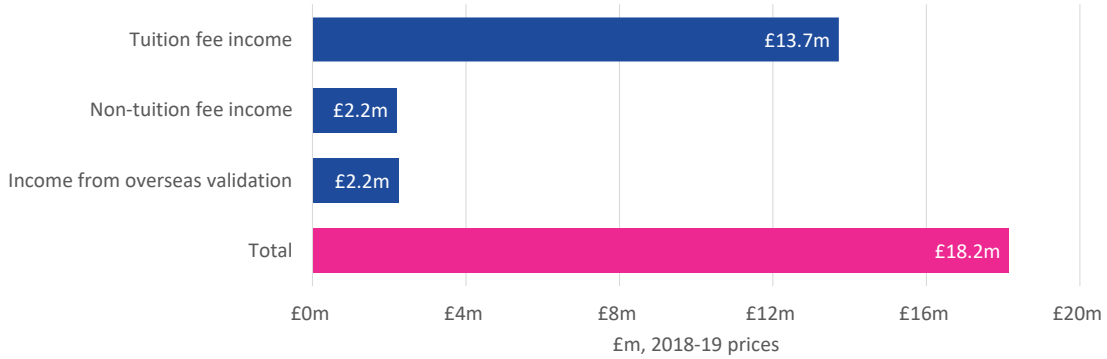
To generate an estimate of The Open University's contribution to educational exports, we estimated the income associated with The Open University's cohort of international offshore students undertaking qualifications or credit bearing modules in 2018-19. This income incorporated international students' **tuition fees and non-tuition fee spending** over the course of their studies. We also took account of The Open University's income generated from its **overseas validation activities** in 2018-19.

There were a total of **2,565** international offshore students who started higher education qualifications or stand-alone modules at The Open University in 2018-19. Of these students, **1,250 (49%)** were domiciled within the European Union, and **1,315 (51%)** were studying with The Open University from outside the European Union.

The total export income generated by The Open University's activities in 2018-19 was estimated at £18.2 million.

Combining the estimates of tuition fee income and non-tuition fee income associated with the 2018-19 cohort of international offshore students studying with the OU, and the income associated with the OU's overseas validated programmes, the analysis indicates that the **total export income** generated by The Open University in 2018-19 stood at **£18.2 million**[6]. Of this total, approximately **£13.7 million (76%)** was associated with the tuition fee income accrued by The Open University from international students in the 2018-19 offshore cohort, **£2.2 million (12%)** was associated with these international students' non-tuition fee expenditures in the UK, and the remaining **£2.2 million (12%)** was generated by OU validated programmes offered by non-UK partner institutions.

Figure 1 Total contribution of The Open University to education exports in 2018-19, by source of impact (£m)



Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values (for tuition fee income and non-tuition fee income only), and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding.
Source: London Economics' analysis

[6] As we focus specifically on the contribution of The Open University to the UK economy, this estimate does not include the economic benefits associated with learning and qualification attainment that might be accrued by overseas students in their own countries.

The direct, indirect and induced impact of the University's activities

The Open University's physical and digital footprint supports jobs and promotes economic growth throughout the UK economy. This is captured by the **direct, indirect and induced impact** associated with the University's expenditures.

In 2018-19, The Open University employed **5,690** full-time equivalent employees[7], and incurred a total of **£437.5 million** in operational costs throughout the UK (including **£302.0 million** in staff related costs and **£135.5 million** in non-staff costs)[8].

The impact of The Open University's expenditure on the UK economy in 2018-19 stood at £983.4 million, supporting 11,865 FTE jobs across the UK.

The total direct, indirect and induced impact on the UK economy associated with the University's expenditures in 2018-19 was estimated at **£983.4 million**, supporting a total of **11,865** full-time equivalent jobs.

Disaggregating this figure by Home Nation (based on the location of The Open University's expenditures and staff), **£879.5 million** of the total direct, indirect and induced effects arises from the University's expenditures incurred in England, **£32.1 million** from expenditure in Wales, **£55.0 million** from expenditure in Scotland and **£16.8 million** from expenditure in Northern Ireland.

In terms of employment, **10,650 FTE jobs** were created as a result of The Open University's activities in England, **435 FTE jobs** from activities in Wales, **570 FTE jobs** from activities in Scotland and **210 FTE jobs** from activities in Northern Ireland.

Table 6 Direct, indirect and induced impact (£m and # of FTE jobs supported) on the UK economy associated with the OU's expenditures in 2018-19, by location of expenditure

Type of impact	England	Wales	Scotland	Northern Ireland	Total
Output (£m)	£879.5m	£32.1m	£55.0m	£16.8m	**£983.4m**
Employment (FTE jobs)	10,650	435	570	210	**11,865**

Note: Breakdown by Home Nation should be interpreted as the direct, indirect and induced effect on the UK as a whole originating from expenditure/employment of the OU in that particular Home Nation. All monetary estimates are presented in 2018-19 prices and rounded to the nearest £0.1m. The numbers of FTE jobs supported are rounded to the nearest 5. Totals may not add up precisely due to rounding.
Source: London Economics' analysis

The Open University's social impacts

In addition to the economic impacts associated with skills and qualification acquisition, education has a transformative effect on recipients' lives. These wider benefits include **improvements in health and well-being outcomes; social capital and cohesion; intergenerational transmission of skills; improved social mobility; the subsequent acquisition of further learning and qualifications; and improved self-confidence, self-esteem and quality of life**. Although these outcomes clearly have significant societal

[7] This excludes any non-UK staff, as well as staff on atypical contracts.
[8] Note that this excludes **£6.1 million** in expenditures incurred outside of the UK, as well as **£6.7 million** in depreciation costs from the University's other operating expenses, as it is assumed that these are not relevant from a procurement perspective (i.e. these costs are not accounted for as income by other organisations). In addition, these operating costs exclude one-off non-cash expenditure relating to USS pension deficit provisions, amounting to **£109.9 million**.

value, it is almost impossible to assign a monetary value in any robust way. Therefore, we do not attempt to monetise these wider impacts, but rather demonstrate the depth of the impact of learning at The Open University on graduates' jobs, lives, and prospects. To assess these wider impacts of The Open University on its students and society at large, we conducted an **online survey among the University's alumni** (achieving complete responses from a total of **983** alumni).

Although we present the aggregate results across all alumni, the analysis was undertaken separately for those undertaking formally recognised qualifications as well as alumni who undertook standalone credit-bearing modules. **There was a very limited difference in outcomes between the different groups of learners, illustrating the substantial social benefits associated with any form of study at The Open University.** It is also the case that compared to similar analyses undertaken for other higher education institutions with predominantly younger and more 'traditional' student bodies, the results are very similar across all measures.

Respondents were asked about whether they felt that their **career prospects and working lives** had improved as a result of their Open University qualification or module, where:

- **62%** of respondents reported that their **career prospects** had improved since completing their studies; **57%** reported that they had increased their level of **job satisfaction**; and **42%** reported that their **pay and promotion prospects** had improved. In addition, **40%** of respondents said that their job had **involved more responsibility**; **38%** had **achieved better job security**; **32%** were now in a job that **better suited their skills and circumstances** in a different company (with **22%** achieving the same result in the same company); and **12%** had **set up their own business** or **become self-employed**.
- **66%** of respondents reported that these improvements in their working lives were either as a **direct result** of the qualification, or that the qualification had **helped a lot**. These responses demonstrate the very high degree of **additionality** associated with the University's provision.

In terms of improvements in their **general skills** following their learning experience at The Open University, responses identified significant improvements (either by 'a lot' or 'a little') across a wide range of skills and proficiencies, including their **problem-solving** skills (**76%**); **presentation** skills (**73%**); **literacy** skills (**73%**); and **communication** skills (**71%**). In addition, respondents also reported improvements in their **IT skills** (**65%**), **numeracy skills** (**48%**) and **team working skills** (**40%**).

Finally, in terms of the impact on respondents' **personal development and well-being**:

- **84%** of respondents felt that they had become **more enthusiastic about learning**, and **78%** of respondents believed that their experience at the University made them **more likely to undertake further learning and training at *any level*** (with **71%** reporting that they were **more likely to undertake further learning and training at a *higher level***).
- **77%** of respondents thought that their studies helped them **do something useful with their spare time**; **62%** felt that they had a **better idea about what they wanted to do in their life**; and **42%** reported that their studies **enabled them to help their children with their schoolwork**.
- **77%** of respondents felt that they had become **more confident** as a result of their Open University studies and that their degree had **helped increase their self-esteem** (respectively); and **61%** indicated that their Open University studies had **improved their quality of life**.

1 Introduction

1.1 Background and context

In 2014, London Economics were commissioned by The Open University to undertake an analysis of the economic and social impact associated with The Open University's activities in the 2012-13 academic year[9]. For the first time, rather than just considering the traditional direct, indirect and induced impacts associated with the University's physical and digital footprint, the analysis incorporated the economic impact associated with The Open University's extensive teaching and learning activity, as well as the impact of research.

A lot has changed since 2012-13. At the UK level, there have been three different Prime Ministers, five different Secretaries of State for Education and seven different Ministers of Higher Education. There have been three General Elections, a referendum resulting in the withdrawal of the United Kingdom from the European Union, and a global pandemic that will result in deep and prolonged economic damage.

Despite these wider economic and political circumstances, some things remain the same: the acquisition of human capital remains the most significant determinant of a county's long run economic growth. In the current environment, there has never been a more acute need for a highly skilled and versatile workforce to overcome the challenges that will present themselves in the coming decade.

To support the levelling-up of every part of the United Kingdom, the support and promotion of part-time flexible learning is paramount - especially given the labour market scarring that is currently taking place, and likely to last for years to come:

- The cost of learning is prohibitive for many part-time students and their employers. The decimation of part-time study over the last decade (in England in particular) is in no small part a result of the removal of teaching grant funding by the Exchequer, and its replacement with loan-backed tuition fees.
- Current student support arrangements discourage part-time flexible learning, resulting in prospective students either not studying at all or enrolling on a full-time basis. The experience of Wales following the Diamond Review in 2016 illustrates that when treated comparably to full-time students, there is an untapped pool of part-time students eager to (re-)engage in higher education.
- The role of employers has been marginalised. Historically, employers often contributed to the costs of their employees undertaking higher education qualifications on a flexible part-time basis. However, the change in fees and student support arrangement since 2012-13 has removed much of the flexibility in the higher education system, and also removed the incentives for providers to engage with part-time students. The ability to combine modular qualifications whilst continuing in the labour market needs to be addressed.

While these policy recommendations involve significant resource costs, this study illustrates the value of part-time flexible learning to the UK economy, by estimating the substantial economic and social impacts associated with The Open University in the 2018-19 academic year. In particular, the analysis illustrates the very significant economic benefit accrued by students undertaking higher

[9] See London Economics (2014).

education qualifications and modules at The Open University, but also the benefits accrued by the Exchequer from the resulting enhanced taxation receipts. In short, the economic benefits significantly outweigh the potential costs associated with any policy recommendation aimed at encouraging part-time higher education.

1.2 Structure of this report

The remainder of this report is structured as follows.

In **Section 2**, we assess the improved labour market earnings and employment outcomes associated with higher education attainment. Through an assessment of the lifetime benefits and costs associated with educational attainment, we estimate the net economic benefits of The Open University's **'formal' teaching and learning activity** to the University's students and the public purse (through enhanced taxation receipts), focusing on the **44,800** UK-domiciled students starting qualifications or standalone modules at the University in 2018-19.

Alongside the 'formal' teaching of higher education qualifications and modules, the OU also offers a range of 'informal' teaching and learning opportunities through the provision of educational content to the wider public. The University provides freely accessible educational content through a range of channels, including **OpenLearn** (the OU's free online learning channel); the **OU's YouTube channel**; and **FutureLearn** (a social learning platform that provides short courses from the OU itself, as well as from a range of international universities and cultural institutions). Although this educational content does not lead to formally recognised or credit-bearing qualifications[10], there is a significant degree of knowledge transfer, and an exceptionally broad reach and potential impact. **Section 3** of this report considers the economic impact of the OU's informal teaching and learning activity.

In **Section 4**, we combine information on the research-related income accrued by The Open University in 2018-19 with estimates from the wider economic literature on the extent to which public investment in research activity results in additional or subsequent private sector productivity (i.e. positive 'productivity spillovers'). This results in an estimate of the **impact of The Open University's research activities**.

In addition to the **44,800** UK-domiciled students starting qualifications or modules at The Open University in the 2018-19 academic year, there were a further **2,565** international offshore students who started qualifications or modules with the University from overseas. As such, The Open University contributes to the value of UK educational exports through the receipt of income from overseas. **Section 5** of this report assesses the monetary value of the tuition fee and non-tuition fee income associated with non-UK-domiciled offshore students in the 2018-19 OU cohort.

The **direct economic impact** of The Open University, generated through its purchases of goods, services and labour from within the UK economy, is substantial - employing **5,690** full-time equivalent staff and incurring a total operational expenditure of **£450 million**[11] in 2018-19. In addition to these direct effects, the University also **indirectly** supports economic output generated throughout its extensive supply chain, and generates **induced** economic benefits through the

[10] In addition to the non-credit-bearing short courses considered here, FutureLearn also offers a range of credit-bearing microcredentials, degree programmes and professional certificates.
[11] This includes depreciation and any expenditures incurred by the University outside the UK, but excludes one-off non-cash expenditure relating to USS pension deficit provisions.

expenditures of its staff. In **Section 6**, we estimate the total direct, indirect and induced impacts of the University's expenditure throughout the UK economy.

In addition to the many economic impacts associated with skills and qualification acquisition, there are a multitude of **non-economic or societal benefits** associated with higher education qualification attainment. In **Section 7** of this report, using results from a survey of The Open University's alumni, we demonstrate the depth of the impact of learning at The Open University on students' jobs, lives, families, learning and prospects.

Finally, **Section 8** of this report **summarises** our main findings.

2 The impact of The Open University's formal teaching and learning activities

Traditional economic impact analyses of higher education institutions typically only consider the direct, indirect and induced economic effects of a university's expenditures (including the institution's extensive supply chains, and the expenditures on its staff) on the local and regional economy, as well as the economic effects associated with the expenditures of domestic and international students attending the institution. However, given that universities' primary 'products' include the provision of teaching and learning, a simple study of this nature would significantly underestimate the economic (and social) impact of The Open University throughout the UK economy.

In terms of measuring the impact of universities' teaching and learning activities, Atkinson's (2005) report to the Office for National Statistics asserted that the economic value of education and training is essentially the **value placed on that qualification as determined by the labour market**. Based on this approach, in this section of the report, we detail the methodology used to place a value on the teaching and learning activities undertaken at The Open University, by considering the labour market benefits associated with enhanced qualification attainment and skills acquisition – to **both the individual and the public purse**.

2.1 The 2018-19 cohort of UK-domiciled students studying at The Open University

The analysis of the economic impact of the OU's teaching and learning activities is based on the **2018-19 cohort of UK-domiciled students**. In other words, instead of considering the University's entire student body of **122,360** students in 2018-19 (*irrespective* of when these individuals may have commenced their studies), the analysis in this section focuses on the **44,800** UK-domiciled[12] students who ***started*** **a formally recognised qualification or stand-alone credit bearing module at the OU in the 2018-19 academic year**[13,14].

In terms of **study level** (see Figure 2)[15], the majority of UK-domiciled students in the 2018-19 cohort (**33,370** students, **75%**) were undertaking first degrees, with a further **7,615** students (**17%**) undertaking other undergraduate qualifications (including standalone credit-bearing modules at

[12] It is possible that a proportion of EU and non-EU domiciled students undertaking their studies with the OU will live and work in the UK following completion of their studies; similarly, UK-domiciled students might decide to leave the UK to pursue their careers in other countries. Given the uncertainty in predicting the extent to which this is the case, and the difficulty in assessing the labour market returns for non-UK students, the analysis of teaching and learning focuses on UK-domiciled students only (assuming that all of these students will remain in the UK post-graduation).

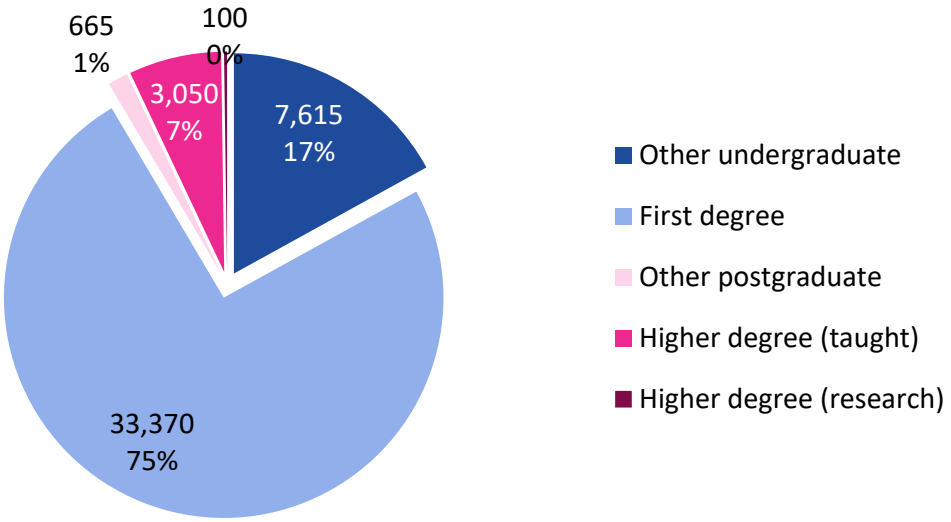
[13] The economic impacts associated with non-UK-domiciled students studying with The Open University (from overseas) in 2018-19 are instead considered as part of the analysis of **educational exports** (see Section 5).

[14] We received information from the OU on a total of **44,890** first-year students studying with The Open University in 2018-19 (based on the University's Higher Education Statistics Agency (HESA) data). From this, total, we excluded **90** EU-domiciled or non-EU domiciled students who were studying with the OU while living in the UK. Note that these students have not been included in our analysis of educational exports (in Section 5); instead, the latter focuses exclusively on those international students studying with the OU from overseas (i.e. international offshore students).

[15] The different levels of study included in the analysis are based on HESA variable XLEV601. For a small number of records, compared to the original HESA data provided by the OU, the information on level of study was cleaned to match the exact (more granular) COURSEAIM recorded for each student in the data. This cleaning affected **145** students in the cohort of UK-domiciled students studying with the OU in 2018-19.

undergraduate level[16]). At postgraduate level, **3,050** students in the cohort (**7%**) were undertaking postgraduate taught degrees, and **100** students were undertaking postgraduate research degrees. An additional **665** students (**1%**) were enrolled in other postgraduate qualifications (including standalone credit-bearing modules at postgraduate level)[17].

Figure 2 UK-domiciled students in the 2018-19 cohort of Open University students, by level of study



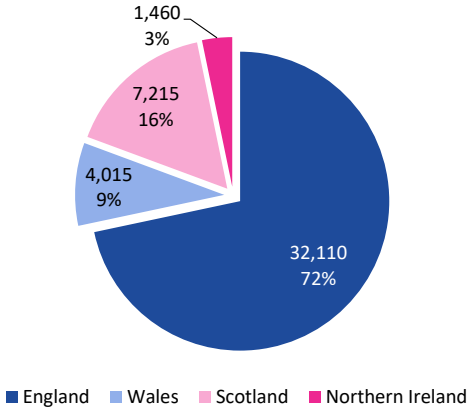
Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.
'Other undergraduate' includes Foundation Degrees, Certificates of Higher Education, Diplomas of Higher Education, undergraduate-level certificates or credits, graduate diplomas or certificates, and professional qualifications other than first degrees. 'Other postgraduate' includes certificates and diplomas at postgraduate level, other taught qualifications at postgraduate level, and taught work for credit at postgraduate level.
Source: London Economics' analysis based on HESA data provided by The Open University

In terms of students' **domicile/location of study** (see Figure 3)[18], approximately **32,110** students (**72%**) within the UK-domiciled 2018-19 cohort were domiciled in England (and registered with the OU in England), with **7,215** (**16%**) domiciled in Scotland, **4,015** (**9%**) domiciled in Wales, and **1,460** (**3%**) domiciled in Northern Ireland.

In relation to the composition by **mode of study** (see Figure 4), **99%** (**44,465**) of all students in the cohort were undertaking their learning with The Open University on a part-time basis. However, in terms of differences by level of study, a large proportion (**65%**) of students undertaking postgraduate research degrees were undertaking their qualifications on a full-time basis (though note there were only a total of 100 students within the cohort enrolled in such degrees). Furthermore, there were no students in the cohort undertaking postgraduate taught degrees, or other undergraduate or other postgraduate qualifications on a full-time basis.

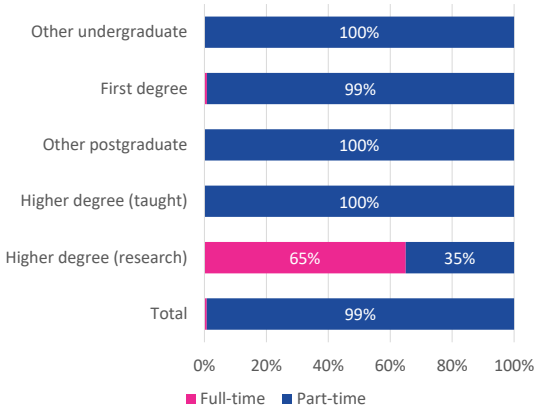
[16] Specifically, 'other undergraduate' learning includes Foundation Degrees, Certificates of Higher Education, Diplomas of Higher Education, undergraduate-level certificates or credits, graduate diplomas or certificates, and professional qualifications other than first degrees.
[17] Specifically, 'other postgraduate' learning includes certificates and diplomas at postgraduate level, other taught qualifications at postgraduate level, and taught work for credit at postgraduate level.
[18] OU students are formally registered at the OU location (i.e. the OU in England, the OU in Wales, the OU in Scotland and the OU in Northern Ireland) in the Home Nation in which they are domiciled at enrolment – so that their study location exactly matches their domicile (e.g. English domiciled students are registered with The Open University in England). In this respect, note that the original HESA data provided by the OU included **5** UK-domiciled first-year students whose domicile did not match the location of their study. In these few cases, we cleaned the original domicile so that it matches the location of study with the OU (e.g. we assumed that all students studying at the OU in England were English-domiciled students).

Figure 3 UK-domiciled students in the 2018-19 cohort of Open University students, by domicile/location of study



Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.
Source: London Economics' analysis based on HESA data provided by The Open University

Figure 4 UK-domiciled students in the 2018-19 cohort of Open University students, by mode and level of study



Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.
Source: London Economics' analysis based on HESA data provided by The Open University

In addition to the focus on part-time learning, one of the unique characteristics of The Open University is the fact that a significant proportion of its students may not have had the opportunity to undertake higher education with 'traditional' levels of prior attainment (i.e. GCE A-Levels or above), but enrol with the OU with lower levels of prior attainment or formally recognised qualifications. As such, the academic 'distance travelled' by many OU students is significantly greater than for those with levels of prior attainment that are 'traditionally' associated with higher education entry. As presented in Table 7, out of the total of **44,800** UK-domiciled students starting qualifications or modules with the OU in 2018-19, **75%** (**33,805** students) were in possession of '**traditional**' levels of prior attainment (i.e. 2 or more GCE A-Levels or equivalent, or higher qualifications), while as many as **25%** (**10,985** students) were in possession of 'non-traditional' levels of prior attainment (i.e. 5 or more GCSEs A*-C or equivalent, or lower qualifications (including students with no formal qualifications prior to enrolling with the OU))[19]. As outlined in further detail in Annex A2.1.1, the analysis of the labour market returns to higher education qualifications was adjusted to capture the greater academic 'distance travelled' by these students.

[19] Note that there were **1,630** students in the cohort of UK-domiciled students whose prior attainment was indicated as 'Mature student admitted on basis of previous experience and/or admissions test' or 'Other qualification level not known'. For those students, we imputed their prior attainment level per student using a group-wise imputation approach based on students undertaking qualifications at the same level, separately by study mode.

Table 7 UK-domiciled students in the 2018-19 cohort of Open University students, by level of study, mode of study, and prior attainment

Level and mode of study	GCSEs or below	A-levels	Other undergraduate	First degree	Other postgraduate	Higher degree (taught)	Higher degree (research)	Total
Full-time students								
Other undergraduate	0	0	0	0	0	0	0	**0**
First degree	30	135	60	35	5	5	0	**270**
Other postgraduate	0	0	0	0	0	0	0	**0**
Higher degree (taught)	0	0	0	0	0	0	0	**0**
Higher degree (research)	0	0	0	10	0	50	0	**65**
Total	**30**	**135**	**60**	**45**	**5**	**55**	**0**	**335**
Part-time students								
Other undergraduate	1,875	3,170	1,235	735	245	280	75	**7,615**
First degree	9,065	14,530	6,380	2,050	495	470	105	**33,100**
Other postgraduate	5	15	40	365	70	140	30	**665**
Higher degree (taught)	10	35	170	1,975	385	375	100	**3,050**
Higher degree (research)	0	0	0	5	5	25	0	**35**
Total	**10,955**	**17,750**	**7,825**	**5,130**	**1,200**	**1,290**	**310**	**44,465**
All students								
Other undergraduate	1,875	3,170	1,235	735	245	280	75	**7,615**
First degree	9,095	14,665	6,440	2,085	500	475	105	**33,370**
Other postgraduate	5	15	40	365	70	140	30	**665**
Higher degree (taught)	10	35	170	1,975	385	375	100	**3,050**
Higher degree (research)	0	0	0	15	5	75	0	**100**
Total	**10,985**	**17,885**	**7,885**	**5,175**	**1,205**	**1,345**	**310**	**44,800**

Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.
Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formally recognised qualification prior to studying at the OU.
There were **1,630** students in the cohort of UK-domiciled students whose prior attainment was indicated as 'Mature student admitted on basis of previous experience and/or admissions test' or 'Other qualification level not known'. For those students, we imputed their prior attainment level per student using a group-wise imputation approach based on students undertaking qualifications at the same level, separately by study mode.
Source: London Economics' analysis based on HESA data provided by The Open University

OpenTalks in Wales - Bringing OU expertise to communities in Wales

The Open University in Wales' OpenTalks series saw seven large public engagement events hosted in five locations across Wales, between January 2019 and March 2020. The series was commissioned to make a distinct contribution to the enrichment and development of Welsh cultural and civic life, and to make The Open University's academic research accessible to the wider public.

The public events covered all four OU faculty areas and explored a diverse range of topics. Many of the OpenTalks were linked with BBC/OU co-productions such as Blue Planet, Psychosis and Me, and Dementia Choir. The Open University's expert consultants on these programmes were able to give a behind-the-scenes look on the production itself and provide extra detail on the fascinating topics explored in the original TV programmes.

The Open University in Wales commissioned livestreaming and recording to enhance the accessibility of the series, and the events **reached over 2,000 people** via physical and online attendance.

OpenTalks and partnerships

The OpenTalks events were hosted in conjunction with **15 OU partner organisations**. External speakers provided a holistic approach to event topics, and included contributors from fellow Welsh universities and third sector organisations such as the Alzheimer's Society. Event partners were chosen to widen the reach and impact of the public engagement, and support grass roots outreach sessions.

In addition to the large public events, **16 community and school engagement events** were also delivered in 2019. These outreach sessions **reached over 330 learners** in schools and further education and adult learning providers, as well as community members and learners in secure environments. The school and further education college sessions were tailored to support and enhance curriculum learning, providing additional resources, education and different viewpoints on students' existing studies.

Future OpenTalks programme

The OpenTalks series provided an opportunity for a range of communities in Wales to engage with The Open University's research, expertise and teaching. **In response to the current COVID-19 environment, The Open University in Wales is continuing to develop its OpenTalks programme** and exploring digital possibilities for public engagement in addition to long-term future 'in-person' events.

Internships in Northern Ireland

Building on the university-wide **Santander Internship Programme**, The Open University in Northern Ireland has pioneered a range of support and engagement opportunities to **assist students in gaining meaningful paid internships, work experience and insight visits with businesses across key sectors**. Internships have been secured with organisations including Young Enterprise Northern Ireland, Ulster Wildlife, Datactics, Core Systems, A&L Goodbody, Philips, Randox Laboratories, Eircom, Allstate and Young at Art. Three internships offered were virtual; one with Young Enterprise Northern Ireland and the others with Inspire Loyalty. While employment post-internship is not a given, **several students have been offered permanent positions following the programme**.

2.2 Adjusting for completion rates

The above information provided an overview of the number of students *starting* qualifications or modules at The Open University in the 2018-19 academic year. However, to aggregate individual-level impacts of the University's teaching and learning activity, it is necessary to adjust the number of 'starters' to account for **completion rates**.

To achieve this, we used information provided by The Open University on the completion rates of the **2010-11 cohort** (10 years after enrolment) and the **2014-15 cohort** (6 years after enrolment) of OU students - broken down by study intention and study completion[20]. In other words, these completion rates include the number of students (separately for the two cohorts) who completed their intended qualification, as well as those who completed a different (usually lower) qualification, or only completed one or several standalone modules associated with their qualification before discontinuing their studies (modelled as completion at 'other undergraduate' level (for students who originally enrolled in first degrees or other undergraduate qualifications) and 'other postgraduate' level (for students who originally intended to complete higher degrees or other postgraduate qualifications)). In all of these cases, **the analysis calculates the estimated returns associated with the *completed* qualification or standalone credit-bearing module(s)**[21].

Since these two sets of cohort completion rates provided by the OU are not necessarily representative of students' *final* outcomes (but only capture students' completion outcomes to date after 10 or 6 years of study (respectively)), we then used the highest completion rate across the two data sets (separately for each study intention/completion) as the assumed completion rate applied to the above-discussed 2018-19 cohort of UK-domiciled students studying at the OU[22].

2.3 Defining the returns to higher education qualifications

The fundamental objective of the analysis of the impact of the OU's teaching and learning activities is to generate the **net graduate premium** to the individual and the **net public purse benefit** to the Exchequer associated with the attainment of higher education qualifications (or standalone credit-bearing modules), defined as follows:

- The ***gross* graduate premium** associated with qualification attainment is defined as the **present value** of **enhanced after-tax earnings** (i.e. after income tax, National Insurance and VAT are removed, and following the deduction of any foregone earnings) relative to an individual in possession of the counterfactual qualification.
- The ***gross* benefit to the public purse** associated with qualification attainment is defined as the **present value** of **enhanced taxation** (i.e. income tax, National Insurance and VAT,

[20] Note that, for consistency with our above definition of 'other undergraduate' students, we combined the original separate data for undergraduate-level credits and other undergraduate learning into a single category (and proceeded similarly for postgraduate-level credits and other postgraduate learning).

[21] In terms of course switching (not completing the intended qualification), the analysis of the net graduate premium and net Exchequer benefit is undertaken for that level of qualification/credit-bearing module that the student ends up completing. This represents a large proportion of those individuals completing credit-bearing modules (for instance, of those learners that complete a credit-bearing module at undergraduate level, approximately 85% are estimated to have switched from other intended qualifications, with the remaining 15% originally intending to undertake a credit-bearing module). If no credit-bearing module is completed (which is the case for approximately 50% of starters originally intending to undertake one), we do not estimate the costs to the individual or the Exchequer (as these costs are likely to be relatively minor). In the case of individual costs, there is limited available information on the point at which the learner might have withdrawn or whether they had paid fees etc, while in the case of the Exchequer, student support from the Exchequer is not available for part-time learning at less than 0.25 FTE.

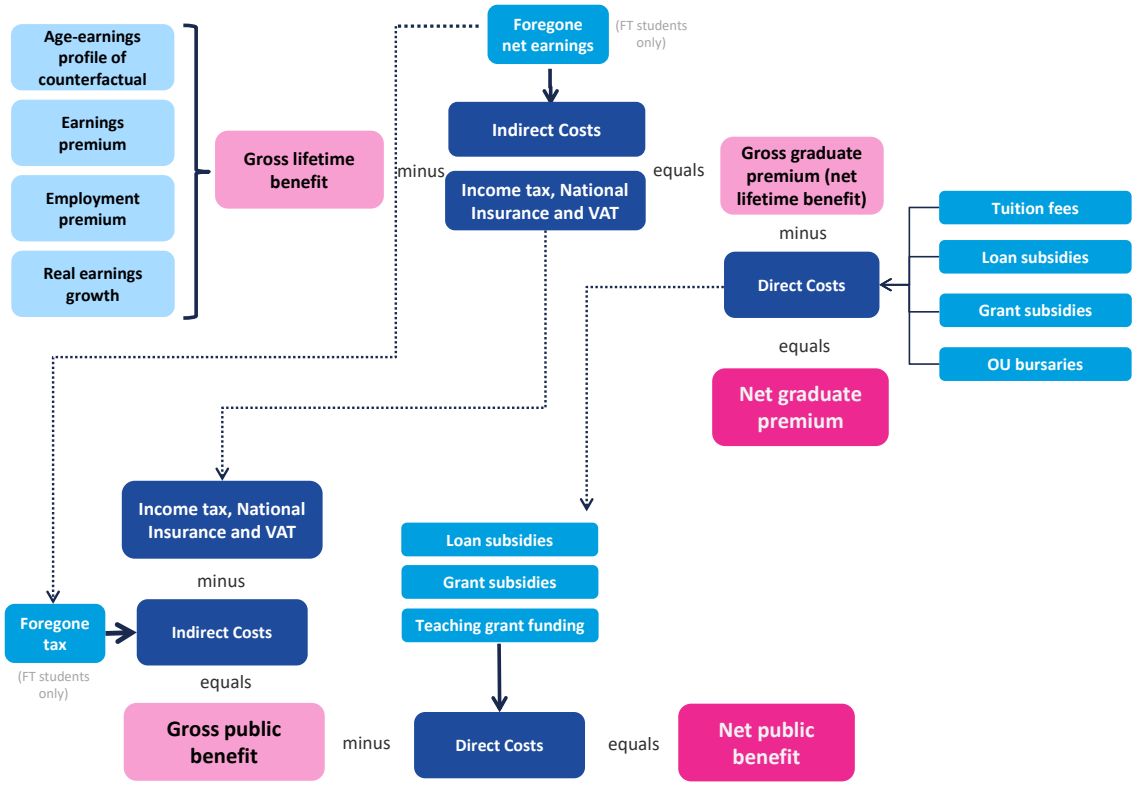
[22] We further apply the same assumed completion rates to the cohort of international offshore students studying with the OU in 2018-19 (see Section 5 for further detail).

following the deduction of the costs of foregone tax earnings) relative to an individual in possession of the counterfactual qualification.

- The ***net* graduate premium** is defined as the gross graduate premium *minus* the present value of the direct costs associated with qualification attainment. Similarly, the ***net* benefit to the public purse** is defined as the gross benefit minus the direct costs of provision during the period of attainment.

The specific components of the analysis are presented in Figure 5, and discussed in greater detail in subsequent sections.

Figure 5 Overview of gross and net graduate premium, and gross and net Exchequer benefit



Source: London Economics' analysis based on Department for Business, Innovation and Skills (2011a)

2.4 Estimating the returns to higher education qualifications

2.4.1 Measuring the returns to higher education for full-time and part-time students

To measure the economic benefits to higher education qualifications, we estimate the **labour market value associated with these qualifications**, rather than simply assessing the labour market outcomes achieved by individuals *in possession* of a higher education qualification. The standard approach to estimating this labour market value is to undertake an **econometric analysis** where the 'treatment' group consists of those individuals in possession of the qualification of interest, and the 'counterfactual' group consists of those individuals with comparable personal and socioeconomic characteristics but with the next highest level of qualification. The rationale for adopting this approach is that the comparison of the earnings and employment outcomes of the treatment group and the counterfactual group 'strips away' those other personal and socioeconomic characteristics that might affect labour market earnings and employment (such as gender, age or sector of

employment), leaving just the labour market gains attributable to the qualification itself. The treatment and counterfactual groups, and details of the econometric approach are presented in Annex A2.1.1 and A2.1.2, respectively.

Many existing economic analyses considering the lifetime benefits associated with higher education qualifications to date (e.g. Walker and Zhu, 2013) have focused on the returns associated with the 'traditional path' of higher education qualification attainment – namely progression directly from secondary level education and completion of a three or four year undergraduate degree from the age of 19 onwards (completing by the age of 22 or 23). Presented in the upper panel of Figure 6, these analyses assume that there are **direct costs** (tuition fees, etc.), as well as **opportunity costs** (the foregone earnings whilst undertaking the qualification full-time) associated with qualification attainment.

However, **the labour market outcomes associated with the attainment of higher education qualifications on a part-time basis are fundamentally different than those achieved by full-time students**. In particular, part-time students typically undertake higher education qualifications several years later than the 'standard' full-time undergraduate (e.g. the estimated average age at enrolment among students in the 2018-19 cohort undertaking part-time first degrees with the OU is **31**); generally undertake their studies over an extended period of time; and often combine their studies with full-time employment. Similarly, full-time students at the OU also tend to complete their higher education qualifications later than 'typical' UK full-time students (for instance, the average age at enrolment among full-time first degree students in the 2018-19 OU cohort also stands at approximately **31**). Table 8 presents the average age at enrolment and completion for students in the 2018-19 Open University cohort (by level and study mode)[23].

Table 8 Average age at enrolment, study duration, and age at completion for students in the 2018-19 Open University cohort

Qualification level	Full-time students			Part-time students		
	Age at enrolment	Duration (years)	Age at completion	Age at enrolment	Duration (years)	Age at completion
Other undergraduate	31	1	**32**	31	2	**33**
First degree	31	3	**34**	31	6	**37**
Other postgraduate	-	-	-	40	2	**42**
Higher degree (taught)	-	-	-	40	4	**44**
Higher degree (research)	33	5	**38**	42	6	**48**

Note: All values have been rounded to the nearest integer. Gaps arise where there are no students in the 2018-19 cohort of UK-domiciled students expected to complete a qualification at the given level and on the given basis.
While the analysis uses applies separate assumptions for students registered with the OU in England, the OU in Wales, the OU in Scotland and the OU in Northern Ireland, all numbers constitute weighted averages across these locations (weighted by the assumed number of completers in each group).
Source: London Economics' analysis based on HESA data provided by The Open University

[23] The assumed average age at enrolment is based on the number of individuals in the cohort assumed to *complete* a given qualification at the OU (based on the assumption that some students might complete a different qualification than initially intended, or instead only attend several standalone modules associated with the intended qualification (see Section 2.2 for more information)). In particular, the age at enrolment per qualification (based on the HESA data provided by The Open University) is calculated as the weighted average age at enrolment across students in the 2018-19 cohort expected to *complete* the given qualification (weighted by the number of students starting different qualification aims and completing each given qualification, separately by study mode and OU location (i.e. the OU in England, OU in Wales, OU in Scotland and OU in Northern Ireland)).
The average duration of study is based on separate information provided by The Open University, in terms of the average duration of study for students in the 2010-11 Open University cohort who completed their intended qualification (after 10 years of study) – separately by study level and mode.

Collaborating with Further Education Colleges

An **open and proactive approach to partnerships** continues to be a strategic cornerstone of **The Open University in Northern Ireland**, **Scotland** and **Wales**. Collaboration with partners from across these nations, such as Further Education colleges, other Higher Education institutions, and industry, is helping to open learning opportunities for all, especially for students who might not normally be able to gain a university qualification.

Northern Ireland

In Northern Ireland, the Further Education sector has experienced a major re-structure, consolidating 16 colleges to 6 large, regional colleges. With a refreshed mission to support the economy, colleges provide a strong local presence for employers. Three of the six Northern Irish colleges now have **formal validation and articulation partnerships with The Open University**. Since 2018, **239 students across these colleges have undertaken OU-validated programmes at Foundation Degree and Honours Degree levels** in areas including Cyber Security and Network Infrastructure; Cloud and Application Development, Fashion Management; Construction, Education and Management; Sports and Exercise; Digital Marketing, Advertising and Communication; and Transport and Supply Chain Management. These partnerships have a **huge impact in rural areas** where traditional universities do not offer such provision or progression.

Wales

A recent collaborative project in Wales is the **Partnership for Innovation in Education (PIE)**, a HEFCW funded collaborative project undertaken with the four higher education institutions and five further education colleges in the Cardiff Capital Region. The project aligns to Regional Skills Partnership priorities across the creative industries, design, and compound semiconductor sectors. The Open University leads on digital content and the mapping of part-time curriculum pathways ranging from free OpenLearn courses through to postgraduate courses. The Open University contributed directly and indirectly to many of the **66 completed one-day-duration industry workshops** and the **104 completed 50 hour-duration Strategic Insight Programmes exchange placements,** which facilitate knowledge exchange across industry, higher education and further education to help identify skills needs and gaps. These, in turn, influence The Open University's academic curriculum design. The collaboration allows for cutting edge academic research and industry insight to be shared across further and higher education, increasing opportunities for more learners.

Scotland

The Open University in Scotland has developed formal partnerships with the 15 regional colleges that facilitate progression from Higher National Certificate (HNC) and Higher National Diploma (HND) courses into university undergraduate programmes. The Open University **uniquely offers all students with HNC and HND qualifications the opportunity to transfer credits**. Articulation routes are available nationwide, unrestricted by the geographical location of the student or their college. Significant outreach work with colleges has helped raise the profile and signpost this pathway to students, resulting in award-winning partnerships. The development of campus-based teaching modules with Ayrshire College, North East Scotland College and City of Glasgow College allow cohorts of HNC and HND students to progress seamlessly to Open University study in Social Sciences at their existing college campus. A new Social Work pathway is also underway with Ayrshire College.

In another collaboration, the OU Choices programme with Dundee and Angus College **integrates online OU Access modules into face-to-face study skills units delivered at the college**. This unique, blended learning approach aims to support learners considering full-or part-time higher education degrees.

The Open University in Scotland has also developed **OU Learning Spaces** in several colleges – including Dumfries and Galloway College, New College Lanarkshire, South Lanarkshire College, West College Scotland and Fife College -

providing articulating students within these regions with the opportunity to continue using their college campus and facilities as a base for their OU studies.

Carol Hunter, a mum-of-three from Fife, graduated with a First-class OU Bachelor of Arts degree in Social Science in September 2019, and has now embarked on an **OU Master's degree in Crime and Justice**. Growing up in care, Carol struggled academically when younger, with difficulties associated with Foetal Alcohol Syndrome. She dropped out of a traditional university after the first year, *"leaving with no additional qualifications and plenty of additional debt".* Carol subsequently went on to do a Fife College HND, and then transferred credits towards her OU undergraduate degree.

"Before my adoptive dad passed, he made me promise him that I would get out from my 9-5 desk job and do something that I was passionate about. He knew I could achieve more. I wanted to make my dad proud, and to show my children it's never too late in life to completely change your course of direction. The OU meant that I could finally achieve my goal."

Following her two-year President's role, Carol now works as a Guidance Adviser at Fife College. She is also a member of the Children's Panel.

Scott Montgomery, who left school aged 16 with no qualifications, graduated with a Bachelor of Arts degree in Social Science from The Open University. Having worked in construction and then as a bus driver, the dad-of-two juggled his family and work life with campus-based studies at Ayrshire College, via an OU partnership programme. Credits from his HNC and HND, both gained previously at the College, were able to be transferred towards his degree.

Scott's degree studies were a springboard in his successful application for a paid internship at the Department for International Development (DFID) in East Kilbride. Inspired by its work on poverty reduction and armed with his degree, Scott went on to apply for a DFID apprenticeship.

"I was over the moon to get my degree. Studying with the OU is a great opportunity for anybody, particularly if they're trying to fit work around it, or if they've got family commitments where it's not convenient to travel away to a brick university. The whole thing seems to fit really nicely. It's worked out fantastically for me."

Given these fundamental differences between the full-time and part-time students, and reflecting the (relatively limited) wider economic literature on the returns to part-time study, we made significant adjustments to the methodology when estimating the returns to part-time (and late starting full-time) education attainment at the University (see the lower panel of Figure 6).

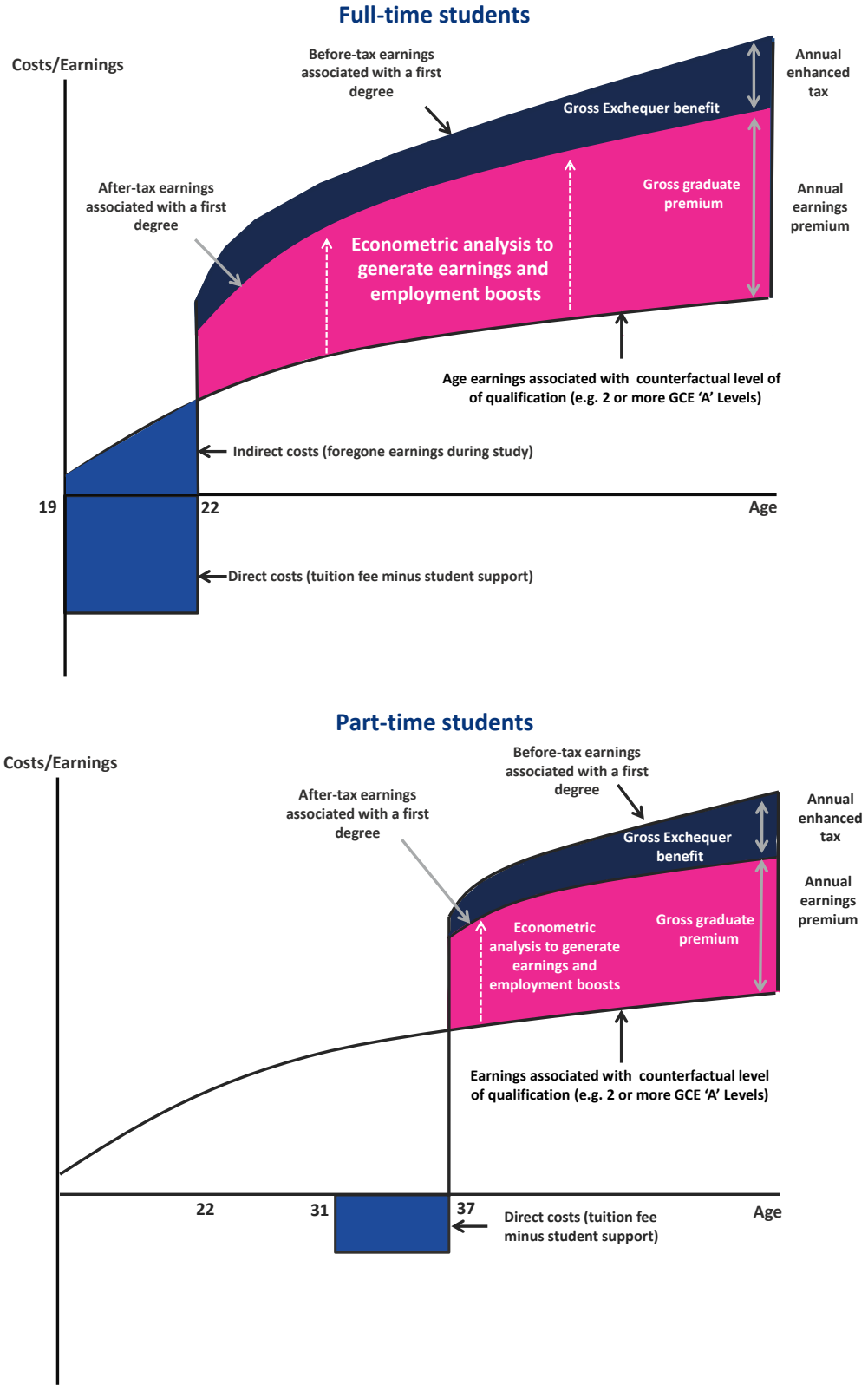
The most important of these changes relates to the introduction of an **'age-decay' function**. This approach assumes that possession of a particular higher education qualification is associated with a certain earnings or employment premium, and that this entire labour market benefit accrues to the individual *if* the qualification is attained before the age of 24 (for undergraduate qualifications) or 29 (for postgraduate qualifications).

However, as the age of attainment increases, it is expected that a declining proportion of the potential value of the estimated earnings and employment benefit accrues to the individual[24]. This calibration ensures that those individuals completing qualifications at a relatively older age will see lower earnings and employment benefits associated with higher education qualification attainment (and perhaps reflect potentially different motivations among this group of learners). In contrast, those individuals attaining qualifications earlier in their working life will see a greater economic benefit (potentially reflecting the investment nature of qualification acquisition). More detail on this 'age-decay' function is provided in Annex A2.1.3.

The second difference in the treatment of part-time and full-time students is that we assume that students undertaking higher education qualifications on a full-time equivalent basis are not in employment during their studies, and as such incur opportunity costs during the period of study (corresponding to the (foregone) earnings associated with the adjacent level of qualification). In contrast, we **assume that part-time students are able to combine work with their academic studies and as such, do *not* incur any opportunity costs in the form of foregone earnings**.

[24] E.g. Callender et al. (2011) suggest that the evidence points to decreasing employment returns with age at qualification: older graduates are less likely to be employed than younger graduates three and a half years after graduation; however, there are no differences in the likelihood of graduates undertaking part-time and full-time study being employed according to their age or motivations to study.

Figure 6 Estimating the gross graduate premium and gross Exchequer benefit – Full-time vs. part-time students



Note: The illustration for full-time students is based on a typical student undertaking a full-time first degree in the UK (with a typical study duration of 3 years). The illustration for part-time students is based on an analysis of the OU's 2018-19 cohort of UK-domiciled students, where the mean age at enrolment for part-time students completing first degrees stands at 31, with an average study duration 6 years.
Source: London Economics

2.4.2 Estimating the gross graduate premium and gross public purse benefit

Annex A2.1.2 provides a detailed overview of the econometric analysis of the marginal earnings and employment returns to higher education qualifications, undertaken separately by gender and qualification level, and adjusted for the specific subject composition of the 2018-19 cohort of UK-domiciled students studying at the OU[25]. To estimate the **gross graduate premium** associated with qualification attainment – i.e. the **present value of enhanced post-tax earnings** (i.e. after income tax, National Insurance and VAT are removed, and following the deduction of foregone earnings) relative to an individual in possession of the counterfactual qualification – it was necessary to expand on the results from the econometric analysis by undertaking the following elements of analysis (separately by qualification level[26], gender, study mode, and location of study[27]):

1. We estimated the employment-adjusted **annual earnings** achieved by individuals in the counterfactual groups (i.e. 2 or more GCE A-Levels or a first degree) – separately by Home Nation.
2. We inflated these baseline or counterfactual earnings using the marginal earnings premiums and employment premiums (presented in Table 17 and Table 18 in Annex A2.1.2), adjusted for the 'age-decay' function to reflect late attainment (as outlined in Annex A2.1.3), to produce **annual age-earnings** profiles associated with the possession of each particular qualification.
3. We adjusted these age-earnings profiles to account for the fact that earnings would be expected to increase in real terms over time (at an assumed rate of **0.8%** per annum (based on long-term earnings growth rate forecasts estimated by the Office for Budget Responsibility (2020)[28]).
4. Based on the earnings profiles generated by qualification holders, and income tax and National Insurance rates and allowances for the relevant academic year[29], we computed the future stream of net earnings (i.e. post-tax)[30]. Using similar assumptions, we further calculated the stream of (employment-adjusted) foregone earnings (based on earnings in the relevant counterfactual group[31]) during the period of study, again net of tax - for full-time students only.
5. We calculated the **discounted** stream of additional (employment-adjusted) future earnings compared to the relevant counterfactual group (using a standard discount rate

[25] The estimation of the net graduate premiums and net Exchequer benefits is based on a detailed econometric analysis of the Labour Force Survey. The analysis considers the impact of higher education qualification attainment on earnings and employment outcomes; however, as no information is specifically available on the particular higher education institution attended, the analysis is not specific to Open University alumni. Rather, as discussed throughout this section, the findings from the econometric analysis are adjusted to reflect the characteristics of The Open University cohort in 2018-19.

[26] Note again that, for individuals undertaking credit-bearing modules but withdrawing prior to completion, the potential costs to the individual and Exchequer are not incorporated into the analysis. See footnote 21 for more information.

[27] i.e. separately for the OU in England, OU in Wales, OU in Scotland and the OU in Northern Ireland.

[28] This captures the OBR's average forecasted long-term real earnings growth rate (calculated by adjusting the nominal earnings growth rate for projected (Retail Price Index) inflation) between 2019-20 and 2069-70.

[29] i.e. 2018-19. Note that the analysis assumes fiscal neutrality, i.e. it is asserted that the earnings tax and National Insurance income bands grow at the same rate of annual earnings growth of **0.8%**.

[30] The tax adjustment also takes account of increased VAT revenues for HMG, by assuming that individuals consume **93%** of their annual income, and that **50%** of their consumption is subject to VAT at a rate of **20%**. The assumed proportion of income consumed is based on forecasts of the household savings rate published by the Office for Budget Responsibility (2020), while the proportion of consumption subject to VAT is based on VAT estimates provided by the Office for Budget Responsibility (no date).

[31] The foregone earnings calculations are based on the baseline or counterfactual earnings associated with 5 or more GCSEs at A*-C, 2 or more GCE A-Levels, or first degrees. As outlined in Annex A2.1.1, some students in the 2018-19 Open University cohort were in possession of other levels of prior attainment. To accommodate this, as a simplifying assumption, the foregone earnings for students previously in possession of other undergraduate qualifications (other than first degrees) are based on the earnings associated with possession of 2 or more GCE A-Levels as the highest qualification (adjusted for the age at enrolment and completion associated with the relevant qualification obtained). In addition, the estimated foregone earnings for students previously in possession of postgraduate qualifications are based on the level of earnings associated with first degrees.

of **3.5%** as presented in HM Treasury Green Book (HM Treasury, 2018)), and the discounted stream of foregone earnings during qualification attainment (applicable to full-time students only), to generate a present value figure[32]. We thus arrive at the **gross graduate premium** (or equivalent for other qualifications).

6. The **discounted** stream of enhanced taxation revenues minus the tax income foregone during students' qualification attainment (again, for full-time students only) derived in element 4 provides an estimate of the **gross public benefit** associated with higher education qualification attainment.

Note that the gross graduate premium and gross public benefit for students undertaking qualifications at a level equivalent to or lower than the highest qualification that they are already in possession of was assumed to be zero. For example, it is assumed that a student already in possession of a first degree undertaking a first degree at the OU will not accrue any wage or employment benefits from this additional qualification attainment (while still incurring the costs of foregone earnings during the period of study, if they are studying on a full-time basis).

Further note that the analysis of gross graduate premiums and public purse benefits was undertaken separately for each Home Nation, to reflect differences across the OU in England, OU in Wales, OU in Scotland and OU in Northern Ireland. To further adjust for differences across the Home Nations, these premiums were then combined with the relevant differential student support costs facing the individual and/or the Exchequer for students domiciled in the different Home Nations (and studying within the same Home Nation, i.e. English students studying in England, Welsh students studying in Wales, etc.).The resulting gross graduate premiums and gross public purse benefits per student (by level of study, gender, prior attainment, and Home Nation (for part-time students only)) are presented in Annex A2.1.4.

[32] The choice of discount rate is important in estimating the gross and net graduate premium and Exchequer benefit. In Annex A2.1.5, we provide a detailed explanation of the rationale for discounting as well as an analysis of the impact of choosing different discount rates on the estimates of the net graduate premium and net Exchequer benefit.

Supporting the curriculum for Art History

A lack of resources to teach A-level Art History risked the subject being cut in 2016, and is symptomatic of a larger problem for a discipline that is often seen as elitist and Eurocentric. Art historians at The Open University (led by Dr Leah Clark) have used their research to found **Open Arts Objects (OAO)**, an open access platform that provides free teaching materials to support the teaching of Art History in secondary schools and higher education institutions across the UK and North America. By working with A-level teachers, OAO has influenced the **design and delivery of Pearson's A-level and the National Extension College's online curriculum**. Additionally, The Open University's collaboration with museum professionals has resulted in enhanced educational practices in museums.

Film & TV production

The underlying Open University research addresses a global and expanded Art History. It has also resulted in the co-production of BBC's *Civilisations* programme and its accompanying support materials, reaching 13.7 million viewers. It introduced new audiences to a global approach to Art History, which seeks to decolonise the curriculum and widen participation.

OAO have collaborated with several museums to produce educational films, including the Wallace Collection; Ashmolean Museum; V&A; Wrest Park; Royal Collections Trust; Grosvenor Museum; National Museum Wales; and Yorkshire Sculpture Park.

OAO's films produced as a result of collaboration with museums led to changes in their education programmes and professional practices. For example, educators at the **Ashmolean Museum** in Oxford now have the expertise to teach on non-western works, because of OAO's resource of more than 50 films and The Open University's research presented at their GCSE study day. In addition, the Mobility of Objects Project (funded by the Arts and Humanities Research Council) centred on objects at the **Grosvenor museum** in Chester, and has enabled GCSE History teachers to use the collections in their teaching, expanding the educational focus of the museum beyond primary schools. Further, **ArtUK** now showcases OAO films on their website, connecting institutions across the country, resulting in OAO being the **key resource for the general public** who search these works online.

Teaching Events

OAO has led **teaching sessions in schools**, working with students from Cheltenham to Tottenham, to bring Art History into the classroom and widen participation. The Open University's team also hosted a **Teaching Global Art History event** for 25 teachers and museum educators in October 2019. It tackled the issue of decolonising the curriculum. The participants noted that the teaching materials provided by OAO were hugely beneficial to them due to the limited availability of literature on non-western examples. Moreover, one teacher stated that the materials provided will help them educate themselves for the new, expanded A-level specification.

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'What a revelation! […] I'm so excited to share the [OAO] resources with next year's students […] as a fantastic introduction to the discipline! […] Teaching has got a whole lot better!'

A-level teacher

Teachers also indicated that the teaching events helped **build their confidence**, provided them with '**new-found inspiration to persevere with a global approach**', and to 'consider the feelings of students from ethnic minorities to encourage them to feel ownership of the topics covered'.

2.4.3 Estimating the net graduate premium and net public purse benefit

The difference between the gross and net graduate premium essentially relates to **students' direct costs** of qualification acquisition[33]. These direct costs refer to the **proportion of the tuition fee paid by the student**[34] net of any **tuition fee support** or **maintenance support** provided by the Student Loans Company (SLC – for students from England and Wales and Northern Ireland) or the Students Awards Agency for Scotland (SAAS – for students from Scotland)[35] and minus any **fee waivers or bursaries** provided by The Open University itself[36]. In this respect, the student benefit associated with tuition fee loan or maintenance loan support equals the **Resource Accounting and Budgeting Charge** (RAB charge, or interest rate subsidy)[37], capturing the proportion of the loan that is not repaid. Given the differing approach to the support funding of students from each of the UK Home

[33] Note again that the *indirect* costs associated with qualification attainment, in terms of the foregone earnings during the period of study (for full-time students only), are already deducted from the gross graduate premium where applicable.

[34] We made use of information provided by The Open University on the average **tuition fees** per UK-domiciled *full-time equivalent* (FTE) student charged in 2018-19, separately by domicile (i.e. England, Wales, Scotland and Northern Ireland), study mode, and study level. To arrive at the fees per *student* (i.e. in headcount), we multiplied the respective rates per FTE student by the assumed average study per student, separately by study mode, study level (based on an aggregate split into undergraduate and postgraduate students), and Home Nation domicile/OU location.

The average **study intensity** was calculated based on HESA data provided by The Open University relating to its 2018-19 cohort of UK-domiciled students, where we divided the number of students in the cohort (FTE terms) by the corresponding number of students (headcount terms), separately by study mode, study level (undergraduate vs. postgraduate students) and Home Nation domicile/OU location.

[35] The analysis makes use of *average* levels of support paid per student, separately by study mode, study level (i.e. undergraduate, higher degree (taught) and higher degree (research) (and we assume that no funding is available for students undertaking qualifications at 'other postgraduate' level)), domicile and location of study. Our estimates are based on publications by the SLC on student support for higher education in England, Wales and Northern Ireland in 2018-19 (see Student Loans Company 2019a, 2019b and 2019c, respectively) and a publication by the Student Awards Agency for Scotland on student support for higher education in Scotland (see Student Awards Agency for Scotland, 2019). To ensure comparability across the different Home Nations, we focus only on core student support in terms of tuition fee grants, tuition fee loans, maintenance grants and maintenance loans (where applicable), but *exclude* any Disabled Students' Allowance and other targeted support. Wherever possible, we focus on the average level of support for students in public providers only, for the most recent cohorts possible, split by domicile (i.e. 'Home' vs. EU) and location of study (i.e. 'Home' vs. the rest of the UK). Furthermore, and again wherever possible, we adjusted the average levels of fee and maintenance loans for average loan take-up rates available from the same sources. In addition, the assumed average fee loan per student has been capped at the level of tuition fee charged per OU student in 2018-19 (see Footnote 34), and adjusted downwards for any fee waivers which students receive directly from the OU to help with the tuition fee costs of their study.

[36] Average fee waivers and other bursaries per student were calculated based on information provided by The Open University on the total amount of fee waivers and bursaries provided to students in 2018-19. This was then combined with the HESA data provided by the OU in terms of the total number of UK-domiciled OU enrolments in 2018-19 (including students at all levels and modes), to arrive at an estimate of the average fee waiver and other bursaries per student per year. Note that, for simplicity, we assume that this financial support is available only to UK-domiciled students studying at The Open University (but not to international offshore students analysed as part of the impact of educational exports (see Section 5)).

[37] For **undergraduate full-time** students, we have assumed a RAB charge of **47%** associated with tuition fee and maintenance loans for English domiciled students (based on data published by the Department for Education (2019)). There were no full-time students from Wales, Scotland or Northern Ireland included in the 2018-19 cohort of Open University students. For **undergraduate part-time students**, we have assumed a RAB charge of **41%** for English domiciled students (again based on data published by the Department for Education (2019)), and **0%** for Welsh domiciled students. For Welsh domiciled students, the Diamond Review of Higher Education in Wales (see Welsh Government, 2016) estimated a negative RAB charge; however, for consistency with the assumptions for postgraduate students (see below), we assume that the RAB charge can never be negative (as it effectively measures the government subsidy to the student loan system (see Department for Education (2019) for more detail)). We then apply the same **0%** assumption to Northern Irish domiciled students. There is currently no student loan funding provided to Scottish domiciled undergraduate part-time students (so no RAB charge assumptions are required).

For the (relatively recently introduced) loans for **postgraduate taught students** from England, Wales and Northern Ireland, we have assumed a RAB charge of **0%** for **part-time** students (based on the Department for Education's (2019) student loan forecasts for Master's loans for English students). For the (more long-standing) postgraduate loans for Scottish students, we have assumed a RAB charge of **12%** (based on the RAB charge for Welsh-domiciled undergraduate full-time students estimated as part of the Diamond Review of Higher Education in Wales (see Welsh Government, 2016) – which was based on a relatively similar maximum loan amount as currently available for Scottish domiciled postgraduate taught students). There were **no full-time postgraduate taught students** in 2018-19 cohort of UK-domiciled OU students (so that no RAB charge assumptions are required for students of this type).

Finally, for **postgraduate research students** from England (there were no Welsh, Scottish or Northern Irish domiciled students at this level included in the 2018-19 OU cohort), we assumed a RAB charge of **39%** across **both full-time and part-time students** at this level (based on the predicted 'steady-state' RAB charge for English postgraduate research loans estimated by the Department for Education (2019)).

Nations, the direct costs incurred by students were assessed separately for students from England, Wales, and Scotland and Northern Ireland[38, 39].

The **direct costs**[40] **to the public purse** include the **teaching grant funding** administered by the Office for Students (OfS), the Higher Education Funding Council for Wales (HEFCW), the Scottish Funding Council (SFC) and the Department for the Economy Northern Ireland (DfE NI)[41], the **student support** provided in the form of maintenance/fee grants (where applicable), and the **interest rate or write-off subsidies** that are associated with maintenance and tuition fee loans (i.e. the RAB charge). Again, the analysis tailors the cost of student support to the student's specific Home Nation of domicile.

These direct costs associated with qualification attainment to both students and the Exchequer (by qualification level, study mode and Home Nation domicile/location) are calculated from start to completion of a student's learning aim. Throughout the analysis, to ensure that the economic impacts are computed in **present value** terms (i.e. in 2018-19 money terms), all benefits and costs occurring at points in the future were **discounted** using the standard HM Treasury Green Book real discount rate of **3.5%** (see HM Treasury, 2018)[42].

Deducting the resulting individual and Exchequer costs from the estimated gross graduate premium and gross public purse benefit, respectively, we arrive at the estimated **net graduate premium** and **net public purse benefit** per student.

2.5 Estimated net graduate premium and public purse benefit

Table 9 presents the net graduate premiums and net Exchequer benefits achieved by UK-domiciled part-time students (only)[43] undertaking qualifications at The Open University the 2018-19 cohort (separately by domicile, study level, gender and prior attainment).

The analysis indicates that the average **net graduate premium** achieved by a representative[44] UK-domiciled student in the 2018-19 cohort completing a **part-time first degree** at The Open University (with GCE A-levels (or equivalent) as their highest level of prior attainment) is approximately **£55,000** in today's money terms. Reflecting the larger academic 'distance travelled' (by a relatively large share of OU students), the corresponding net graduate premium for students with GCSEs or

[38] Again, note that OU students are formally registered with the OU in the Home Nation in which they are domiciled at enrolment – so that their study location matches their domicile (e.g. English domiciled students are registered with The Open University in England).
[39] Note that, in some instances, the total financial support provided to students (though tuition fee loans and grants, maintenance loans and grants, and fee waivers/other bursaries (where applicable)) *exceeds* the costs of their OU tuition fees – i.e. the net graduate premium *exceeds* the gross graduate premium per student. For example, this is the case for English and Welsh domiciled students undertaking part-time first degrees at The Open University in 2018-19, which is driven by the (recently introduced) maintenance funding received by these students (in terms of loans for English domiciled students, and grants for Welsh domiciled students). This results in the net graduate premium being (slightly) higher than the gross graduate premium (see the results presented in Table 20 vs. Table 22 in Annex A2.1.4).
[40] Again, any indirect costs to the public purse in terms of foregone income-tax, National Insurance and VAT receipts foregone during the period of qualification attainment (applicable to full-time students only) are already incorporated in the gross public purse benefits as described above.
[41] This is based on HESA financial information provided by The Open University on the total OfS/HEFCW/SFC/DfE NI recurrent teaching grant received by The Open University in 2018-19, divided by the total number of students enrolled with the University in 2018-19 (excluding any non-EU-domiciled students and higher degree (research) students; i.e. it is assumed that there is no teaching funding associated with these students). We again adjusted for the average assumed study intensity among full-time and part-time students, to arrive at separate rates of teaching grant funding by study mode.
[42] To illustrate the impact of this discounting to present values, Annex A2.1.5 presents the estimated net graduate premiums and net Exchequer benefits per student *without* being discounted (i.e. a 0% real discount rate rather than a real discount rate of 3.5% adopted throughout the rest of the analysis).
[43] The full set of net graduate premiums and net Exchequer benefits for all part-time students in the 2018-19 OU cohort is presented in Annex A2.1.4 (see Table 22 and Table 23).
[44] The analysis is based on an average age at graduation of 37 for students undertaking part-time first degrees at the OU in the 2018-19 cohort (see Section 2.4.1 for further information).

The net graduate premium for a representative part-time first degree student at the OU stands at £55,000 compared to A-levels, and £83,000 compared to GCSEs or below.

below as their highest level of prior attainment was estimated at **£83,000**. These estimated net graduate premiums vary by **gender** (with women typically achieving relatively lower net graduate premiums than men[45]), as well as by **domicile** (with the largest premiums estimated for students from England[46]).

In terms of the benefits to the public purse, the average **net Exchequer benefit** for a representative **part-time first degree** student at the OU (again with GCE A-levels as their highest level of prior attainment) stands at approximately **£29,000** in 2018-19 money terms. Again, these benefits increase significantly depending on students' academic 'distance travelled', with the corresponding estimates compared to GCSEs or below standing at **£52,000** per student.

The net Exchequer benefit for a representative part-time first degree student at the OU stands at £29,000 compared to A-levels, and £52,000 compared to GCSEs or below.

Note that there is some variation in both the net graduate premium and net Exchequer benefit by Home Nation, which reflects both the different labour markets in each of the Home Nations but also the different student support arrangements in operation. In particular, the net graduate premium associated with first degrees in Wales (compared to A-Levels) stands at **£51,000** per student compared to **£57,000** per student in England, while the net Exchequer benefit associated with first degrees in Wales stands at **£20,000** per student compared to **£30,000** per student in England. The differences in the estimate of the net Exchequer benefit illustrate the much more generous student support arrangements in operation in Wales since the implementation of the Diamond Review reforms in Wales. However, importantly from a policy perspective, it is important to note that the despite these changes, across all learners, the net Exchequer benefits of higher education qualifications in Wales are all positive.

The analysis further indicates that there are substantial monetary benefits associated with undertaking OU learning at 'other undergraduate' level (including standalone credit-bearing modules). The analysis suggests that the **net graduate premium** associated with a representative student[47] in the 2018-19 cohort undertaking **other undergraduate qualifications/modules** (relative to GCE A-levels) stands at approximately **£25,000**. The corresponding **net Exchequer benefits** stand at approximately **£14,000** per student.

[45] The economic benefits associated with higher education qualification - expressed in monetary terms - are generally lower for women than men - predominantly as a result of the increased likelihood of spending time out of the active labour force. However, as with the majority of the wider economic literature, it is often the case that the marginal benefit associated with higher education qualification attainment - expressed as either the percentage increase in hourly earnings or enhanced probability of employment - are greater for women than for men.

[46] The differences by Home Nation are predominantly driven by differences in the underlying baseline earnings by Home Nation that have been used to estimate the *gross* graduate premium and Exchequer benefit, but also (to a lesser extent) reflect the differences in the direct costs to students associated with higher education qualification acquisition across the different Home Nations, as well as (small) differences in the average age at enrolment across the Home Nations.

[47] This is based on an average age at graduation of 33 for part-time students completing qualifications (or modules) at 'other undergraduate level' in the 2018-19 cohort.

Table 9 Net graduate premium and net Exchequer benefit per UK-domiciled part-time student at The Open University, by domicile/location of study, study level and gender

Gender and study level	Prior attainment	Net graduate premium					Net Exchequer benefit				
		England	Wales	Scotland	Northern Ireland	All	England	Wales	Scotland	Northern Ireland	All
Men											
Other undergraduate	A-levels	£39,000	£33,000	£33,000	£27,000	**£37,000**	£28,000	£19,000	£24,000	£19,000	**£26,000**
First degree	A-levels	£69,000	£59,000	£51,000	£49,000	**£66,000**	£44,000	£27,000	£33,000	£30,000	**£41,000**
First degree	GCSEs or below	£114,000	£93,000	£87,000	£83,000	**£109,000**	£83,000	£55,000	£63,000	£59,000	**£78,000**
Other postgraduate	First degree	-£3,000	-£4,000	-£4,000	-£4,000	**-£3,000**	-£1,000	-£2,000	-£3,000	-£3,000	**-£1,000**
Higher degree (taught)	First degree	£16,000	£12,000	£12,000	£15,000	**£16,000**	£22,000	£14,000	£16,000	£14,000	**£21,000**
Higher degree (research)	First degree	£35,000				**£35,000**	£33,000				**£33,000**
Women											
Other undergraduate	A-levels	£18,000	£18,000	£17,000	£15,000	**£18,000**	£7,000	£5,000	£9,000	£7,000	**£7,000**
First degree	A-levels	£51,000	£47,000	£38,000	£42,000	**£49,000**	£22,000	£15,000	£20,000	£23,000	**£21,000**
First degree	GCSEs or below	£68,000	£62,000	£53,000	£57,000	**£66,000**	£37,000	£26,000	£32,000	£34,000	**£35,000**
Other postgraduate	First degree	£17,000	£13,000	£17,000	£17,000	**£17,000**	£16,000	£12,000	£15,000	£14,000	**£16,000**
Higher degree (taught)	First degree	£22,000	£17,000	£19,000	£22,000	**£22,000**	£22,000	£17,000	£17,000	£19,000	**£21,000**
Higher degree (research)	First degree	£28,000				**£28,000**	£19,000				**£19,000**
All											
Other undergraduate	A-levels	£26,000	£23,000	£22,000	£20,000	**£25,000**	£15,000	£10,000	£14,000	£12,000	**£14,000**
First degree	A-levels	£57,000	£51,000	£43,000	£45,000	**£55,000**	£30,000	£20,000	£25,000	£26,000	**£29,000**
First degree	GCSEs or below	£86,000	£74,000	£66,000	£69,000	**£83,000**	£54,000	£38,000	£44,000	£45,000	**£52,000**
Other postgraduate	First degree	£10,000	£7,000	£9,000	£7,000	**£9,000**	£10,000	£8,000	£8,000	£6,000	**£9,000**
Higher degree (taught)	First degree	£20,000	£15,000	£16,000	£19,000	**£19,000**	£22,000	£16,000	£16,000	£17,000	**£21,000**
Higher degree (research)	First degree	£32,000				**£32,000**	£26,000				**£26,000**

Note: The averages across OU students domiciled in England, Wales, Scotland and Northern Ireland have been weighted by the underpinning estimated number of completers from each domicile within the 2018-19 cohort of Open University students). Averages across both genders are similarly weighted by the number of student completers in the 2018-19 cohort (by gender).
All values are discounted to net present values, presented in 2018-19 prices, and rounded to the nearest £000. Gaps may arise where there are no students in the 2018-19 Open University cohort expected to complete the given qualification (of the given characteristics).
Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU.
Source: London Economics' analysis

In terms of learning at postgraduate level, the analysis suggests that the **net (post)graduate premium** associated with a representative[48] student in the 2018-19 Open University cohort undertaking a **part-time postgraduate taught degree** (relative to a first degree) stands at approximately **£19,000**. Reflecting the more limited government support at postgraduate level, the corresponding **net Exchequer benefits** stand at approximately **£21,000** per student[49].

2.6 UK validation activities

In addition to its direct teaching activities analysed above, The Open University validates programmes offered by partnering education institutions wishing to offer Open University qualifications, and has become one of the largest validation providers in the United Kingdom. Open University validated awards are among the most highly regarded in the UK, and carry the same benefits in terms of employment, earnings and progression to postgraduate study as those awarded to individuals studying directly with The Open University.

There is a wide range of institutions offering OU validated programmes to their students, including further education colleges, performing and creative arts institutions, health education providers, private for-profit and not-for-profit organisations, business schools, as well as the Royal Navy Fleet Air Arm. In line with the variety of OU partner institutions running validated programmes, the programmes themselves, taught at undergraduate and postgraduate level, encompass a wide range of subjects.

In terms of the scale of the OU's UK-based validation activities[50], in 2018-19, a total of **43** institutions in the UK offered programmes validated by The Open University, with a total of **5,385** students registered on these programmes. To measure the economic value of these validation activities in the UK, based on an input-output approach, we used information on the income which The Open University derived from these activities in the UK in 2018-19 (amounting to **£3.2 million**)[51]. Based on the location of the majority of the partner institutions offering OU validated programmes within the United Kingdom, we have assumed that all income that the OU derives from its validation activities in the United Kingdom is accrued in England.

[48] This is based on an average age at graduation of 44 for part-time higher degree (taught) students in the 2018-19 cohort.

[49] Note that, in terms of the negative net graduate premium and Exchequer benefits identified for male students at 'other postgraduate' level, we assume that the gross graduate premium / Exchequer benefit associated with any HE qualification attainment can never be negative – i.e. students will never incur a wage/employment penalty from achieving additional qualifications. In instances where this would be the case (e.g. for male students at 'other postgraduate level'), we instead assume a £0 gross graduate premium/Exchequer benefit. The negative *net* benefits associated with these qualifications are thus entirely driven by the direct costs of study (e.g. in terms of the effective tuition fees (net of any student support or bursaries) paid by students).

[50] The OU's international validation activities are instead considered as part of the analysis of educational exports (see Section 5).

[51] Given that students enrolled in these OU-validated programmes are likely to derive significant labour market benefits from completing Open University qualifications, our simple 'input-output' approach based on the OU's income derived from validation activities likely underestimates the true economic benefit of these teaching and learning activities. However, our approach was necessitated by the lack of available data on the precise characteristics of students enrolled in OU validated programmes in the UK, so that a more sophisticated analysis of the potential labour market outcomes achieved by these students was not possible.

2.7 Total economic impact of The Open University's formal teaching and learning activities

Combining the information on completion rates with the number of UK-domiciled students in the 2018-19 Open University cohort and the net graduate and public purse benefits associated with the different qualification levels (relative to students' specific prior attainment), the analysis estimates that the **aggregate economic benefit of the OU's formal teaching and learning activities** associated with the 2018-19 cohort in the UK stands at approximately **£1,673 million**.

The impact of The Open University's formal teaching and learning activities in 2018-19 was estimated at £1.673 billion.

In terms of the split of this total impact between students and the Exchequer, approximately **£1,050.4 million** (**63%**) is accrued by students undertaking qualifications at the University, and **£619.4 million** (**37%**) is accrued by the Exchequer (as well as a total of **£3.2 million** associated with the OU's validation activities in the UK). In terms of domicile/OU location, **80%** (**£1,339.0 million**) is associated with students at the OU in England, with **8%** (**£140.6 million**) generated by students at the OU in Wales, **10%** (**£160.4 million**) at the OU in Scotland, and **2%** (**£33.1 million**) at the OU in Northern Ireland. Finally, considering the breakdown by type of impact, the impact of the teaching provided to students with 'traditional' levels of prior attainment (i.e. at GCE A-Levels and above) was estimated at **£717.6 million** (**43%**), while the impact associated with 'non-traditional' levels of prior attainment stands at approximately **£952.3 million** (**57%**).

It is important to emphasise that these impacts are associated with the 2018-19 cohort of students only. Depending on the size and composition of subsequent cohorts of Open University students, a comparable estimate of the economic impact associated with teaching and learning activities would be associated with each successive cohort of starters (depending on the prevailing labour market conditions at the time).

Table 10 Aggregate impact of The OU's teaching and learning activities associated with the 2018-19 cohort (£m), by type of impact, beneficiary and domicile/location of study

Type of impact and beneficiary	Domicile/location of study				
	England	Wales	Scotland	Northern Ireland	Total
Students	**£833.0m**	**£94.9m**	**£101.2m**	**£21.3m**	**£1,050.4m**
'Traditional' prior attainment	£384.8m	£39.7m	£54.1m	£11.4m	**£490.0m**
'Non-traditional' prior attainment	£448.2m	£55.3m	£47.1m	£9.9m	**£560.4m**
Exchequer	**£502.8m**	**£45.7m**	**£59.2m**	**£11.8m**	**£619.4m**
'Traditional' prior attainment	£186.9m	£11.4m	£24.4m	£4.8m	**£227.6m**
'Non-traditional' prior attainment	£315.8m	£34.2m	£34.8m	£7.0m	**£391.8m**
UK validation activities	**£3.2m**	-	-	-	**£3.2m**
Total	**£1,339.0m**	**£140.6m**	**£160.4m**	**£33.1m**	**£1,673.0m**

Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding. 'Non-traditional' prior attainment includes individuals in the 2018-19 cohort who enrolled in OU qualifications/modules with qualifications at GCSE or below (i.e. RQF Level 2 or below) as their highest level of prior attainment (including no formal qualifications). 'Traditional' prior attainment includes individuals who enrolled with qualifications of at least A-levels or equivalent (i.e. at RFQ Level 3 or above) as their highest level of attainment. ***Source: London Economics' analysis***

The economic impact associated with apprenticeships offered by The Open University

In addition to the significant labour market benefits associated with higher education qualification attainment, there is extensive empirical analysis identifying the economic benefits associated with workplace-based education and training. Analysis recently undertaken as part of the Centre for Vocational Education Research (London Economics (2019)) identified that the daily earnings return associated with Advanced apprenticeships (i.e. Level 3, equivalent to GCE A-Levels) was approximately 20% for men and 10% for women respectively. For Intermediate apprenticeships (i.e. Level 2, equivalent to 5 or more GCSEs), the corresponding returns for men and women were estimated to be 21% and 16% respectively. This analysis also demonstrated that the labour market benefits associated with apprenticeships are significantly greater than classroom-based vocational qualifications at the same level.

Reflecting the significant opportunities offered by apprenticeship training, the **Apprenticeship Levy** was introduced in April 2017. Through a combination of Exchequer and employer contributions (depending on employer size), there has been a significant increase in the volume of apprenticeships delivered at higher levels (i.e. at Level 4 and above). Recent analysis by London Economics (2020) for the Social Mobility Commission identified that the number of learners starting apprenticeships at higher levels offered by large employers had more than doubled between 2015-16 and 2017-18.

Illustrating this fundamental shift towards higher-level apprenticeships, in 2018-19, there were **1,069** apprentices commencing their training with the off-the-job training component delivered by The Open University (predominantly in England). Of this total, **113** were undertaking Foundation Degree apprenticeships (at Level 4/5), **632** were starting degree level apprenticeships (Level 6) and the remaining **324** were enrolled on postgraduate level apprenticeships (Level 7). **57%** of these starters were female, and **43%** were male.

To estimate the economic impact associated with The Open University's apprenticeship delivery, a number of assumptions need to be made because of the relatively recent introduction of these higher-level apprenticeships. Therefore, adopting a relatively conservative approach, we assume the following:

- Open University apprenticeship completion rates are the same as national apprenticeship achievement rates associated with Higher apprenticeships (Levels 4-7) in 2018-19 (for individuals aged 24 or above)[52]. These completion rates stand at **52.3%** for men and **61.3%** for women.
- The average age of learners starting apprenticeships at The Open University is the same as the starting age for the corresponding group of learners undertaking traditional higher education qualifications on a part-time basis with The Open University. Specifically, we assume that the average starting age for Foundation Degree and degree level apprenticeships is **31** years[53], while the assumed average starting age for postgraduate level apprenticeships is **40**[54].
- As the acquisition of an apprenticeship endows the recipient with a higher education qualification as well as the accumulated workplace-based training, we assume that the earnings and employment boosts associated with the different levels of apprenticeships offered by The Open University are the same as the corresponding higher education qualifications (delivered part-time). In particular, we assume that a Foundation Degree apprenticeship offers the same labour market benefit as that associated with 'other undergraduate' qualifications (compared to GCE A-Levels). Similarly, we assume that the labour market return to a degree level apprenticeship is comparable to the return associated with a first degree (again compared to GCE A Levels), and that a postgraduate degree level apprenticeship generates the same return as 'other postgraduate' qualifications (relative to first degrees).

[52] See Department for Education (2020).
[53] This is based on UK-domiciled students starting part-time 'other undergraduate' qualifications and first degrees (respectively) at The Open University in 2018-19.
[54] Based on UK-domiciled students starting part-time 'other postgraduate' qualifications at the OU in 2018-19.

- In terms of the costs of apprenticeship training, we assume that for those apprenticeships that are funded by firms contributing to the Apprenticeship Levy, the contribution of the Exchequer to the costs of delivery are **9%** of the fee accrued by The Open University (with the remaining **91%** contributed by the employer). For non-Levy funded apprenticeships (and where not specified), we assume the contribution of the Exchequer stands at **95%**[55]. We assume that there is no cost incurred by apprentices themselves.
- We assume that the average duration of apprenticeships is **2** years for a Foundation Degree apprenticeship, **4** years for a degree level apprenticeship, and **5** years for a postgraduate degree level apprenticeship. We assume that the Exchequer contribution (as a proportion of the fee income received by The Open University) is spread evenly over the period of training.

Based on these assumptions, our analysis indicates that there are significant economic returns associated with apprenticeship training provided by The Open University. For instance, for a typical male learner starting a degree level apprenticeship with the OU in 2018-19 (on average across all Home Nations of the United Kingdom), the net apprenticeship benefit was estimated to be approximately **£66,000**, while for a typical female apprentice, the corresponding estimate was **£49,000**. In terms of the returns to the public purse, the corresponding net Exchequer benefit associated with a degree level apprenticeship was estimated to be approximately **£59,000** for a male apprentice, while the estimate for a typical female apprentice was **£38,000**.

Combining the information on the net benefits to students and the Exchequer (for all types of apprenticeships offered by the OU) with the number of students starting these apprenticeships with the OU in 2018-19 and the assumed completion rates, the analysis suggests that the aggregate economic benefit accrued by apprentices in the 2018-19 OU cohort was approximately **£23.5 million**, while the aggregate economic benefit accrued by the Exchequer was estimated to be **£19.0 million** (see Table 11). This results in a total economic impact of **£42.5 million**. Approximately **£2.5 million** was associated with learners undertaking Foundation Degree apprenticeships, **£36.7 million** was associated with degree level apprenticeships, and the remaining **£3.2 million** was associated with postgraduate degree level apprenticeships.

Table 11 Total economic impact associated with the 2018-19 cohort of learners starting apprenticeships at The Open University in 2018-19 (£m), by beneficiary and level of apprenticeship

Apprenticeship level	Students	Exchequer	Total
Foundation Degree	£1.4m	£1.1m	**£2.5m**
UG Degree	£20.1m	£16.6m	**£36.7m**
Postgraduate	£2.0m	£1.3m	**£3.2m**
Total	**£23.5m**	**£19.0m**	**£42.5m**

Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding.
Source: London Economics' analysis

[55] In addition, for the small proportion of OU apprenticeship learners for whom the funding type was recorded as 'not applicable', we assume that the entire fee accrued by the OU is funded by the Exchequer.

3 The impact of The Open University's informal teaching and learning activities

Alongside the 'formal' teaching of higher education qualifications and modules (analysed in Section 2), The Open University also offers a range of 'informal' teaching and learning activities through the provision of additional educational content to the wider public. The Open University provides freely accessible educational content through a range of online channels, including **OpenLearn** (the OU's free online learning channel) and the **OU's YouTube channel**. It is also a founder of and key stakeholder in **FutureLearn**, a social learning platform that provides short courses from the OU itself, as well as from a range of international universities and cultural institutions[56]. In addition, although not monetised in this report, as part of its long-standing **partnership with the British Broadcasting Corporation (BBC)**, The Open University has also co-developed a range of popular TV and radio programmes that have resulted in extensive engagement with the general public.

It is clear that there are educational and skills benefits associated with these informal learning opportunities (as well as improved well-being); however, due to the particular nature of learning provided through these channels, estimating the economic value of such open educational resources is a difficult exercise. As such, our analysis provides a lower bound estimate of the economic impact of the informal education offered by The Open University in the United Kingdom[57].

3.1 Methodological approach

To place a monetary value on the impact of the OU's informal education channels, we undertook an assessment of the costs to an individual of engaging in learning with the open educational resources offered by The Open University. The vast majority of courses and content provided by The Open University through OpenLearn, FutureLearn, and the OU content on YouTube do not involve any direct costs (such as tuition fee charges) to its users[58]. Therefore, our analysis instead focuses on the indirect costs to the individual in terms of the **opportunity costs of time devoted to informal learning with the OU**[59]. These opportunity costs are measured by combining:

- An estimate of the **value of 'leisure time'**; and
- Data on the **total time devoted** to learning with The Open University's informal learning opportunities.

[56] In addition to the non-credit-bearing short courses considered here, FutureLearn also offers a range of credit-bearing microcredentials, degree programmes and professional certificates.

[57] For example, individuals who initially engage with The Open University's informal learning channels, having informed an understanding of what it would be like to study with the OU, might be inclined to engage in subsequent formal learning at the OU (i.e. by starting a new qualification intention at the OU, or enrolling in standalone credit-bearing modules). The analysis at hand does not include these 'indirect' effects of informal learning due to a lack of suitable data and the difficulty of measuring these impacts.

[58] Note that our analysis does not take account of the costs to the individual of owning an internet-enabled device, as these constitute sunk costs to the individual, and should therefore not be taken account of in the individual's choice to engage with The Open University's informal learning content. Further note that some FutureLearn courses are not provided for free, but instead require an upfront fee.

[59] The focus on the opportunity cost of participating in the OU's informal learning opportunities is based on the fact that the economic benefits of undertaking this type of learning – in terms of any potential earnings and employment benefits - are relatively difficult to measure (given the nature of this informal learning provision, and the lack of data on the labour market outcomes of individuals who participated in this type of learning as compared to individuals who did not (i.e. the appropriate counterfactual group)).

Providing pathways into social work with Cornwall Council

There is a **national shortage of social workers**, a problem faced by many local councils. For Cornwall Council, the problem is **exacerbated by geography and a lack of fast transport links**. Furthermore, an ageing workforce means there will be even more staffing challenges in the future, unless it can boost the local talent pipeline and provision of skills. The Council knew it needed to act quickly to **recruit more social workers locally** and to **improve succession planning within the profession**.

The Council is now on course to achieving its goals through a programme of **distance learning apprenticeships with The Open University**. Distance learning has been key to attracting high numbers of applicants, as it allows students to remain with their families in Cornwall while training, helping to widen participation in social work education.

The Council now sponsors employees on both The Open University's **Social Worker Degree Apprenticeship** and The Open University's **Postgraduate Diploma in Social Work**; the latter providing an option to progress to the Master's in Social Work. Through The Open University's distance learning provision, **Cornwall Council is able to offer a full career and qualification pathway to its social workers**, from apprenticeships to postgraduate level, leading through to being principal social workers, consultant social workers, and future leaders of the organisation. Progression to the postgraduate qualification not only allows the Council to fast track people into those roles, but also raises the academic bar in the organisation and the social work profession as a whole.

This dual approach (of recruitment into the apprenticeship route, and fast-tracking people into the profession through the postgraduate qualification) enables the Council to recruit and retain a much broader, more diverse range of people who, for a variety of reasons, would not have been able to pursue a traditional full-time university degree.

"When the apprenticeship was offered, I jumped on it immediately and put my application in because it would enable me to carry on working and learning on the job. I need to work as well."

Annette Deegan, an apprentice social worker at Cornwall Council

"What you are studying directly relates to your practice placements and prepares you for the transferable skills that you need to go into the everyday job."

Tina Philp, studying a Postgraduate Diploma in Social Work

3.1.1 The value of leisure

The economic value of The Open University's informal education materials is estimated through assessing the opportunity cost of the (foregone) time spent learning using this content. These costs crucially depend on the type of activity that an individual would have undertaken instead of engaging with The Open University's informal learning channels.

If the time spent would otherwise have been spent working in the labour market, this opportunity cost would be measured by the individual's wage rate. However, given the nature of the OU's informal learning resources, it appears more likely that individuals use them during their leisure time instead of during 'traditional' working hours. As a result, an assessment of the economic impact of informal learning at the OU requires an **estimate of the value of leisure time**.

In general, the value of leisure is lower than the value of time spent working in the labour market, as the wage rate reflects both the effort and the skills associated with a job. The related literature commonly estimates the value of leisure time by considering the value of travel time, focusing on how much an individual would be willing to pay to save a certain amount of time on a trip to a leisure destination (Office of Fair Trading, 2009). As outlined by Belli et al. (2001, p. 128), 'in the absence of evidence to the contrary, a good rule of thumb is to value all leisure time saved equally at about **30 percent** of the traveller's hourly wage'. Likewise, Amoako-Tuffour and Martinez-Espineira (2008) acknowledge the common convention to estimate the value of leisure at **33%** of the wage rate, as is done by many other researchers[60]. Similarly, Cesario (1976) uses a slightly higher fraction of **43%** of the wage rate to approximate the value of leisure, and Sarker and Surry (1998) and Sohngen et al. (2000) apply **30%** to the wage rate.

Our analysis of the value of informal education provided by The Open University follows the literature by **estimating the value of leisure at one third of the average hourly wage rate**, separately for each UK Home Nation. To arrive at estimates of average hourly wage rates for the academic year of interest, we use data from the Annual Survey of Hours and Earnings on average gross hourly pay for all employees by Home Nation of the United Kingdom in 2018. Gross hourly pay amounts to **£16.97** in England, **£14.38** in Wales, **£16.16** in Scotland and **£14.48** in Northern Ireland (with a UK total average of **£16.71** per hour)[61]. Using these hourly wage rates, the estimated value of leisure stands at **£5.66** in England, **£4.79** in Wales, **£5.39** in Scotland, and **£4.83** in Northern Ireland (with a UK-wide average of **£5.57** per hour).

For our calculation of the economic impact of the different channels of informal learning offered by The Open University, we combine these estimates of the costs of leisure with information on the time that individuals in each Home Nation dedicated to each of the OU's informal learning channels throughout the 2018-19 academic year.

[60] For example, by Hellerstein and Mendelsohn (1993), Englin and Cameron (1996), Liston-Heyes and Heyes (1996), Bin et al. (2005), and Hagerty and Moeltner (2005).
[61] See Office for National Statistics (2020a).

Transforming attitudes on the environment with Blue Planet II

As part of its long-standing partnership with the BBC, The Open University has co-developed a range of popular TV and radio programmes that have resulted in extensive engagement with the general public. Since the 1970s, the BBC and the OU have collaborated on a variety of radio and TV programmes, including prime-time broadcasts such as **Blue Planet II**, **The Big Life Fix**, **Inside the Foreign Office**, **School**, **The Prosecutors**, **Hospital** and **Autumnwatch**. In addition to the actual programmes, The Open University and the BBC have also produced a range of further opportunities to continue the learning journey after the broadcast, including:

- **BBC Ideas** (an online BBC platform with short factual videos highlighting OU academics and their research);
- **nQuire** (an OU platform which the BBC utilises for joint Citizen Science projects (such as **Springwatch** or **The Feel Good Test**);
- **Online broadcast pages** complementing the programmes;
- **Free posters and booklets** printable upon request; and
- A range of **outreach events** organised as a result of the OU/BBC co-productions, and featuring OU academic consultants from the relevant series.

The Blue Planet II series (BPII) is one of the landmark programmes co-produced by The Open and the BBC. The aim of the series was to show how ocean research plays a vital part in encouraging political action to protect the Earth's oceans. Academics from The Open University acted as Scientific Advisors on the science aspects portrayed in the programme.

Global reach

The programme had an unparalleled reach, with over 750 million views worldwide (with 133 million UK views)[62], together with linked ancillary activities, including distribution to the public of 481,000 requested copies of an OU 'Oceans' poster.

The Blue Planet II programmes have **catapulted issues of ocean health into the public consciousness** and, crucially, **changed people's attitudes and behaviour** in many areas. The Marine Conservation Society and the World Wildlife Fund respectively experienced 169% and 51% jumps in traffic to their websites after the first BPII episode.

© BBC/Alex Board

Informing policy

The global viewership was complemented by widespread public engagement and concern, and the series has **influenced the extension of existing and passing of new UK government legislation**, and **informed and shaped political debate**. For example, in a parliamentary discussion on Antarctic ocean conservation policy, BPII was quoted several times as an exemplar of the delicate and vulnerable nature of biodiversity in the deep oceans. This illustrates BPII's major contribution to widening public access to, and participation in, the political process.

The series also stimulated another parliamentary debate on the 'Blue Belt Programme: Marine Protected Areas'. Blue Planet II was explicitly mentioned in this debate by MPs in terms of 'capitalising on the momentum generated by it', and the large number of tweets and messages to MPs from BPII viewers. This debate was said to have 'demonstrated

[62] Viewing figures are derived from a cumulative figure consisting of the consolidated viewing figures for each episode's first transmission, plus the narrative repeat and iPlayer viewing figures for each episode.

the broad cross-party consensus on the importance of protecting our marine environment', and was the first phase in implementing the Blue Belt 2.0 initiative: British Global Leadership in Ocean Conservation 2017-2022 (funding of £4.8 million per year for protecting 4 million km^2 of oceans across the UK's overseas territories). **Through the OU expertise that shaped BPII, the series thus provided impetus to implementing and further expanding the original Blue Belt legislation on Marine Protected Areas originally proposed in 2012**.

Changing attitudes and behaviours

A wealth of evidence documents BPII's role in changing the public's awareness of, attitudes towards, and behaviour regarding plastics pollution.

© BBC/Alex Mustard

Internet searches of 'plastic recycling' rose by 55% following BPII's final episode. A Waitrose survey of British consumers found that **88% of people who watched BPII have since changed their behaviour** as a result. Half of these people said they had 'drastically changed' their behaviour. Waitrose received 30,000 questions and posts about plastic on their Twitter account in the six months after BPII was aired – a 16-fold increase on the previous year. An IPSOS-MORI poll found that 80% of BPII viewers say they now try to purchase fewer single-use plastics, compared to only 37% of those who had not seen BPII. Another survey (of 2,000 British adults) found that, following BPII, 47% of people no longer use plastic straws, 50% were more likely to use reusable water bottles or cups, 62% were more likely to reuse a plastic bag at the supermarket, and 49% were regularly taking steps as an individual to combat global warming. 'Plastic' was declared 'children's word of the year' for 2018, with BPII credited with influencing children's writing.

Open for all – How OpenLearn supports skill development throughout the UK

In 2006, The Open University set up OpenLearn as an extension of its mission to transform access to higher education. It is a **free platform** with materials across a range of subject areas, **available to anyone**, wherever they are in the world and whatever stage they are at with their education and employment. There are now **more than 950 short courses offered**, featuring different forms of content, and thousands of articles, videos, quizzes and interactive games. By early summer 2020, **OpenLearn had received around 80 million visitors in total**, attracting around 850,000 visitors every month pre-pandemic.

Supporting employees and jobseekers

The Open University offers **bespoke OpenLearn portals for organisations to help direct employees towards relevant learning**. Courses on offer range from technical and career-specific skills to soft skills, such as managing family budgets, mental health and career resilience, or basic literacy and numeracy. Jobseekers also benefit from these bespoke portals. In a pilot scheme with JobCentre Plus in Kingston-upon-Thames, The Open University collaborated with the Department of Work and Pensions to provide jobseekers curated access to short-course programmes on the OpenLearn platform. Courses cover **core skills cited by employers as lacking in many jobseekers** such as leadership, networking and career resilience. The scheme is now expected to be extended across South London.

In partnership with Further Education colleges and Higher Education Funding Council for Wales, The Open University in Wales has also developed **free bilingual Flexible Essential Skills** courses aligned to Levels 1 and 2 in literacy and numeracy. These have reached **over 2,500 learners** including further education students, students on ESOL[63] courses, and adults returning to learning.

Responding to the Covid-19 pandemic

The Open University has worked with governments across the four UK Home Nations to **provide access for furloughed workers to free courses on the OpenLearn platform**. From February to May 2020, OpenLearn saw a **134% increase in UK visitors** to the platform, reaching a **peak of 2.5 million in April 2020**.

In Scotland, The Open University worked with Skills Development Scotland to launch the **'My World of Work' portal** in response to the Covid-19 pandemic, **to connect people with free-to-access online learning materials**.

In Northern Ireland, The Open University worked in close partnership with the Department for the Economy to produce an **initial suite of free online courses for furloughed workers and others who have lost their job as a result of the pandemic**. Launched by the Minister for the Economy, Diane Dodds, courses cover digital skills, cybersecurity, employability and essential skills.

> ***"This is a great initiative from our key training and skills agency to help people who have been impacted by the economic crisis caused by the COVID-19 pandemic. People who have been furloughed, or sadly made redundant, who are worried about their future career, or simply looking to learn new things or skills while in lockdown, can now do so safely and for free."***
>
> Jamie Hepburn, Scottish Minister for Business, Fair Work and Skills

In England, **OpenLearn courses are available to furloughed workers through the Government's Skills Toolkit website**. As well as existing courses in Beginners' Maths, Cyber Security and Learning to Code, two new courses in entry-level Bookkeeping and Advanced Computer Networking were developed.

In Wales, The Open University **provides courses through the Working Wales website** to provide new e-learning for furloughed workers aimed at helping them to improve their knowledge levels across a broad range of topics, and supporting their mental wellbeing.

[63] English for Speakers of Other Languages.

3.2 OpenLearn

OpenLearn is another informal learning route offered by The Open University, providing access to a wide range of open and free online courses and resources to the general public. Courses are based on the study materials of the OU's undergraduate and postgraduate courses, and cover a variety of topics. In the 2018-19 academic year, OpenLearn included a total of **988** free courses, amounting to around **11,948** hours of study materials.

Our analysis of the economic impact of OpenLearn in terms of the opportunity cost of user time is based on data on different levels of user engagement with OpenLearn free courses in the United Kingdom over the 2018-19 academic year. Out of a total of **6.2 million** (non-unique[64]) visitors to the entire OpenLearn website in the United Kingdom in the 2018-19 academic year, **4.5 million** visited websites associated specifically with OpenLearn's free courses (any elements of free courses). Out of these, our analysis focused on those **2.3 million** visitors that were classified as having engaged with the course material content to some extent, including[65]:

1. **738,000** visitors spent between 1 and 5 minutes on the site;
2. **381,000** visitors spent between 5 and 10 minutes on the site;
3. **644,000** visitors spent between 10 and 30 minutes on the site;
4. **317,000** visitors spent between 30 and 60 minutes on the site;
5. **163,000** visitors spent between 60 and 120 minutes on the site;
6. **42,000** visitors spent between 120 and 300 minutes on the site;
7. **1,000** visitors spent between 300 and 600 minutes on the site; and
8. **20** visitors spent between 600 and 900 minutes on the site.

These visitor numbers were further broken down by Home Nation, using their assigned IP address[66].

Using midpoint durations of the number of minutes viewed for these groups of visitors that engaged with the OpenLearn materials[67] in each Home Nation, multiplying this by the associated number of engaged visitors per Home Nation in each group, and combining this with the value of leisure per Home Nation, the **economic impact of OpenLearn** in the United Kingdom in the 2018-19 academic year was estimated at **£5.2 million**. Of this total, visitors from England accounted for **£4.4 million** of this total, with the associated estimates for visitors from Wales, Scotland and Northern Ireland standing at **£0.2 million**, **£0.5 million** and **£0.1 million, respectively**.

3.3 The Open University's YouTube channel

The Open University also provides additional free open educational resources via its YouTube channel. The channel currently has over **240,000** subscribers worldwide, with a total number of UK visitors amounting to approximately **651,000** in the 2018-19 academic year. Since the original figures could not be broken down by Home Nation, we instead used total population distributions to estimate a breakdown of visits by Home Nation. It is thus estimated that approximately **548,000**

[64] Visitors are measured by browser activity; in this case, the visits measured are non-unique, i.e. if an individual accesses the given website using the same browser multiple times, each visit will be counted individually, and not as one.
[65] Visitor numbers have been rounded to the nearest 1,000 or 10 as applicable.
[66] Note that the above numbers exclude approximately 2,200 visitors with a missing/hidden IP address who could thus not be assigned to a specific UK Home Nation.
[67] For example, visits that lasted between 5 and 10 minutes, were assigned a midpoint duration of 7.5 minutes. The same approach was applied separately for each Home Nation.

visits to the YouTube channel were made in England, **31,000** in Wales, **53,000** in Scotland and **18,000** in Northern Ireland[68]. The average video viewing time per visit per video was approximately **2.6** minutes, and the average visitor watched **1.5** videos[69]. Using this average video viewing time, the number of videos watched, visitors per Home Nation and the value of leisure in each Home Nation, this implies an **economic impact of The OU's YouTube channel** in the UK in the academic year 2018-19 of **£0.2 million** (of which the vast majority was associated with visitors from England).

3.4 FutureLearn

A private company founded by The Open University and now jointly owned by the OU and the SEEK Group, **FutureLearn** offers credible and flexible short online courses and microcredentials, as well as undergraduate and postgraduate degrees. In addition to top universities, FutureLearn partners with leading organisations such as Accenture, the British Council, CIPD, Raspberry Pi, Founders4Schools and Health Education England, and is involved in government-backed initiatives to address skills gaps such as The Institute of Coding and the National Centre for Computing Education.

In order to provide a conservative and robust estimate, our analysis focused on those **162,000** learners who *completed* FutureLearn courses in the 2018-19 academic year, including circa **16,000** individuals who completed courses provided by the OU (with an associated **16** hours of study per course on average), and **146,000** learners who completed non-OU courses (with an associated **21** hours of study per course on average). A direct breakdown from FutureLearn data on completers by Home Nation is not possible, so we again estimate this breakdown based on total population data (as in Section 3.3 (the OU's YouTube channel)).

Combining the breakdown of completers by Home Nation with the average study hours per course (assuming that this does not vary by Home Nation) and the value of leisure, the total **economic impact of FutureLearn** in 2018-19 was estimated at **£18.8** million. This economic impact is disaggregated into **£16.0** million for England, **£0.8** million for Wales, **£1.5** million for Scotland and **£0.5** million for Northern Ireland.

Note again that these constitute conservative estimates of the impact that FutureLearn generated in the UK, as they only include learners who completed FutureLearn courses in 2018-19. Furthermore, note that many FutureLearn short courses have professional, academic, or employability-related outcomes, so that the analysis based on the value of time spent engaged with these activities likely does not capture the true economic value of these courses. This might be particularly true for paid-for short courses included in our estimate (where the cost of these courses (which proxies the perceived value by those who pay for the course) exceeds our estimates based on the leisure opportunity cost method), as well as for courses leading to credit or giving learners the chance to enrol in parts of an institution's full degree programmes (which have not been included here).

[68] Numbers may not add precisely to the UK total due to rounding (to the nearest 1,000).
[69] Note that these are UK-wide averages, as no geographical breakdown was available.

Open Access publishing through The Open University's CORE system

The importance of Open Access

One of the UK's national aims is to be a leader in the creation and dissemination of new research through its knowledge economy and educational provision. Aligned with this is its desire to spearhead developments in Open Science and Research provisions and open access publishing for research. Open Access publishing is especially critical in times such as the COVID-19 pandemic. The free sharing of global scientific knowledge helps researchers find solutions to scientific problems more efficiently and effectively, and avoids duplication - all of which are key in combating the spread of COVID-19.

What is CORE?

CORE offers unique data services for researchers, the general public, not-for-profit organisations, as well as commercial paying customers, enabling them to **discover, process, and data mine research literature from a range of disciplines**. The main services CORE provides include:

Content discovery	Managing content	Access to raw data
Services assist users in discovering articles of interest from across the network of open access repositories and finding freely accessible copies of papers that are often behind a paywall.	The CORE Repository Dashboard provides an online interface offering valuable technical information and statistics to content providers.	Services allow users to download up-to-date copies of all CORE data and provide real-time machine access to metadata and full texts of research papers in CORE.

Through these services, CORE powers **highly innovative uses by market-leading third-party organisations**, including in plagiarism detection and publishing. CORE has played a **pivotal role in the global move towards universal open access** by making scientific knowledge more easily and freely discoverable, improving communication protocols used by research publication providers, and helping funders to monitor the impact of policies on practice.

The Open University's involvement in CORE

As of January 2020, CORE was the **5,312nd most used website globally,** with an average of **8 million monthly active users**.

The Open University's CORE system, hosted by the University's Knowledge Media Institute, provides access to the world's largest aggregator of open and freely accessible research publications acquired from a global network of repositories and journals. The research underpinning CORE has been conducted at The Open University since 2010. The research and development funding, including for the delivery of the CORE service supporting the work, totalled £2.37 million.

The origins of CORE evolved from The Open University's research into content-based recommender systems. The Knowledge Media Institute's team improved the state-of-the-art in:

- Balancing content similarity and content diversity;
- Introducing the use of citation proximity functions in research papers' recommendation systems; and
- Pioneering an online evaluation lab for research papers' recommendation systems.

Dr Petr Knoth and colleagues at The Open University have applied these new findings in the development of CORE, particularly in the CORE Recommender service. As a result, the quality of the services CORE offers to its extensive user-base has improved steadily over time.

3.5 Aggregate economic impact of the OU's informal education opportunities

Adding the total amount of time committed to the above channels in 2018-19, individuals in the UK spent a total of approximately **4.3 million hours** engaged with The Open University's informal education provided through OpenLearn, OU content on YouTube, and FutureLearn. Adding the economic impact of these learning opportunities in 2018-19, we arrive at a total estimated economic impact associated with all of these informal learning channels of **£24.2 million** (see Table 12). The analysis suggests that the economic impact of informal learning in England stands at **£20.7 million** (corresponding to **85%** of the UK total), with the comparable estimates for Wales, Scotland and Northern Ireland standing at **£1.0 million** (**4%**), **£2.0 million** (**8%**) and **£0.6 million** (**2%**), respectively.

Again, it is important to note that these numbers constitute lower bound estimates of the true value of the OU's informal education opportunities to the UK economy. While it is clear that there are educational and skills benefits associated with these learning channels (as well as a range of wider/social benefits), given the difficulty in measuring these impacts, our analysis is solely based on the value of time dedicated to learning through these channels.

The impact of The Open University's informal teaching and learning activities in 2018-19 was estimated at £24.2 million.

Table 12 Aggregate economic impact of informal education provision by the OU, £m in 2018-2019, by location of study

Type of impact	England	Wales	Scotland	Northern Ireland	Total
OpenLearn	£4.4m	£0.2m	£0.5m	£0.1m	**£5.2m**
YouTube	£0.2m	£0.0m	£0.0m	£0.0m	**£0.2m**
FutureLearn	£16.0m	£0.8m	£1.5m	£0.5m	**£18.8m**
Total	**£20.7m**	**£1.0m**	**£2.0m**	**£0.6m**	**£24.2m**

Note: All values are presented in 2018-19 prices, rounded to the nearest £0.1 million, and may not add up precisely to the totals indicated. ***Source: London Economics' analysis***

4 The impact of The Open University's research

In this section, we outline our analysis of the economic impact of The Open University's research activities, accounting for both the **direct effects** of the University's research as well as **productivity spillovers** from these research activities to the rest of the UK economy.

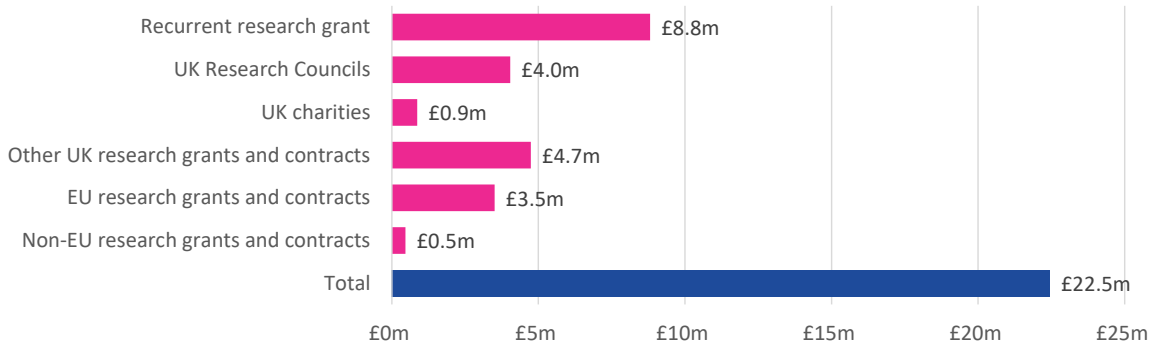
4.1 Direct research impact

The analysis of the direct economic impact of the research activities undertaken at The Open University was based on the total research-related income accrued by the University in the 2018-19 academic year, including:

- **Research grants and contracts** provided by:
  - The UK Research Councils;
  - UK-based charities;
  - UK government bodies, Local Authorities, health and hospital authorities;
  - UK industry and commerce and other UK sources;
  - EU sources, including government bodies charities, industry and commerce, and other sources; and,
  - Non-EU sources, including charities, industry and commerce, and other sources; and
- **Recurrent research funding** allocated to the University by Research England.

Aggregating across these sources, the total research-related income accrued by The Open University in the 2018-19 academic year amounted to **£22.5 million** (see Figure 7). The majority of this income was received through recurrent research grant funding provided by Research England (**£8.8 million, 39%**), from other UK research grants and contracts (**£4.7 million, 21%**), and from the UK Research Councils (**£4.0 million, 18%**). Another relatively large share (**£3.5 million, 16%**) was received from EU sources (i.e. government bodies and organisations).

Figure 7 Research Income received by The Open University in 2018-19, £m by source of income



Note: All values are presented in 2018-19 prices and are rounded to the nearest £0.1 million.

Source: London Economics' analysis based on data provided by The Open University

Using space technology to detect counterfeit whisky

Research from The Open University has supported the development of new analytical methods and technologies to classify and detect counterfeit alcohols.

The Open University is a delivery partner in SPRINT, the Space Research and Innovation Network for Technology, which enables the growth of SMEs via the exploitation of space technology to solve terrestrial problems. Enabled by SPRINT, Dr Geraint Morgan and his colleagues in the OU's School of Physical Sciences are working with the Scotch Whisky Research Institute (SWRI), IBM Research Europe and the Science and Technology Facilities Council (STFC) to **develop an optimised, fully automated classification algorithm to screen and detect adulterated and fake whisky samples** for the SWRI's members (which make up 90% of the production capacity in the Scotch Whisky sector).

The UK is the largest producer of spirits within the EU, with exports worth £5.2 billion in 2016. The spirits industry is strategically important, as it makes one of the largest positive contributions to the UK balance of trade (accounting for around 20% of all UK food and drink exports). More specifically, the Scotch Whisky sector exports to 180 countries, with particularly strong growth in India and China, and contributes approximately £1 billion in taxes each year to the UK Exchequer. Across Scotland, there are 128 operating whisky distilleries, employing more than 10,000 people. The high value of the products produced by the sector provides opportunities and incentives for criminal activity (such as adulteration, substitution or defrauding the consumer), creating safety concerns and resulting in lost revenue for genuine producers and governments.

> ***'SWRI looks forward to exploring the potential of the advanced techniques developed at The Open University to help us combat counterfeiting.'***
>
> Prof. James Brosnan, Director of Research, SWRI

Each whisky produces a complex profile of hundreds of organic compounds, which can be identified using chromatography techniques. SWRI reached out to The Open University to evaluate innovative gas chromatography and mass spectrometry techniques, to enhance its authentication capabilities and more accurately detect counterfeit products. While, in the short-term, a laboratory-based approach has been adopted, the longer-term aim is to utilise The Open University's space instrumentation expertise to jointly develop a robust system that can be used globally.

> ***'This project, utilising the expertise and technology of one of our core partners, The Open University, is an ideal example of how SPRINT can benefit organisations by transferring space-related expertise and development work into a commercial application.'***
>
> Ross Burgon, Head of SPRINT

Collectively, the OU, IBM, the STFC and SWRI have **developed optimised analytical assays and machine learning models to separate the complex mixture of volatile species present, and identify even the most subtle differences between samples**. This classification algorithm determines the likelihood that a given sample's profile is from a previously identified whisky, providing a method to distinguish between real and counterfeit whiskies. The outputs will be disseminated in a talk to the distilled spirit sector at the World Distilled Spirits Conference, Edinburgh, in March 2021.

The Open University's ability to characterise batch-to-batch variations is also of interest to SWRI's members and to other distillers. This is illustrated by the SPRINT project with Efficiency Technologies Ltd, as part of which the team at The Open University have developed analytical methods to enable the development of an optimised premium quality distilled spirit, currently under evaluation for sale by two leading supermarkets in the UK food and drink sector.

To arrive at the net direct impact of The Open University's research activities on the UK economy, we deducted the **costs to the public purse** of funding the University's research activities from the above total research income. These public costs relate to the direct block grants provided by the **UK Research Councils** (**£4.0 million**) as well as the **recurrent research funding provided by Research England** (**£8.8 million**). In addition, we take a conservative approach by including **other research income from UK central government bodies** (**£3.7 million**) as a cost to the public purse[70]. Combining these three costs amounts to a total public purse cost of **£16.5 million** in the 2018-19 academic year. Deducting these public purse costs from the total research-related income (**£22.5 million**), the analysis suggests that the **net direct impact** associated with The Open University's research activity in the 2018-19 academic year stands at **£5.9 million**.

4.2 Productivity spillovers

In addition to the direct impact of research, the wider academic literature indicates that investments in Research & Development (R&D) and other intangible assets may induce positive **externalities**. Economists refer to the term 'externality' to describe situations in which the activities of one 'agent' in the market induces (positive of negative) external effects on other agents in that market (which are not reflected in the price mechanism). In the context of the economic impact of research activities, existing academic literature assesses the existence and size of **positive productivity and knowledge spillovers**, where knowledge generated through the research activities of one agent enhances the productivity of other organisations.

There are many ways in which research generated at universities can induce such positive spillover effects to the private sector[71]. For example, spillovers are enabled through direct R&D collaborations between universities and firms (such as Knowledge Transfer Partnerships), the publication and dissemination of research findings, or through university graduates entering the labour market and passing on their knowledge to their employers.

Of particular interest in the context of research conducted by universities, a study by Haskel and Wallis (2010)[72] investigates evidence of **spillovers from publicly funded Research & Development activities**. The authors analyse productivity spillovers to the private sector from public spending on R&D by the UK Research Councils and public spending on civil and defence-related R&D[73, 74], and the relative effectiveness of these channels of public spending in terms of their impact on the 'market sector'. They find strong evidence of the existence of market sector productivity spillovers from public R&D expenditure originating from the UK Research Councils[75]. Their findings imply that, although there is no spillover effect associated with publicly funded civil and defence R&D, the marginal spillover effect of public spending on research through the Research Councils stands at **12.7 (i.e. every £1 spent on research through the Research Councils results in an additional annual**

[70] In the 2012-13 analysis (London Economics, 2014), we excluded enterprise grants from the SFC, HEFCW and DELNI as public costs. We would assume that for 2018-19, these grants would be included in this 'other research income' from UK central government category, so we exclude this total here.
[71] Note that there are clearly significant economic and social spillovers to the public sector associated with university research. However, despite their obvious importance, these have been much more difficult to estimate robustly, and are not included in this analysis.
[72] Also see Imperial College London (2010) for a summary of Haskel and Wallis's findings.
[73] The authors use data on government expenditure published by the Department for Business, Innovation and Skills for the financial years between 1986-87 and 2005-06.
[74] This is undertaken by regressing total factor productivity growth in the UK on various measures of public sector R&D spending.
[75] Note that the authors' regressions only test for correlation, so that their results could be subject to the problem of reverse causation (i.e. it might be the case that increased market sector productivity induced the government to raise public sector spending on R&D). To address this issue, the authors not only test for 1-year lags, but for lags of 2 and 3 years respectively, and receive similar estimates. These time lags imply that if there was a reverse causation issue, it would have to be the government's *anticipation* of increased total factor productivity growth in 2 or 3 years which would induce the government to raise its spending on research; as this seems an unlikely relationship, Haskel and Walls argue that their results appear robust in relation to reverse causation.

output of £12.70 within the UK private sector). The analysis also suggests that the spillover benefits of public spending on research in higher education are greater than those from other R&D areas supported by government.

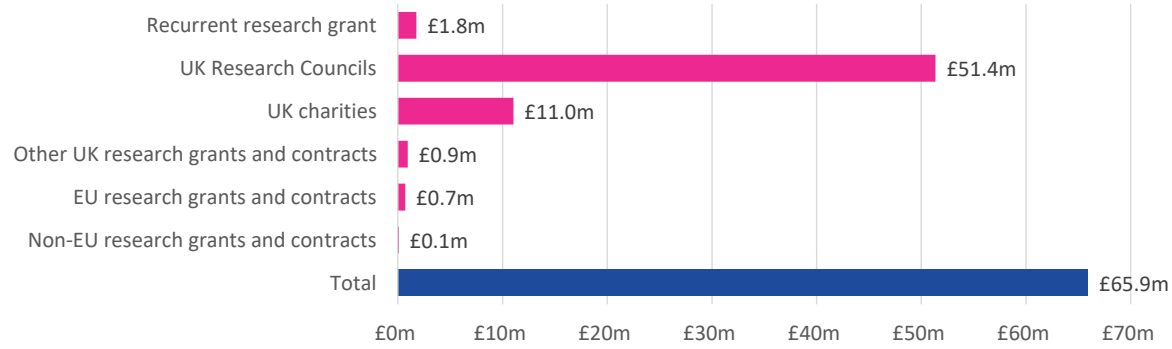
Another study by Haskel et al. (2014) provides additional insight into the size of potential productivity spillovers from university research. Rather than estimating effects on the UK economy as a whole, the authors analyse the size of spillover effects from public research across different UK industries[76]. The authors investigate the correlation between the combined research conducted by the Research Councils, the higher education sector, and central government itself (e.g. through public research laboratories)[77], interacted with measures of industry research activity, and total factor productivity within the different market sectors[78]. Their findings imply a total rate of return on public sector research of **0.2 (i.e. every £1 spent on public R&D results in an additional annual output of £0.20 within the UK private sector)**.

In order to estimate the productivity spillovers associated with The Open University's research activities, we apply these productivity spillover multipliers from the existing literature to the different research-related income streams received by the University in 2018-19 (presented in Figure 7). Specifically, assigning the multiplier of **12.7** to the research funding that The Open University received from **UK Research Councils and UK charities**[79] in 2018-19 (amounting to **£4.9 million**), and using the multiplier of **0.2** for **all other research funding** received by the University in that academic year (amounting to **£17.5 million**)[80], we estimate that the research conducted by The Open University in 2018-19 resulted in **total market sector productivity spillovers of £65.9 million** (see Figure 8).

In other words, we infer a weighted average spillover multiplier associated with The Open University's research activities of approximately **2.94** – i.e. **every £1 invested in The Open University's research activities generates an additional annual economic output of £2.94 across the UK economy**.

[76] Haskel et al. (2014) use data on 7 industries in the United Kingdom for the years 1995 to 2007.
[77] A key difference to the multiplier for Research Council spending provided by Haskel and Wallis (2010) lies in the distinction between *performed* and *funded* research, as outlined by Haskel et al. (2014). In particular, whereas Haskel and Wallis estimated the impact of research *funding* by the Research Councils on private sector productivity, Haskel et al. instead focus on the *performance* of R&D. Hence, they use measures of the research undertaken by the Research Councils and the government, rather than the research funding which they provide for external research, e.g. by higher education institutions. The distinction is less relevant in the higher education sector: to measure the research performed in higher education, the authors use Higher Education Funding Council funding (where research is both funded by and performed in higher education).
[78] In particular, the authors regress the three-year natural log difference of total factor productivity on the three-year and six-year lagged ratio of total research performed by the Research Councils, government and the Higher Education Funding Councils over real gross output per industry. To arrive at the relevant multiplier, this ratio is then interacted with a measure of co-operation of private sector firms with universities and public research institutes, capturing the fraction of firms in each industry co-operating with government or universities. The lagged independent variables are adjusted to ensure that the resulting coefficients can be interpreted as annual elasticities and rates of return.
[79] Where the vast majority of funding provided by UK charities relates to projects commissioned through an open competitive process.
[80] In terms of the large difference in magnitude between these multipliers, explaining the size of the 12.7 multiplier in particular, Haskel and Wallis (2010) argue that they would expect the productivity spillovers from Research Council funding to be large, 'given that the support provided by Research Councils is freely available and likely to be basic science'. To the best knowledge of the authors, there exists no further and recent empirical evidence to support this. As a result, we apply the separate multipliers to the different income strands.

Figure 8 Productivity spillovers associated with The Open University's research in 2018-19, £m by source of income



Note: All values are presented in 2018-19 prices, and rounded to the nearest £0.1 million.

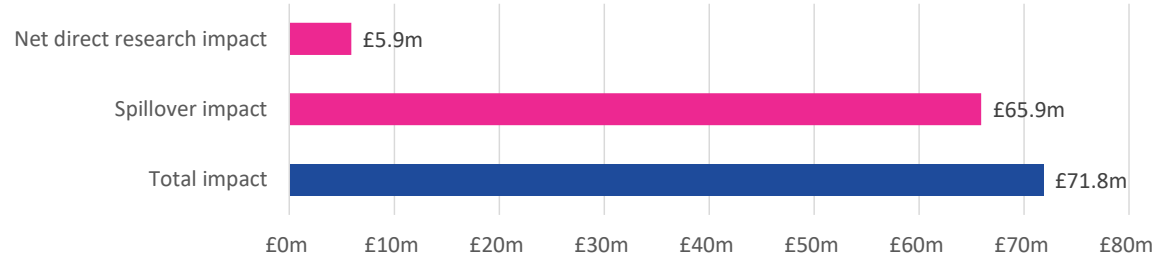
Source: London Economics' analysis based on data provided by The Open University, Haskel and Wallis (2010) and Haskel et al. (2014).

4.3 Aggregate impact of The Open University's research activities

Combining the direct economic impact of the University's research (**£5.9 million**) with the estimated productivity spillovers associated with this research (**£65.9 million**), we estimate that the total economic impact associated with The Open University's research activities in 2018-19 stands at approximately **£71.8 million** (see Figure 9).

The impact of The Open University's research activities in 2018-19 was estimated at £71.8 million.

Figure 9 Total impact of The Open University's research activities, £m in 2018-2019



Note: All values are presented in 2018-19 prices, rounded to the nearest £0.1 million, and may not add up precisely to the totals indicated.

Source: London Economics' analysis

5 The University's contribution to exports

Overseas trade, or international trade, is the sale of goods and services across international borders. With the United Kingdom being an attractive destination for many overseas students, the higher education sector is a tradeable industry with imports and exports like any other tradeable sector.

In this part of the analysis, we focus on the educational exports generated by The Open University, contributing to the UK economy as an injection of funding from overseas. In particular, we analyse overseas income in the form of the **tuition fee expenditure** by international (EU and non-EU domiciled) offshore students enrolled with The Open University, over the entire course of their studies at the OU. In addition, we also take account of the **non-tuition fee spending** of these students incurred in the UK (predominantly related to the costs of any potential travel and accommodation associated with education-related activities taking place in the UK)[81]. Finally, the analysis also includes the additional **income from The Open University's validated programmes offered by the non-UK partner institutions**, as another source of income from overseas.

5.1 The 2018-19 cohort of non-UK domiciled students studying at The Open University

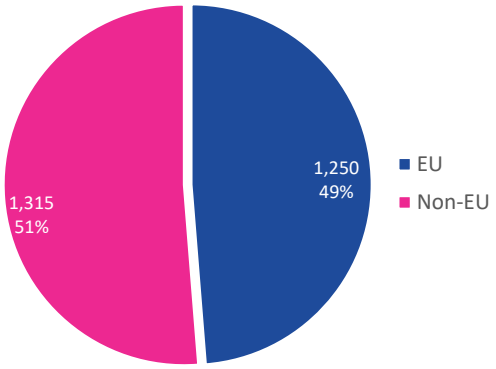
Out of the total of **2,565** students domiciled outside of the UK starting higher education qualifications or stand-alone modules at The Open University in 2018-19 (i.e. the 2018-19 offshore student cohort), **1,250 (49%)** were domiciled within the European Union, while **1,315 (51%)** were from non-EU countries (see Figure 10). As with the cohort of UK-domiciled students (discussed in Section 2), almost all of these international students were studying part-time (see Figure 11). Specifically, only **30 (1%)** of non-UK-domiciled students in the cohort were enrolled on full-time courses, with the remaining **2,535 (99%)** undertaking qualifications on a part-time basis.

In terms of study level (Figure 12), the majority of non-UK-domiciled students in the offshore cohort were undertaking first degrees (**1,485, 58%**) with another **545** students (**21%**) enrolled in postgraduate taught degrees. A further **375** students (**15%**) were enrolled in other undergraduate qualifications, **120** students (**5%**) were enrolled in other postgraduate learning, and **40** (**1%**) were undertaking postgraduate research degrees[82].

[81] Note that other types of export income accrued directly by The Open University (such as research income from international sources, or any other income received from non-UK sources) are taken account of in our analysis of the impact of the University's research activity (Section 4) and the direct, indirect and induced impacts (Section 6), and are thus excluded from the analysis of exports to avoid double-counting.

[82] Note that, in the, the original HESA Aggregate Offshore Return data provided by The Open University, it was not possible to distinguish 'other postgraduate' students from postgraduate (taught). To achieve a study-level disaggregation that is consistent with the analysis of the impact of formal teaching and learning (see Section 2), the breakdown into 'other postgraduate' and higher degree (taught) students was thus estimated based on the corresponding breakdown of part-time students in the UK-domiciled 2018-19 Open University cohort.

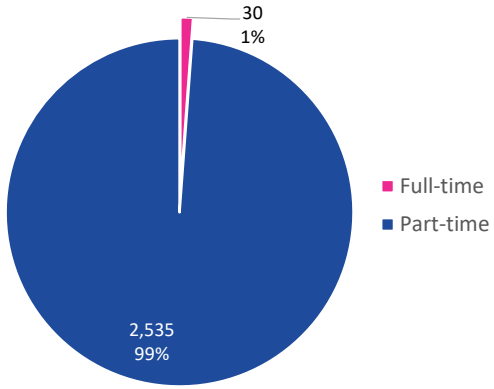
Figure 10 Non-UK-domiciled Open University students in the 2018-19 cohort, by domicile



Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.

Source: London Economics' analysis based on HESA Aggregate Offshore Return (AOR) data provided by The Open University

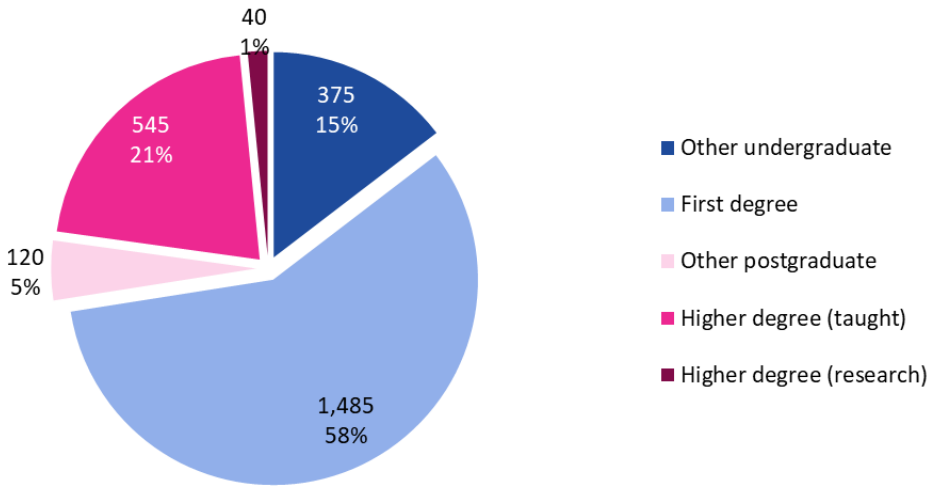
Figure 11 Non-UK-domiciled Open University students in the 2018-19 cohort, by study mode



Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.

Source: London Economics' analysis based on HESA Aggregate Offshore Return (AOR) data provided by The Open University

Figure 12 Non-UK-domiciled Open University students in the 2018-19 cohort, by level of study



Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding.

Source: London Economics' analysis based on HESA Aggregate Offshore Return (AOR) data provided by The Open University

5.2 Tuition fee income

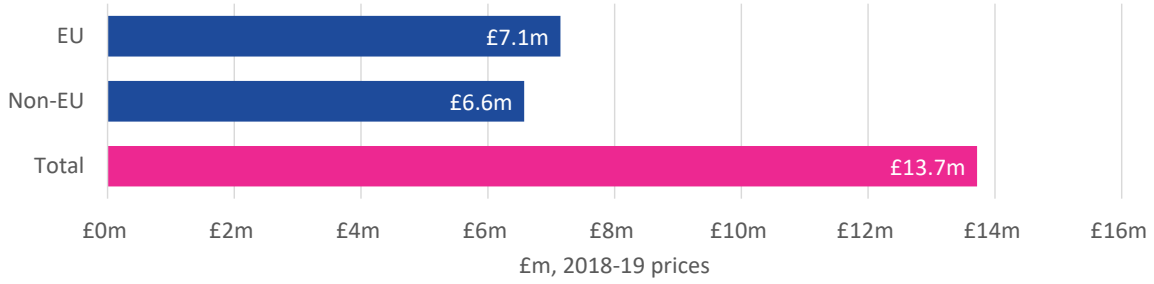
To assess the level of **tuition fee income** associated with international students in the 2018-19 cohort, we made use of data on the average tuition fees per international student charged by The Open University in 2018-19 (by qualification level and domicile[83]). Assuming the same average study durations as in the analysis of the OU's formal teaching and learning activities (Section 2), we

[83] Specifically, we used information provided by The Open University on the average tuition fees per international *full-time equivalent* (FTE) student in 2018-19, separately by domicile (i.e. EU students vs. non-EU students) and study level (i.e. undergraduate vs. postgraduate). To arrive at the fees per *student* (i.e. in headcount), we multiplied the respective rates per FTE student by the assumed average study per student, separately by study mode, study level (based on an aggregate split into undergraduate and postgraduate students) and domicile. We assume the same average study intensity for international (offshore) students in the 2018-19 cohort as for English-domiciled students starting qualifications or standalone modules with The Open University in 2018-19.

calculated the resulting tuition fee income per international student in the cohort from the start of a students' learning aim until completion. Expressing the total income until completion in 2018-19 prices, and applying the HM Treasury Green Book real discount rate of 3.5% (see HM Treasury (2018)), we arrived at an estimate of the total tuition fee income per student (in present value terms) over students' total study duration.

Combining the above estimates per student with information on the number of non-UK students in the 2018-19 offshore cohort, and using the same assumptions on completion rates as for UK-domiciled students (as part of the analysis of the impact of formal teaching and learning (see Section 2)), we arrived at estimates of the total tuition fee income generated from EU and non-EU students in the 2018-19 cohort of OU students. As presented in Figure 13, the **total tuition fee income** generated by international students in the 2018-19 cohort was estimated at **£13.7 million**, of which **£7.1 million** was generated by **EU students**, and **£6.6 million** was associated with **non-EU students**[84].

Figure 13 Aggregate tuition fee income associated with international students in the 2018-19 cohort, by domicile (£m)



Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £0.1m.

Source: London Economics' analysis

5.3 Non-tuition fee income

In addition to tuition fees, the UK economy benefits from export income from overseas students' **non-tuition fee expenditures** incurred during their studies with The Open University. Specifically, although predominantly based overseas (i.e. studying with the OU from offshore), international students in the 2018-19 Open University cohort are expected to incur some expenditures in the UK associated with their OU studies, including **accommodation** costs, **subsistence** costs, or **expenditures on books or course materials**, **IT/software**, or **subscriptions**[85].

[84] A detailed breakdown of the tuition income per student (by study level, mode and domicile) can be found in Annex A2.2.

[85] More specifically, unlike the majority of 'traditional' higher education institutions, the cohort of the OU's offshore students generally undertook their studies on a remote basis while living overseas. As such, unlike 'traditional' international students who incur non-tuition fee expenditure approximately equivalent to the level of tuition fee expenditure (e.g. see Department for Business, Innovation and Skills (2011b)), the general level of non-tuition fee expenditure *in the UK* incurred by OU offshore students over the duration of their studies is relatively limited (as any living cost expenditures are mostly incurred overseas). However, there are some travel and subsistence costs incurred by international students associated with activities related to their studies with the OU in the United Kingdom (such as attendance at graduation ceremonies, and some residential learning activity that takes place in the UK).

The Open University's Online Educational Resources Hub

The COVID-19 pandemic has shown that online access to education tools and systems is critical – in the short term, but also as a driver of the economic recovery. Informed by extensive pedagogical research, The Open University specialises in designing and delivering high-quality online learning approaches. Work such as that occurring at the Open University's Institute of Educational Technology has an important role to play in fulfilling the UK's desire to deliver online learning to improve access to education around the globe.

Work on **the Online Educational Resources (OER) Research Hub** at The Open University, directed by Professor Martin Weller, has focused on providing an evidence base for the use of OERs, to **enable open education organisations and practitioners to make informed decisions regarding their open education practices (OEP)**. The Hub has had an impact on **over 7,000 practitioners**, by increasing their awareness of OER and OEP, increasing their capacity to implement OEP, and stimulating them to develop new teaching strategies. The impact of the OER Research Hub is unique in that it has been created through conducting research about and modelling best OER and OEP practice.

Winner of the RCUK/OU Engaging Research Award (Feb 2015). The judges commented on how the 'public were engaged meaningfully in this densely participative research'.

The OER Hub has demonstrated research leadership by making their research tools and datasets openly available and providing courses aimed at informing and transforming open education practices. The importance of this dual role in supporting the development of a community of OER practitioners has been widely recognised. In 2015, an independent evaluation of the work of the Hub concluded that 'the OER Research Hub has built a solid reputation among a community of OER researchers and practitioners as leader, expert, and role model'. In February 2015, the Hub won a RCUK/OU Engaging Research Award with judges commenting on how the public "were engaged meaningfully in this densely participative research".

Worldwide impact

The OER Hub has worked closely with large Open Education organisations across the world to help them gain a better understanding of their learners and how they use OER.

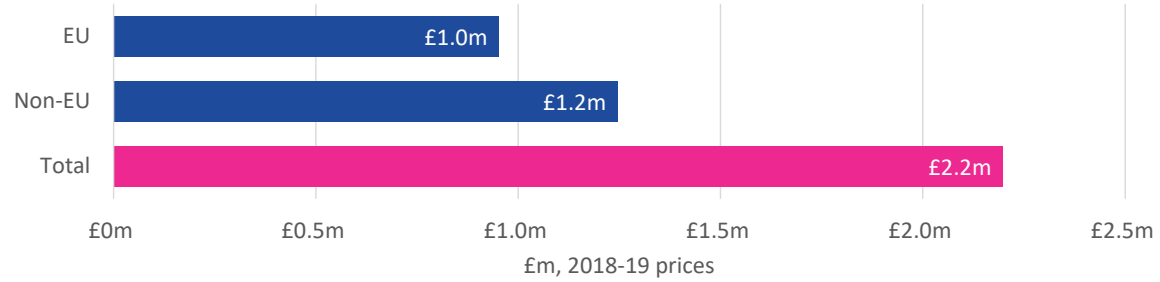
'The recommendation […] provided concrete evidence to share [with others] [...] and directly impacted the University of British Columbia's decision to add the creation of open educational resources in their promotion and tenure guide for educational leadership'. Amanda Coolidge Associate Director of Open Education at **BCcampus**, a project in Canada developing open textbooks for undergraduate courses	Jane Park, Director of Product and Research at Creative Commons stated that her work with the OER was of benefit to '*leading, managing, and running courses and course organizers for the School of Open, which ended up impacting people in various regions around the world*'. Examples of the scale of this benefit include the launch of the **School of Open Africa** in Kenya, Tanzania, Nigeria, and South Africa (8 programmes with 400 participants).	The **Global OER Graduate Network** has launched 100 courses, workshops and programmes with 3,000 participants to date. *'Participating […] has helped me to support other staff within my institution. I now coach other faculty members on how important it is to incorporate ICT and OER in teaching and learning, which I feel has enhanced the quality of my own teaching.'* Judith Pete, a lecturer at Tangaza University College in Kenya
The OER Hub has worked with US-based **OpenStax**, the largest open textbooks provider (their textbooks are being used in 56% of college and universities in the US and over 100 countries)	Based on a collaboration with the OER Hub, over 5 million users have completed Mathematics and Science exercises developed by **Siyavula**, a provider of maths and science open textbooks for K12 in South Africa	The OER Hub's work has also supported **The Saylor Academy**, a foundation developing 100+ open online resources and courses for learners

To analyse the level of UK-based non-tuition fee expenditure associated with the 2018-19 cohort of Open University offshore students, we used information collected through our survey of Open University alumni[86]. The non-tuition fee expenditures indicated by alumni that had studied with the OU from overseas were adjusted for inflation (to reflect 2018-19 prices[87], based on each respondents' year of study completion). The inflation-adjusted values were then used to calculate the average (UK-based) non-tuition fee expenditure per student per year incurred by The Open University's international students (split by domicile).

Similar to the estimates relating to tuition fee expenditure, we then calculated the non-tuition fee expenditure over the entire duration of students' higher education courses at the OU (and discounted to reflect present values). The resulting estimates provide the total average non-tuition fee expenditure per student in 2018-19 prices by level of study, mode and domicile[88].

Again combining these non-tuition fee estimates per student with the estimated number of students in the 2018-19 international offshore cohort expected to complete qualifications or modules at the OU, the **total non-tuition fee expenditure** associated with international students in the cohort was estimated to be **£2.2 million** (Figure 14). Considering the breakdown by domicile, **£1.0 million** of this income was associated with **EU students**, whereas **£1.2 million** was generated by **non-EU students** in the 2018-19 Open University offshore cohort.

Figure 14 Aggregate non-fee income associated with international students in the 2018-19 cohort, by domicile (£m)



Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £0.1m.

Source: London Economics' analysis

5.4 Income from the OU validated programmes offered by non-UK institutions

As outlined in Section 2.6, in addition to its direct teaching activities, The Open University validates programmes offered by partnering education institutions wishing to award OU qualifications. Information provided by The Open University indicated the value of the OU's income from its overseas validation activities in 2018-19 stood at approximately **£2.2 million**. The income from OU

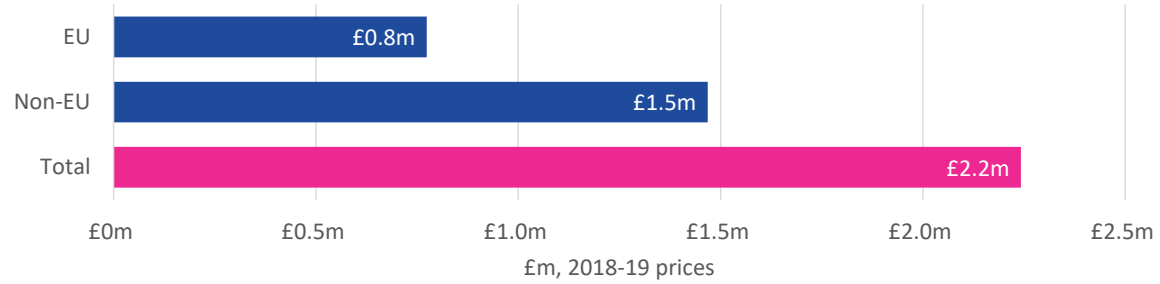
[86] See Section 7 for more information on the survey. The level of UK-based on non-tuition fee spending per student was calculated based on the overseas graduates' responses (i.e. graduates who had studied with the OU from overseas) to the question *"Thinking about your highest qualification/module from The Open University, did you incur any non-tuition fee expenditure related to this qualification whilst in the UK on any of the following items?"*. Respondents were asked to indicate the approximate costs borne over the entire duration of their studies (while being in the United Kingdom). To arrive at an average level of expenditure per student *per year* (for EU vs. non-EU domiciled students), we divided the total estimated expenditure over the entire study period by the assumed average study duration per student (by level and mode).

[87] Inflation estimates are based on Harmonised Consumer Price Index inflation estimates provided by the Office for National Statistics (2020c).

[88] A detailed breakdown of the total non-tuition income per student (by study level, mode and domicile) can be found in Annex A2.2..

validated programmes offered by the University's EU-based partners represents approximately **35%** (**£0.8m**) of this total, with validation activities for non-EU based partners accounting for the remaining **65%** (**£1.5m**) (see Figure 15).

Figure 15 Aggregate income from the OU validated programmes offered by international partners, by location of institution (£m)



Note: All estimates are presented in 2018-19 prices, and rounded to the nearest £0.1m.

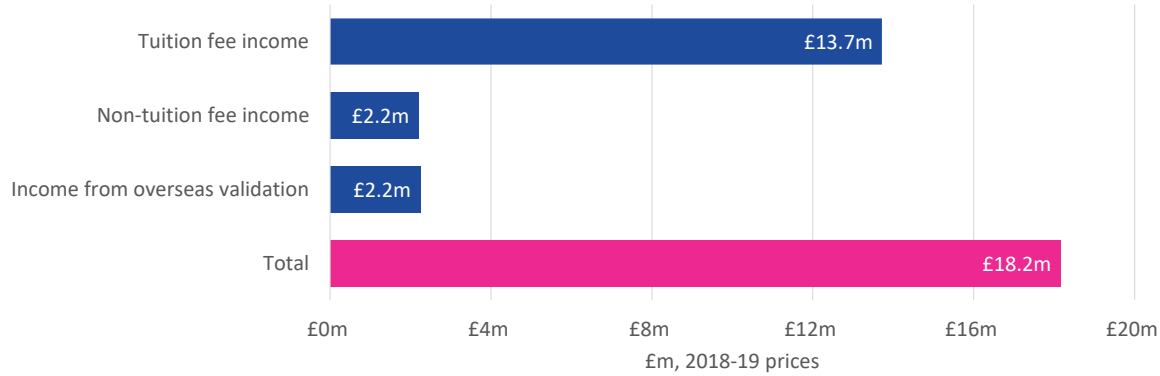
Source: London Economics' analysis

5.5 Aggregate contribution to educational exports

The total export income generated by The Open University's activities in 2018-19 was estimated at £18.2 million.

Combining the estimates of tuition fee income, non-tuition fee income, and the income associated with the OU's overseas validated programmes, the analysis indicates that the **total export income** associated with The Open University's activities in 2018-19 stood at **£18.2 million** (see Figure 16). Of this total, approximately **£13.7 million (76%)** was associated with the tuition fee income accrued by The Open University from international students in the 2018-19 offshore cohort, **£2.2 million (12%)** was associated with these international students' non-tuition fee expenditures in the UK, and the remaining **£2.2 million (12%)** was generated by OU validated programmes offered by non-UK partner institutions.

Figure 16 Total contribution of The Open University to education exports in 2018-19, by source of impact (£m)



Note: All estimates are presented in 2018-19 prices, discounted to reflect net present values (for tuition fee income and non-tuition fee income only), and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding.

Source: London Economics' analysis

6 The economic impact of the University's physical and digital footprint

Much of the existing literature on the economic impact of higher education institutions focuses (almost exclusively) on the **direct, indirect and induced impact** of universities on their local, regional or national economies. Assessments of these impacts consider universities as economic units creating output within their local economies by purchasing products and services from their suppliers, and hiring employees. More specifically, the direct, indirect and induced economic impacts of a university are defined as follows:

- **Direct effect:** This considers the economic output generated by the university itself, by purchasing goods and services (including labour) from the economy in which it operates.
- **Indirect effect:** The university's purchases generate income for the supplying industries, which they in turn spend on their own purchases from suppliers to meet the university's demands. This results in a chain reaction of subsequent rounds of spending across industries, often referred to as the 'ripple effect'.
- **Induced effect**: The induced effect is based on a university's status as an employer. The university's employees use their wages to buy consumer goods and services within the economy. This in turn generates wage income for employees within the industries producing these goods and services, who then spend their own income on goods and services. Again, this leads to subsequent rounds of wage income spending, i.e. a 'ripple effect' throughout the economy as a whole.

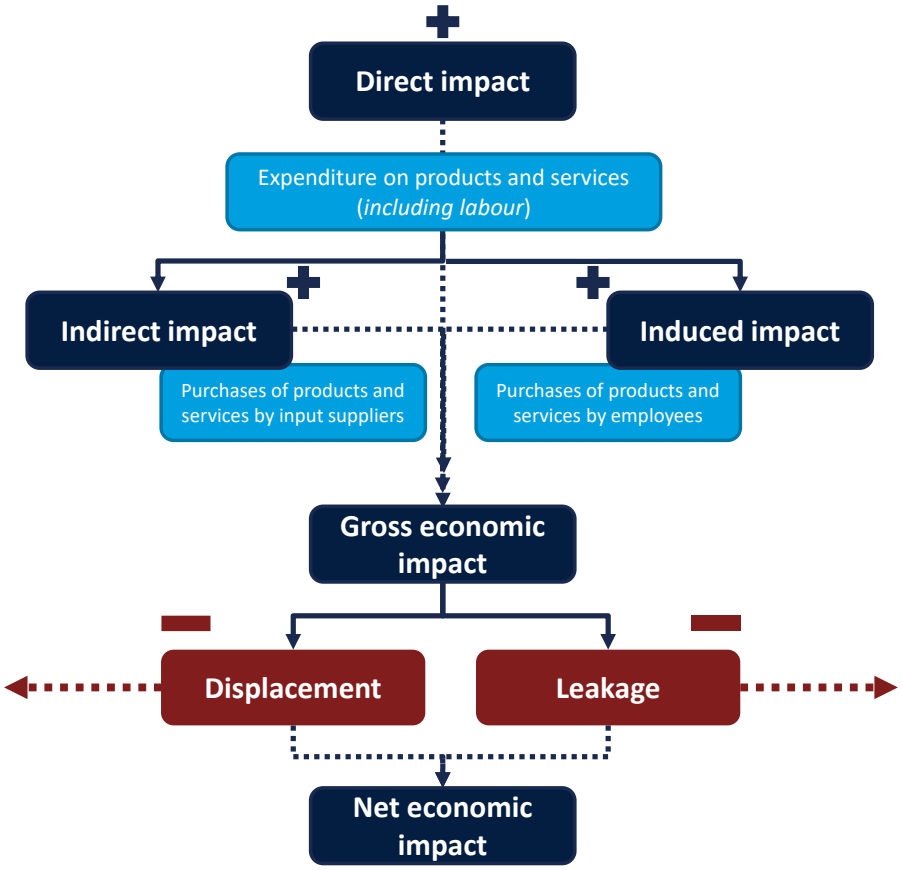
The total of the direct, indirect and induced effects constitutes the **gross economic impact** of a university on its local economy (typically measured in terms of monetary economic output as well as employment). An analysis of the **net economic impact** needs to account for two additional factors potentially reducing the size of any of the above effects:

- **Leakage** into other geographical areas, by taking account of how much of the additional economic activity actually occurs in the area of consideration. For example, it might be the case that the university sources some of its inputs from areas outside of its local economy, thus reducing the economic impact which it has on its local surroundings.
- **Displacement** of economic activity within the region of analysis, i.e. taking account of the possibility that the economic activity generated might result in the reduction of activity elsewhere within the region.

Figure 17 provides a graphical overview of these concepts[89].

[89] Note that, while the above definitions were discussed in the context of the expenditures of higher education institutions themselves, additional direct, indirect and induced impacts are generated by the spending of university students in the local economy. Again, this spending leads to additional knock-on effects throughout the economy (through indirect effects within the supply chain, and induced effects arising from the additional wage income), adding further economic value to the university's physical footprint. However, given the fact that OU students study with the University remotely (rather than on campus), we have taken a conservative approach here, and have excluded any estimate of the direct, indirect and induced effects associated with OU students' expenditures.

Figure 17 Direct, indirect and induced economic impacts of universities



Source: London Economics

6.1 Direct impact of The Open University's expenditures

To measure the direct economic impact of the OU's purchases of goods, services and labour, following the common approach across existing economic impact analyses of higher education institutions, we used data provided by The Open University on its institutional expenditures (including staff and non-staff spending), as well as the number of staff employed (in terms of full-time equivalent employees), in the 2018-19 academic year (in accordance with the other strands of impact included in this analysis).

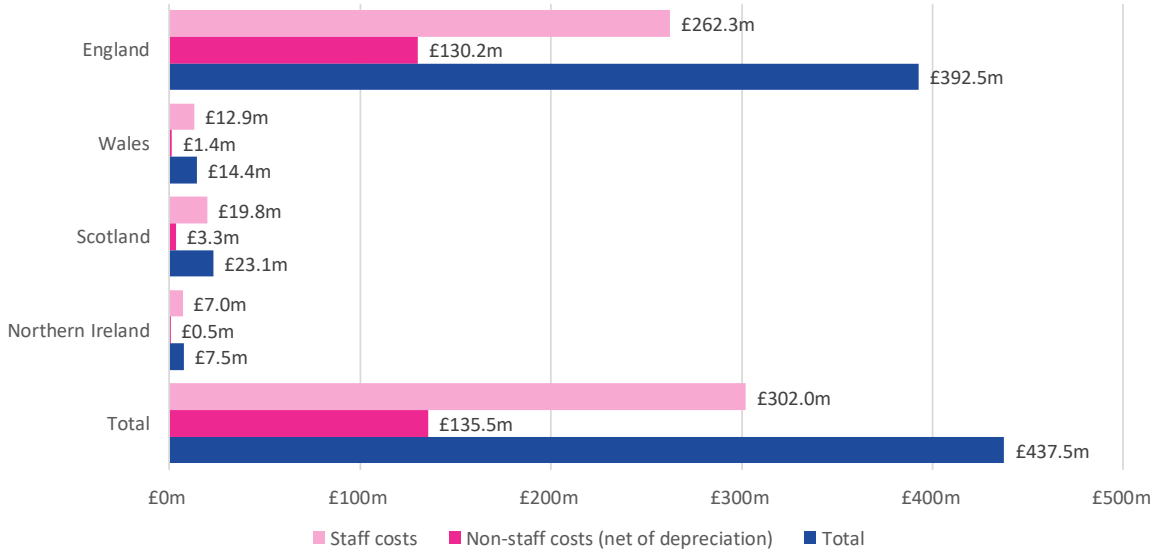
Based on this, in terms of monetary economic **output** (measured in terms of expenditure), **the direct impact** associated with The Open University's expenditures in 2018-19 stood at **£437.5 million**, based on approximately **£302.0 million** of staff costs and **£135.5 million** of other operating expenses in that academic year[90] (see Figure 18). In terms of **employment**, the OU directly employed **5,690** full-time equivalent staff[91] across the UK in 2018-19 (corresponding to a headcount of **8,910** staff) (see Figure 19).

[90] The total expenditure of The Open University in 2018-19 stood at **£560.2 million**. From this, for the purposes of the analysis of the impact of this expenditure on the UK economy, we excluded **£6.1 million** in expenditures incurred outside of the UK. In addition, we exclude a total of **£6.7 million** in depreciation costs from the University's other operating expenses, as it is assumed that these are not relevant from a procurement perspective (i.e. these costs are not accounted for as income by other organisations). In addition, we exclude one-off non-cash expenditure relating to USS pension deficit provisions, amounting to **£109.9 million**.

[91] Note that we exclude any non-UK staff, as well as staff on atypical contracts.

In terms of the breakdown of these figures by Home Nation (in terms of the location (i.e. destination) of the OU's expenditures, and the residential addresses of its staff), the bulk of the OU's expenditure and staff are located in England, accounting for around **90%** of the University's expenditure and **89%** of employment. The corresponding estimates for The Open University's spending and staff in Wales stand at **3%** of expenditure and **4%** of staff, while the OU's activities in Scotland and Northern Ireland account for approximately **5%** and **2%** of expenditure and staff, respectively.

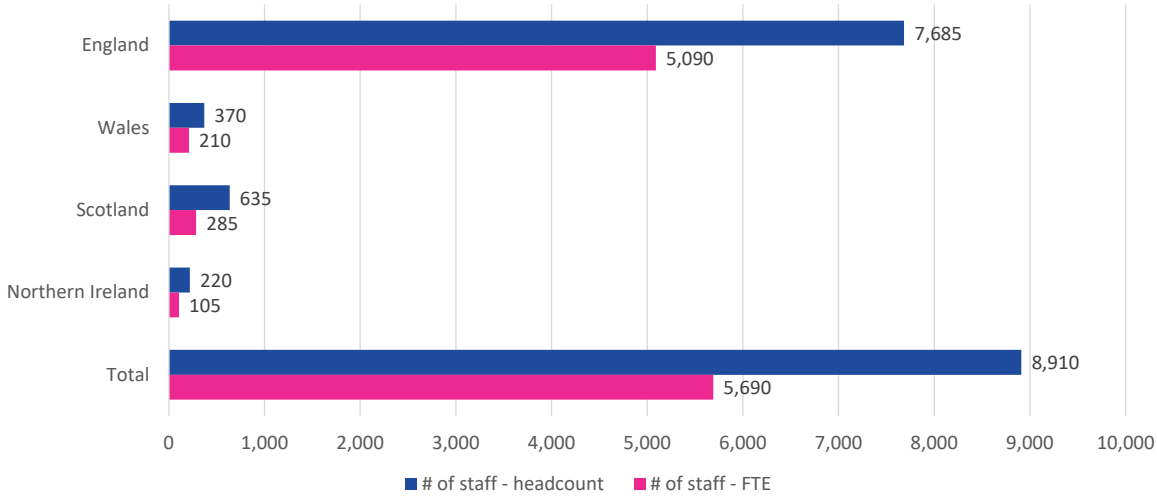
Figure 18 Direct economic impact (in terms of output) associated with The Open University's expenditure in 2018-19, by location (i.e. destination) of expenditure



Note: We exclude (from non-staff costs) a total of **£6.7 million** in depreciation costs, as it is assumed that these are not relevant from a procurement perspective (i.e. these costs are not accounted for as income by other organisations). We also exclude **£6.1 million** in expenditures incurred outside of the UK and one-off non-cash expenditure relating to USS pension deficit provisions amounting to **£109.9 million**. All estimates are presented in 2018-19 prices, and rounded to the nearest £0.1m.

Source: London Economics' analysis based on Open University data

Figure 19 Direct employment by The Open University in the UK in 2018-19 (headcount and FTE), by location (of staff address)



Note: Staff figures exclude non-UK staff and staff on atypical contracts. Figures are rounded to the nearest 5.

Source: London Economics' analysis based on Open University data

Collaboration through knowledge connectivity

Centred on the growth of Milton Keynes, **MK:Smart was an £18 million smart city initiative** that brought together local and global collaborators to explore the value of data as a resource in the development of city services. The project included a successful workstream for SME engagement, encouraging local SMEs to consider data as a route to innovation. The Open University played a leading role in the MK:Smart project, which has led to the **development of support programmes for innovation in the digital economy**.

CityLABS

One such programme is **CityLABS.** Launched in 2017, CityLABS was based on a £2 million grant from the European Regional Development Fund, secured by The Open University to **assist more than 70 SMEs with a structured programme of support.** The programme has resulted in 50 new products being piloted by helping to overcome the barriers SMEs face in using big data for innovation. The programme included grants for product development, tech design and prototype evaluation; workshops; hackathons; and individual assistance with the MK Data Hub environment.

The Urban Business Lab

In partnership with Fronesys, CityLABS delivered **the Urban Business Lab - a practical, hands-on and interactive programme for entrepreneurs.** The programme equipped start-ups and SMEs with the understanding and practical tools needed to address the business issues of product and service development, specifically in the digital economy. The MK:Smart data-led business canvas was used to explore and help define the steps for the development of an organisation's concept into reality.

MK Data Hub

The MK Data Hub is the award-winning data infrastructure that was the core of the MK:Smart project. The Hub supports the collection, integration and use of large amounts of data from numerous resources relevant to city systems. With over **800 datasets**, the Hub provides both public and private sector organisations with **access to complex, smart city data scenarios that can be deployed across a variety of projects**.

Early users of the MK Data Hub developed several applications using city data to explore service delivery. The project also developed a unique methodology that combined face-to-face and crowdsourcing activities to support citizen innovation in smart cities. As a result of CityLABS's training and support, it is now a well-used resource for start-ups and SMEs in the South East Midlands area.

'The individual programme of support from CityLABS meant we were able to revise our business model to the next level and really deliver something new to market. It's been great, we would not have achieved this without CityLABS.'

Wayne Cartmell, Eduvocation Ltd

Through the Urban Business Lab and MK Data Hub, CityLABS provided a programme of mentoring, grants, workshops, and support in using data to encourage innovation in SMEs.

'Urban Business Lab has really helped me get my business plan in perspective and understand the benefits that can be realised by using some quite simple fixes to the way I build my services, like capturing customer data in a better way.'

Emma Ludington, Living Well at Home

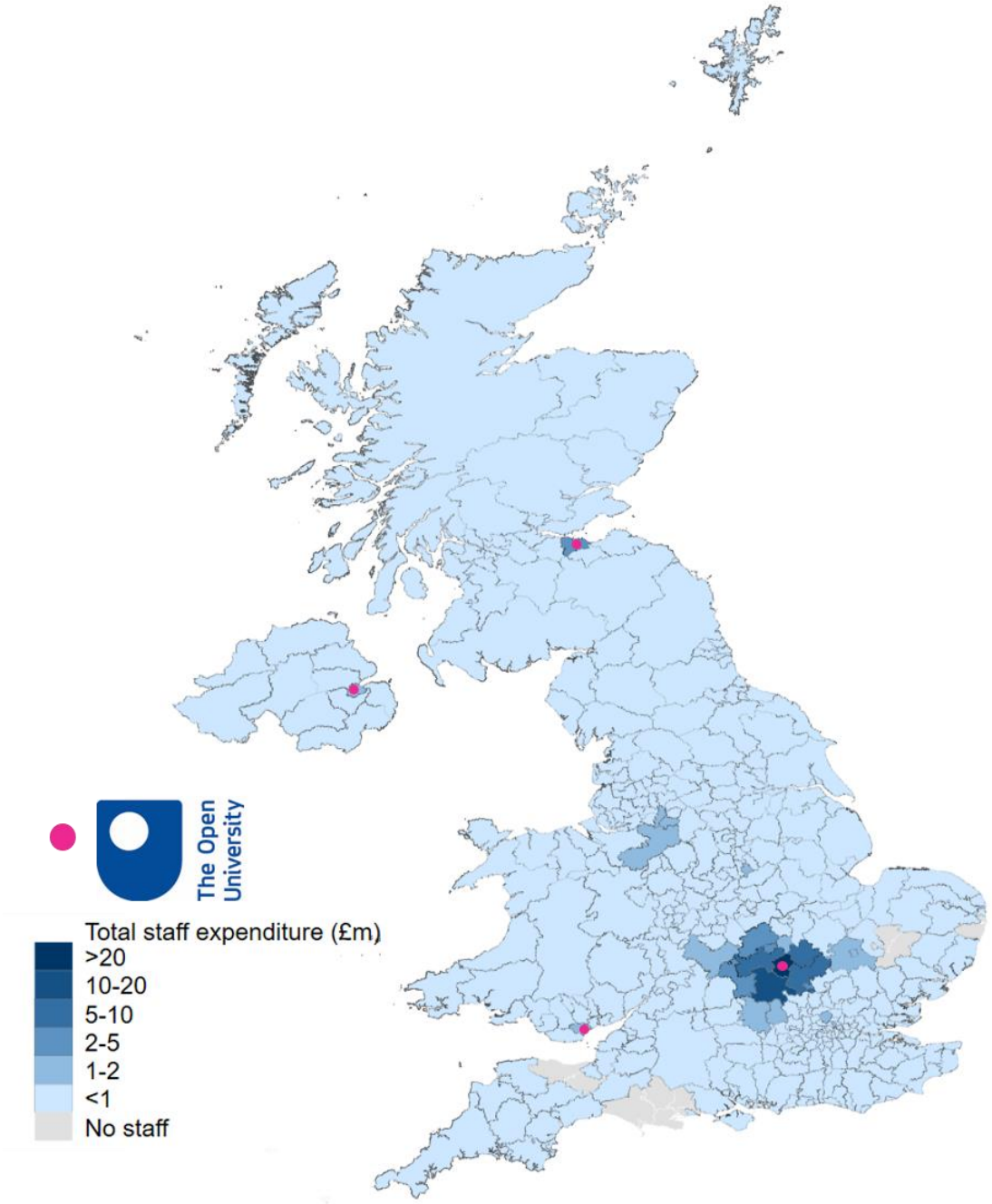
In addition to these direct impacts by Home Nation, it is useful to provide a **more detailed geographical breakdown** of the OU's procurement and staff expenditures, to illustrate the breadth of the institution's impact across the United Kingdom.

By combining information on the distribution of Open University staff and linked salary details, Figure 20 presents the distribution of the OU's **staff expenditures** (based on staff salaries in 2018-19) by Local Authority. The map demonstrates the spread of Open University staff across the United Kingdom; however, the particularly high concentration of staff expenditure surrounding the University's campus in Milton Keynes is clearly visible (denoted by a pink dot). In addition, there are relatively significant expenditures on staff salaries in **Cardiff, Edinburgh and Belfast**, where the OU's operations in Wales, Scotland and Northern Ireland are based, respectively. Specifically, the salary income of The Open University's employees in Milton Keynes (**29.0%** of total), Aylesbury Vale (**5.8%**), Bedford (**4.1%**), Central Bedfordshire (**3.9%**), the City of Edinburgh (**1.3%**), Cardiff (**0.8%**) and Belfast (**0.5%**) correspond to a combined total of approximately **45.3%**[92] of the OU's total expenditure on staff salaries in 2018-19. Despite the large concentration of staff expenditure around the main Open University campuses, more than half of this expenditure (**54.7%**) is dispersed more widely throughout the United Kingdom, demonstrating the geographical reach of the OU's activities.

We also investigated the geographic spread of the OU's **non-staff expenditure** by Local Authority (again, in 2018-19), based on an assessment of the University's invoice data (see Figure 21). While it might be the case that a supplier provides an invoice with a postcode of their Head Office (thereby not accurately reflecting where the actual expenditure takes place, but rather skewing the results to major urban areas), the figure is nevertheless useful to demonstrate the geographical reach of the OU's expenditures. Based on this information, Milton Keynes accounts for approximately **18.4%** of the total non-staff expenditure of The Open University, followed by Islington (**10.5%**), Camden (**6.8%**) and the City of London (**5.3%**). The remaining **59.0%** of non-staff expenditure took place throughout the rest of the United Kingdom, across a wide range of Local Authorities, again illustrating the geographical reach of the OU's activities.

[92] Percentages may not add up to the total precisely due to rounding.

Figure 20 Distribution of The Open University's staff (salary) expenditures in 2018-19, by Local Authority (of home address)

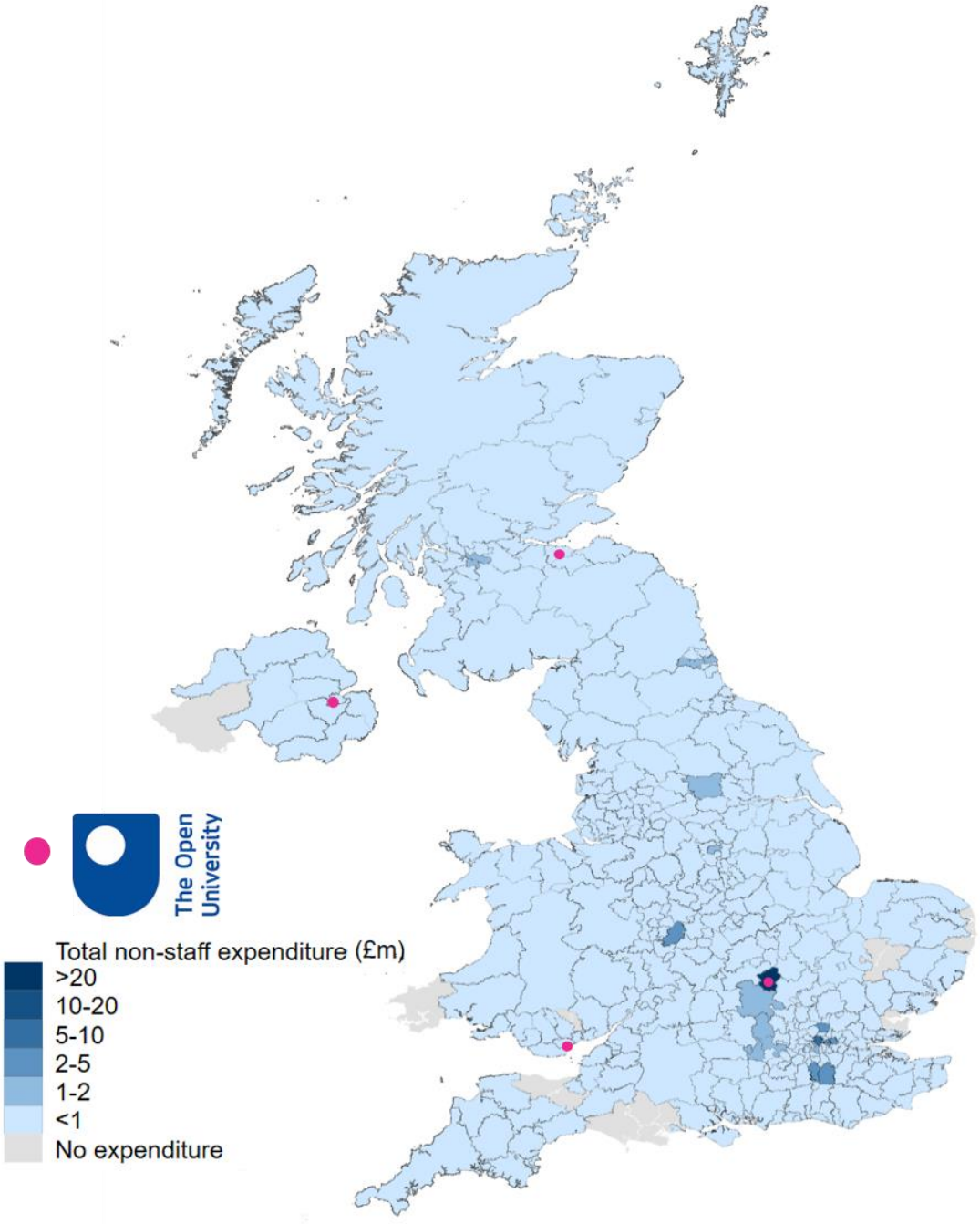


Note: We received data on a total of £229 million expenditure on Open University staff (in terms of the annual salaries of staff employed with the University between 2018-2019). Note that this is a subset of total staff expenditure (which also includes non-salary costs, such as pension contributions (excluding one-off non-cash pension liabilities), insurance, bonuses and overtime). We excluded 611 observations relating to atypical staff, 105 observations which contained no postcode (as the individual was living outside of the UK), and 5 observations for staff based in the Channel Islands and the Isle of Man. After these exclusions, the map is based on a total of £228 million of expenditure.

We used the August 2019 ONS Postcode Directory to determine the Local Authority for each postcode district included in the dataset. Expenditures associated with postcode districts that mapped to multiple Local Authorities have been apportioned equally among them. Next, the data was matched with the ONS digital vector boundaries for Local Authority Districts as of May 2018 to generate a final map. Due to minor changes in the boundaries of Local Authority districts between the years 2018 and 2019, some of the postcode districts were further split between multiple Local Authorities or re-allocated to a Local Authority to correct for any discrepancies (14 cases).

London Economics' analysis based on The Open University data and Office for National Statistics data. Contains National Statistics data, OS data, Royal Mail, Gridlink, LPS (Northern Ireland), ONS, NISRA data, NRS data and Ordnance Survey data © Crown copyright and database right 2020.

Figure 21 Distribution of The Open University's non-staff expenditures in 2018-19, by Local Authority (of invoice address)



Note: We received data on the invoice postcodes for a total of £148.3 million of non-staff expenditures by The Open University in 2018-19. Of this total, we excluded expenditure records outside the UK (3 records) and invalid postcodes (8 records), resulting in a total of £142 million of expenditure included in the map. Note that this figure *includes* £6.7 million of depreciation costs, which were instead excluded from the non-staff expenditure figure used to estimate the University's direct economic impacts (£135.5 million).

We used the August 2019 ONS Postcode Directory to determine the Local Authority district for each postcode district included in the dataset. Expenditure associated with postcode districts that mapped to multiple Local Authorities have been apportioned equally among them. Next, the data was matched with the ONS digital vector boundaries for Local Authority Districts as at May 2018 to generate a final map. Due to minor changes in the boundaries of Local Authority districts between the years 2018 and 2019, some of the postcode districts were further split between multiple Local Authorities or re-allocated to a Local Authority to correct for any discrepancies (14 cases).

Source: London Economics' analysis based on Open University data and Office for National Statistics data. Contains National Statistics data, OS data, Royal Mail, Gridlink, LPS (Northern Ireland), ONS, NISRA data, NRS data and Ordnance Survey data © Crown copyright and database right 2020.

6.2 Indirect and induced impacts of The Open University's spending

Across the wide body of existing literature assessing the economic impact of higher education institutions, the **indirect** and **induced** effects of universities are typically estimated with the help of Input-Output models. These models develop a series of **multipliers** to estimate the **extent to which the direct output produced by universities generates additional economic activity throughout the economy.** As with the direct impact presented above, these knock-on effects are commonly measured in terms of both output (e.g. total university turnover or expenditure) and employment.

For the purpose of our analysis, we applied output and employment multipliers to The Open University's direct expenditure and employment, in order to assess the University's impact **on the UK economy as a whole that is associated with its activities in each Home Nation** (for example, we assess the impact on the UK economy associated with the OU's expenditures incurred in England). Specifically, we made use of multipliers from the existing literature, based on an assessment of the economic impact (on the UK economy) of the expenditures of English higher education institutions (based on Kelly et al. (2014))[93], Welsh higher education institutions (based on Kelly and McNicoll (2018))[94]; and Northern Irish higher education institutions (based on Kelly et al. (2015))[95]. We were unable to find corresponding multipliers associated specifically with Scottish higher education institutions[96], and instead relied on estimates of the multiplier effects associated with the spending by any Higher Education Institution within the UK as a whole (Oxford Economics, 2017)[97]. These multipliers are presented in Table 13. To take an example, we assume that every **£1 million** of expenditure by The Open University incurred in England generates an additional **£1.34 million** of impact throughout the UK economy. In terms of employment, we assume that, for every **1,000** (FTE) staff employed by the University in England, an additional **1,180** staff are supported throughout the UK.

Table 13 Economic multipliers for the whole of the UK applied to The Open University's expenditure and employment

Multiplier type	Location of expenditure			
	England	Wales	Scotland	Northern Ireland
Expenditure	2.34	2.33	2.49	2.32
Employment	2.18	2.20	2.07	2.07

Source: London Economics' analysis of Kelly et al. (2014), Kelly and McNicoll (2018), Oxford Economics (2017) and Kelly et al. (2015)

6.3 Adjustments for double-counting and transfers

Before arriving at the total direct, indirect and induced impact associated with the Open University's institutional expenditure, it is necessary to deduct a number of income and expenditure items to avoid double counting, and to take account of the 'netting out' between the costs and benefits associated with the OU to different agents in the UK economy.

Specifically, we deducted:

[93] This analysis was based on the 2011-12 academic year.
[94] Based on the 2015-16 academic year.
[95] Based on the 2012-13 academic year.
[96] An existing analysis of the economic impact associated with Scottish higher education institutions (see Biggar Economics, 2015) focused specifically on the contribution of Scottish universities to the Scottish economy, but provided no corresponding estimates on the effects on the UK economy as a whole.
[97] The estimates from Oxford Economics (2017) are based on the 2014-15 academic year.

- **£1.6 million** in Open University fee waivers and other bursary spending for UK-domiciled students[98], and **£3.2 million** in OU validation income in the UK, as these items were included (as a benefit) in the analysis of the University's formal teaching and learning activities (Section 2);
- The total research income received by the University in 2018-19 (**£22.5 million**), as this was included in the estimate of research impact (Section 4); and
- **£13.7 million** of tuition fee expenditure generated by international students and **£2.2 million** in non-UK validation income, as these were included in the impact on exports (Section 5).

6.4 Total impact of The Open University's physical and digital footprint

Figure 22 presents the estimates of the total direct, indirect and induced impacts associated with expenditures incurred by The Open University in 2018-19, after the above-described adjustments have been made.

The impact of The Open University's expenditure on the UK economy in 2018-19 stood at £983.4 million, supporting 11,865 FTE jobs across the UK.

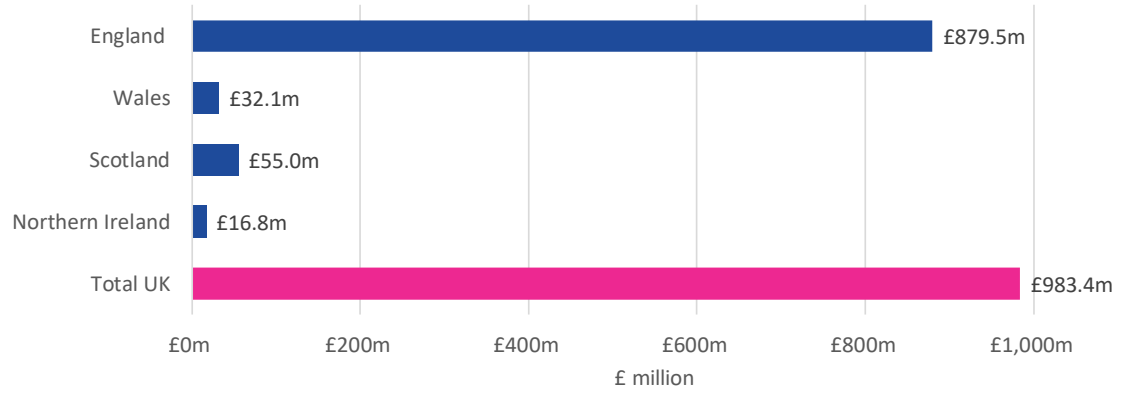
The analysis indicates that the aggregate impact of The Open University's physical and digital footprint on the UK economy associated with the 2018-19 academic year stood at approximately **£983.4 million**. Disaggregating this figure by Home Nation, approximately **£879.5 million** of this total impact arises from the OU's expenditures incurred in England. In addition, **£32.1 million, £55.0 million** and **£16.8 million** of the direct, indirect and induced impact was associated with expenditure of The Open University in Wales, Scotland and Northern Ireland, respectively.

In terms of the number of jobs supported (in FTE), the results indicate that The Open University's physical and digital footprint supported a total of **11,865** FTE jobs across the UK economy in 2018-19. In other words, in addition to the **5,690** full-time equivalent staff directly employed by The Open University itself, there were a further **6,175 FTE jobs** supported by the expenditures of the University and its staff across the United Kingdom. Disaggregating the total figure by Home Nation, **10,650 FTE jobs** were supported as a result of The Open University's activities in England, while **435, 570 and 210 FTE jobs** were supported by The Open University's activities in Wales, Scotland and Northern Ireland, respectively.

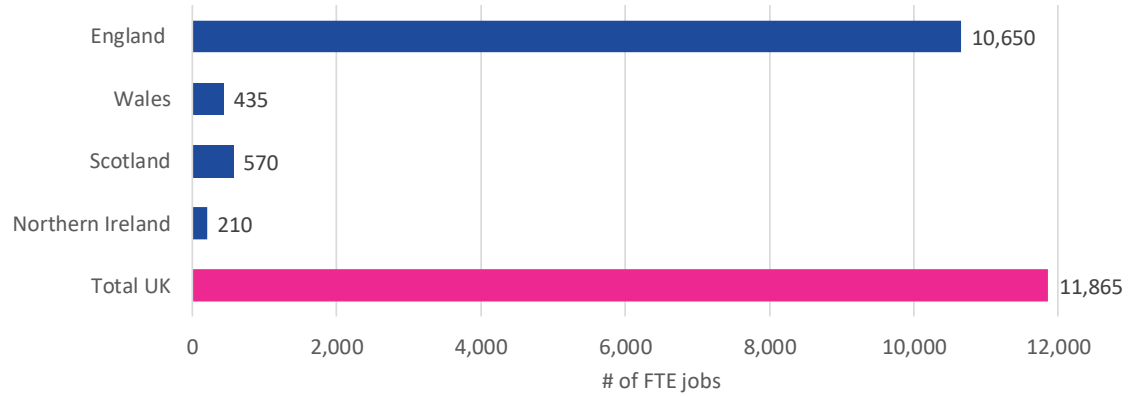
[98] The University's bursary support to UK-domiciled students is considered as a benefit to the student in the analysis of the impact of teaching and learning activities (see Section 2). It is therefore necessary to deduct these bursaries from the direct impact of the University's spending to correctly take account of the fact that these bursaries are a transfer from the University to its students, and not an additional benefit to the UK economy.

Figure 22 Direct, indirect and induced impact (£m and # of FTE jobs supported) on the UK economy associated with the OU's expenditures in 2018-19, by location of expenditure

Economic output (£m)



Employment (# of FTE jobs supported)



Note: Breakdown by Home Nation should be interpreted as the direct, indirect and induced effect on the UK as a whole originating from expenditure/employment of the OU in that particular Home Nation. All monetary estimates are presented in 2018-19 prices and rounded to the nearest £0.1m. The numbers of FTE jobs supported are rounded to the nearest 5. Totals may not add up precisely due to rounding.

Source: London Economics' analysis

Flexibility and innovation in nursing training

Through its partnerships with local healthcare systems across the UK, **The Open University is supporting the training of nurses, helping to develop and retain local expertise and broaden nursing recruitment** by providing flexible and innovative routes into the profession, for example by enabling apprentice nurses to earn while they study towards registered nursing roles.

In Northern Ireland, The Open University plays a key role in the Department of Health's nursing workforce system, working closely with Unison and the Royal College of Nursing. Healthcare Assistants study part-time while working in their usual healthcare setting and progressing to fully qualified registered nurse status. This 'grow your own' model is popular with hospital trusts, as these newly qualified nurses can draw on their previous professional experience as well as mandatory training hours to give them a head-start upon qualification. In addition, these nurses generally stay employed within the Northern Ireland health service for their whole career, and so the programme **provides a good return on public investment**. Commissioned places have grown from 20 per year in 2004 to 191 in 2020.

In Kent, The Open University is working with the Kent Community Health NHS Foundation Trust (KCHFT) to develop the local nursing workforce. Through the OU's Registered Nurse Degree Apprenticeship and Nursing Associate Higher Apprenticeship, the Trust can grow its own talent via its new, innovative Nursing Academy. Through the online programme, **Nursing Academy apprentices can study at negotiated times that fit in with the service needs on the wards where they develop their practical and clinical skills through a variety of placements**. Apprentices have regular online tutorials supplemented with reference books and practical teaching sessions.

The Open University's flexible approach supports the Trust to meet the challenges that it faces in developing the nursing workforce. **The flexible nature of the nursing training, enabling apprentices to continue working, helps not only to address the shortage of nurses entering the profession, but to widen access to routes into nursing**. By effectively training nurses 'in-house', the Trust is better able to recruit from within the locality and retain staff following qualification. Through the Nursing Academy, Kent Community Health NHS Foundation Trust is now supporting almost 50 Registered Nurse and Nursing Associates.

Cassie previously worked as a community nursery nurse within a health visiting team, but took the opportunity offered by KCHFT to enrol on the Registered Nurse Degree Apprenticeship. Her previous experience means she is able to bring a different view to her training and will ultimately enrich the nursing workforce.

"They make a contribution every single time they put on their uniform. I think they enhance what we do at Kent Community Health NHS Foundation Trust, they bring a different view. It's a different way of training to be a nurse and I think that makes us richer as a workforce."

Dr Mercia Spare, Chief Nurse at Kent Community Health NHS Foundation Trust

Kerry is undertaking a Nursing Associate Higher Apprenticeship after working in catering and having a family. The flexibility offered by the OU is vital in helping her to juggle her responsibilities with her role at the Trust. Without the flexibility of the OU-KCHFT partnership, nursing training would not have been a viable option for her, for childcare and financial reasons.

"The apprenticeship seemed the best way because I could learn and earn at the same time. The learning is very flexible for me. I can still go to work, come home, be with my children and spend the time that they need with me. When I graduate there'll be such a huge sense of achievement for me because I love challenging myself and getting back onto that career ladder and making my way up."

7 The University's social impacts

In addition to the economic impacts associated with skills and qualification acquisition, there are a multitude of **non-economic or societal benefits** associated with higher education qualification attainment. These wider benefits include **improvements in health and well-being outcomes; social capital and community cohesion; intergenerational transmission of skills; improved social mobility; the subsequent acquisition of further learning and qualifications; and improved communication and autonomy**. Although it is clear that these outcomes have significant societal value, it is almost impossible to assign a monetary value in any robust way. As such, we do not attempt to monetise these wider impacts, but rather demonstrate the depth of the impact of learning at The Open University on graduates' jobs, lives, and prospects.

To assess the wider impacts of The Open University on its students and society at large, we conducted an **online survey among a large group of the University's alumni** (over the course of three weeks in May 2020). The survey achieved a total of **983 complete and valid responses**[99], and this section summarises the main survey results in terms of the impact of The Open University's teaching and learning activity on graduates' **job-related outcomes, general and job-related skills, personal development,** and **well-being**.

Although we present the aggregate results across all alumni, the analysis was undertaken separately for those undertaking formally recognised qualifications as well as alumni who undertook credit-bearing modules. **There was a very limited difference in outcomes between the different groups of learners, illustrating the substantial social benefits associated with any form of study at The Open University.** It is also the case that compared to similar analyses undertaken for other higher education institutions with predominantly younger and more 'traditional' student bodies, the results are very similar across all measures.

7.1 Job-related outcomes

To assess the impact of Open University qualifications and modules on graduates' economic outcomes, the survey asked respondents a number of questions in relation to whether certain aspects of their **career prospects and working lives** had changed following their learning at The Open University. The responses are highly informative, and demonstrate the causal impact of learning at The Open University[100].

As presented in Figure 23, illustrating the impact that their learning with The Open University had on their employability, the majority of respondents (**62%**) reported that their **career prospects** had improved since completing their studies; **57%** reported that they had increased their level of **job satisfaction**; and **42%** reported that their **pay and promotion prospects** had improved. In addition, **40%** of respondents said that their job **involved more responsibility**; **38%** had **achieved better job security**; **32%** were now in a job that **better suited their skills and circumstances** in a different

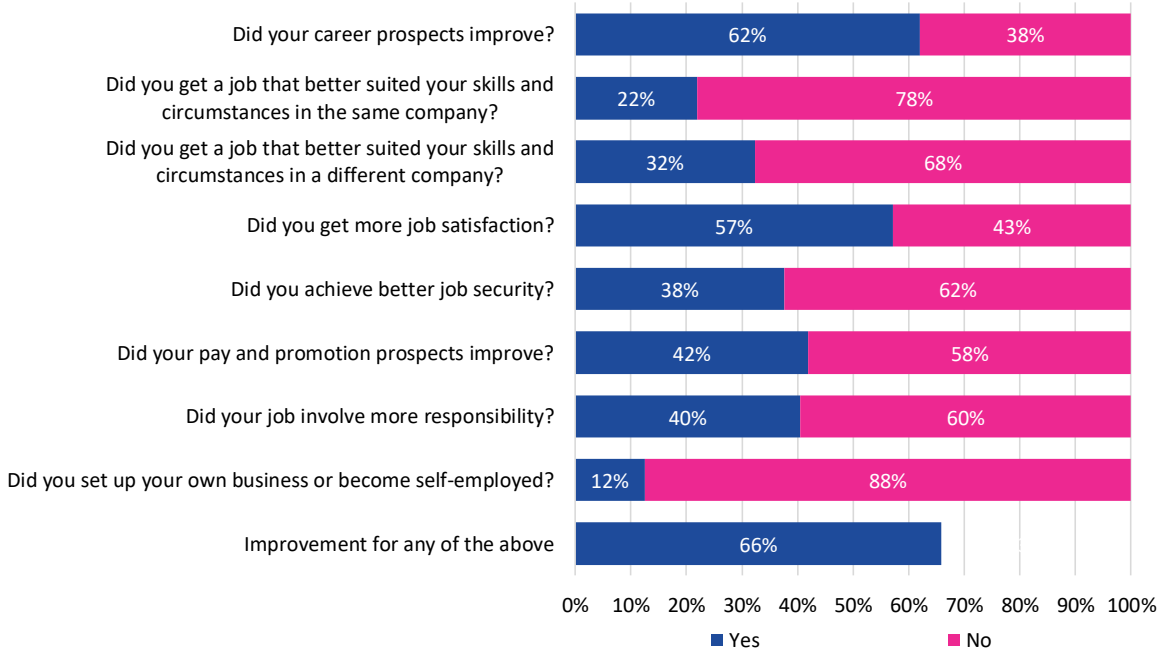
[99] The survey was disseminated to approximately 28,000 Open University alumni, implying a response rate (in terms of complete and valid responses) of approximately 3.5% (which is representative of the normal response rates achieved in online surveys of this kind). The survey included alumni who had completed qualifications at the OU, as well as those who had undertaken standalone credit-bearing modules with the Open University (see Annex A2.3 for a breakdown of the key survey results by these two groups of alumni). Throughout the survey, respondents were asked to focus on the highest level of study which they completed at The Open University (i.e. the qualification or module at the highest educational level).

[100] Annex A2.3 provides a breakdown of the core survey results across alumni who completed standalone modules vs. alumni who completed full qualifications at The Open University. Overall, the responses are comparable across both groups, demonstrating that even students who complete 'only' standalone modules with The Open University derive a wide range of benefits from this learning.

company (with **22%** achieving the same result in the same company); and **12%** had **set up their own business** or **become self-employed** as a result of completing a module or qualification from The Open University.

Across all response categories, approximately **two-thirds** of respondents indicated that at least one of the identified benefits had occurred since completing the learning with The Open University.

Figure 23 'Have any of the following things happened since completing your studies at The Open University?'

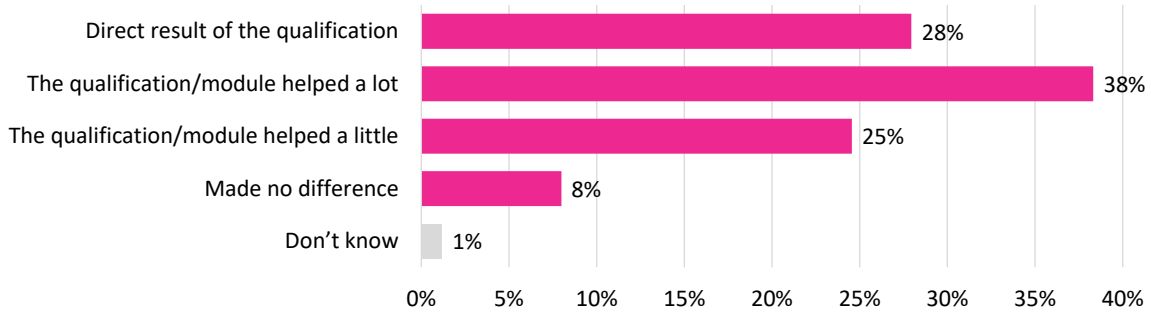


Note: Based on 760 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University. Between 102 and 166 respondents selected 'Don't know / Not applicable' for any given option and were not included in the analysis.

Source: London Economics' analysis of Open University alumni survey data

Within any economic analysis, it is important to understand the **counterfactual**; in other words, what might have happened in the absence of the learning experience with The Open University. Therefore, the survey asked respondents to indicate the extent to which the above changes to their working lives that had taken place were either directly or partially attributable to The Open University. As presented in Figure 24, of those alumni that believed that their OU module or qualification helped them improve their working lives in any of the above-described ways (Figure 23), **28%** indicated that these improvements in their circumstances were a **direct result** of their studies at The Open University, with a further **38%** stating that the learning had **helped a lot**, and **25%** stating that the learning had **helped a little**. Only **8%** of respondents indicated that their learning had made 'no difference'. These results demonstrate the exceptionally high degree of **additionality** associated with undertaking learning activity at The Open University.

Figure 24 'How do you think this improvement was/these improvements were linked to your studies at The Open University?'

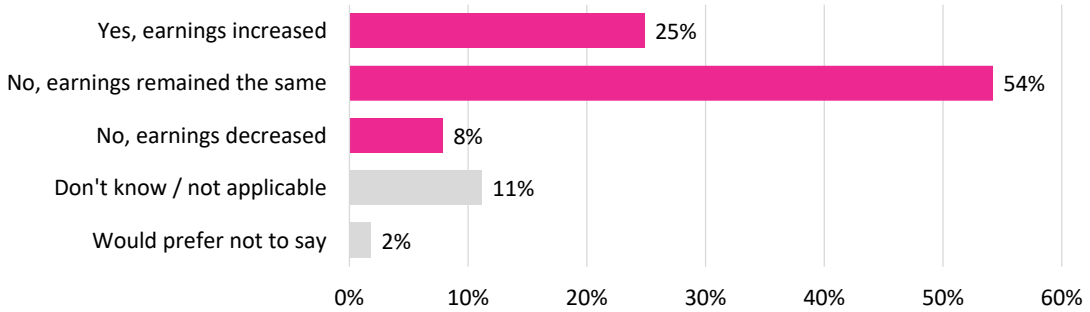


Note: Based on 501 respondents who answered 'yes' to at least one of the items in Figure 23.

Source: London Economics' analysis of Open University alumni survey data

For those individuals who have been either employed or self-employed at any point since completing their learning episode with The Open University, the survey also investigated whether there were any positive financial consequences in terms of pay increases. Presented in Figure 25, the results indicated that approximately **25%** of respondents had achieved a pay increase since completing their studies[101]; however, of more interest is the fact that for those that did achieve an increase in earnings, the increase was substantial. In particular, **60%** of respondents indicated that they had achieved a pay increase in excess of £2,000 per annum (with a further **12%** responding that they pay increase was between £1,000 and £2,000; see Figure 26).

Figure 25 'On completion of your studies at The Open University, did you receive an increase in your earnings (from employment or self-employment)?'



Note: Based on 760 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University.

Source: London Economics' analysis of Open University alumni survey data

[101] Note that the fact that 25% of respondents indicated that they had received a pay increase on *completion* of their studies is compatible with the above-presented econometric analysis of the marginal earnings returns to higher education learning. In particular, the results from the econometric analysis (presented in Annex A2.1.2) essentially identify the different labour market earnings growth paths between those in possession of different levels of higher education qualification and the relevant counterfactual group. The immediate earnings boost identified in the survey analysis (and the very substantial size of the increase for many of those affected) illustrates the possibility that individuals completing higher education qualifications shift onto a new (higher) earnings growth path. In addition, following the attainment of higher qualifications, there is also a medium-term impact (not identified in the survey of alumni) whereby annual (and ongoing) pay settlements amongst higher qualified workers are greater than for lower qualified workers (which contributes to the results identified in the econometric analysis).

Informing the national education campaign to improve road safety

Research at The Open University, undertaken by Dr Gemma Briggs, has improved road safety by informing the national education campaign tackling the dangers of hands-free phone use while driving.

Between June 2017 and June 2018, 26,610 people were killed or seriously injured on UK roads. The leading cause of these incidents is termed 'driver error'. The recording of causes of incidents often does not include mobile phone use, despite phone-induced distraction being prevalent. Recent research by the RAC has shown that reported phone use by drivers has increased since 2017, with nearly half of drivers questioned admitting to using their phone. As most new cars come with 'infotainment' systems[102] and Bluetooth as standard, research into the dangers of hands-free phone use is crucially important.

While research into mobile phone use whilst driving has emphatically demonstrated that hands-free conversations are as distracting as hand-held conversations, **The Open University's research has uncovered new theoretical explanations for the specific ways in which phone use affects cognitive and perceptual processing**. Dr Briggs' team engaged with policy makers, and successfully lobbied for the agenda that **cognitive, rather than just manual, distraction is caused by phone use**. The team created policy documents aimed at non-academic audiences both in Government and business. These have been shared by 'Roadsafe' and 'RoadSafetyGB' (charitable partnerships between road safety professionals and Government).

In 2019, Dr Briggs and co-researcher Graham Hole from the University of Sussex, submitted evidence on phone use by drivers to the Transport Select Committee's open consultation on road safety, leading to Dr Briggs' invitation to provide expert evidence to the committee. The subsequent committee report heavily cited the team's research and recommendations. It supported the view that **legislation should be changed to encompass hands-free phone use**, and that education and public awareness are critical to reducing offending and associated road deaths. The Government response supported the need for increased public awareness and education.

The education processes involved multiple police forces and academics at Keele University, with funding provided by the Road Safety Trust. The research team developed **resources to educate the police and the general public**, with evidence-based resources created for use by UK police forces during the national enforcement week. Included in the educational materials are strategies for roadside education, and a toolkit of social media resources for police to share.

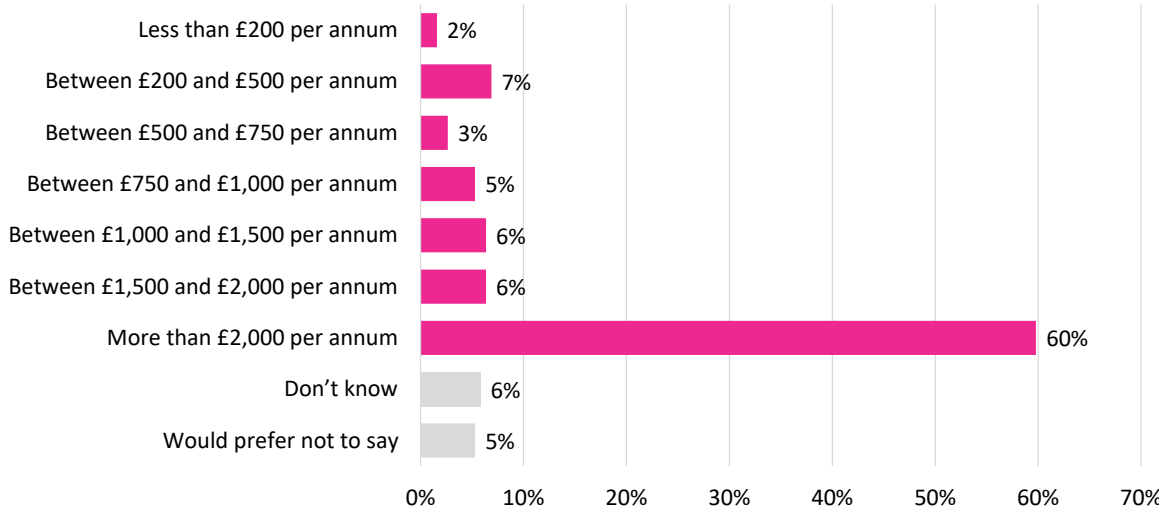
> ***'Our research shows that having two eyes on the road, and both hands on the wheel, does not in itself equate to safe driving. There is no scientific justification for banning hand-held phones but allowing hands-free use.'***
>
> Dr Gemma Briggs, OU

Dr Briggs has also worked with the Police Federation to update 'Road Craft' and 'Motorcycle Craft', the books used for training all UK police officers, and is also working with the haulage firm Vital to evidence best-practice through education.

The **Open University team have also developed interactive, evidence-based educational resources designed to educate first time offenders and the wider public.** To date, 8,000 participants have completed the training, and it is being used in local council and national police safety campaigns.

[102] In-vehicle 'infotainment' systems refer to hardware and software within a vehicle that provide (audio or video) entertainment, or information delivery, to drivers and passengers.

Figure 26 'How much was this earnings increase?'



Note: Based on 189 respondents who indicated that they had received a pay increase following the completion of studies at The Open University.

Source: London Economics' analysis of Open University alumni survey data

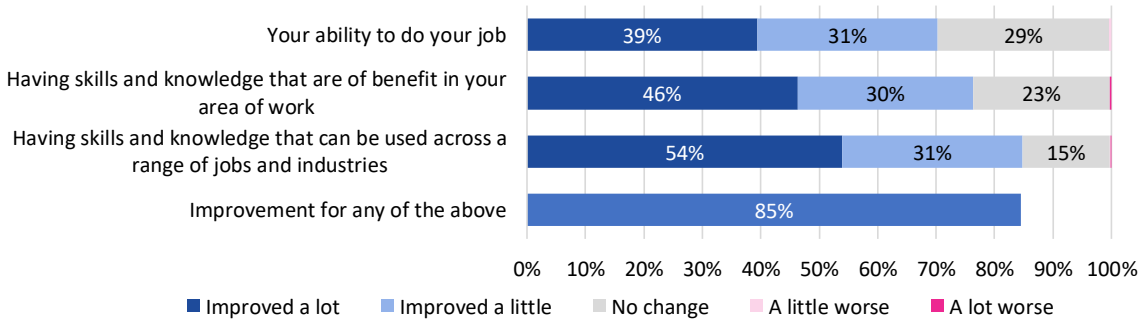
7.2 Impact on skills

In addition to the above-described benefits to their working lives and pay, respondents further reported that their learning with OU had improved their job-related skills (as presented in Figure 27). Approximately **70%** of respondents indicated that their **ability to do their job** had improved (a lot or a little), while **76%** of respondents suggested that the skills and knowledge accumulated as part of the learning episode were of **benefit in their specific area of work**. Reflecting the general and transferable nature of Open University learning, the survey also identified that **85%** of respondents believed that the **skills acquired as part of their learning with the OU could be used across a range of jobs and industries**.[103]

Across all response categories, approximately **85%** of respondents indicated that at least one of the identified benefits had occurred since completing the learning with The Open University.

[103] London Economics (2018) undertook a comparable analysis of the economic and social impact of the University of York in 2018. In many respects, the impact of qualification attainment was similar for Open University and University of York alumni despite the fundamentally different graduate populations. In particular, approximately **70%** of Open University alumni responded that their ability to do their job had increased 'a lot' 'or a little' compared to **89%** of University of York alumni. **85%** of Open University alumni indicated believed that the skills acquired as part of their learning with the OU could be used across a range of jobs and industries compared to **88%** of University of York alumni. Given the fundamentally different characteristics of the two student bodies (and in particular the difference in labour market experience accumulated prior to qualification attainment), these differences are unsurprising.

Figure 27 'Following completion of your studies at The Open University, what impact did this have on your job-related set of skills?'

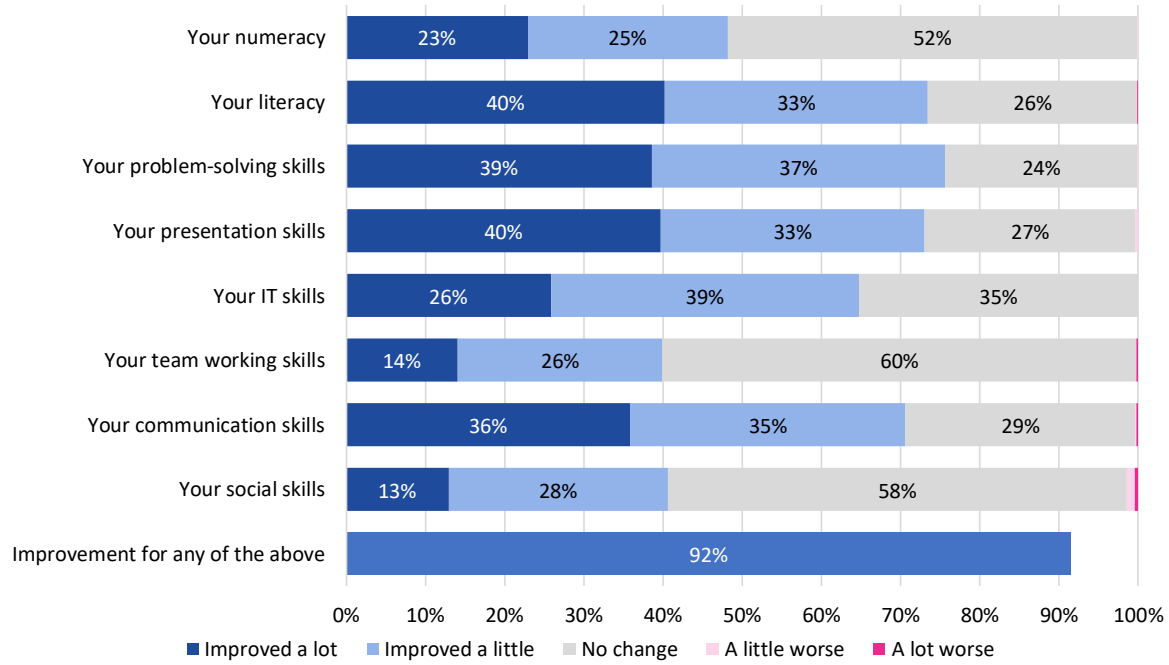


Note: Based on 745 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University *and* were currently employed, unemployed or economically inactive (excluding 15 respondents who indicated a current employment status of 'other'). Between 56 and 75 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

Clearly, the impact of learning activity is not limited to just economic outcomes such as improved earnings or the ability to do a job. Figure 28 presents information on the impact of obtaining a qualification or completing a module at The Open University on individuals' **general skills**.

Figure 28 'Following completion of your studies at The Open University, what impact did this have on your general set of skills?'



Note: Based on 983 respondents. Between 29 and 107 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

Respondents identified significant improvements (either by 'a lot' or 'a little') across a wide range of general skills and proficiencies, including their **problem-solving** skills (**76%**); **presentation** skills

(**73%**); **literacy** skills (**73%**); and **communication** skills (**71%**). In addition, respondents also reported improvements in their **IT skills** (**65%**), **numeracy** (**48%**) and **team working skills** (**40%**)[104].

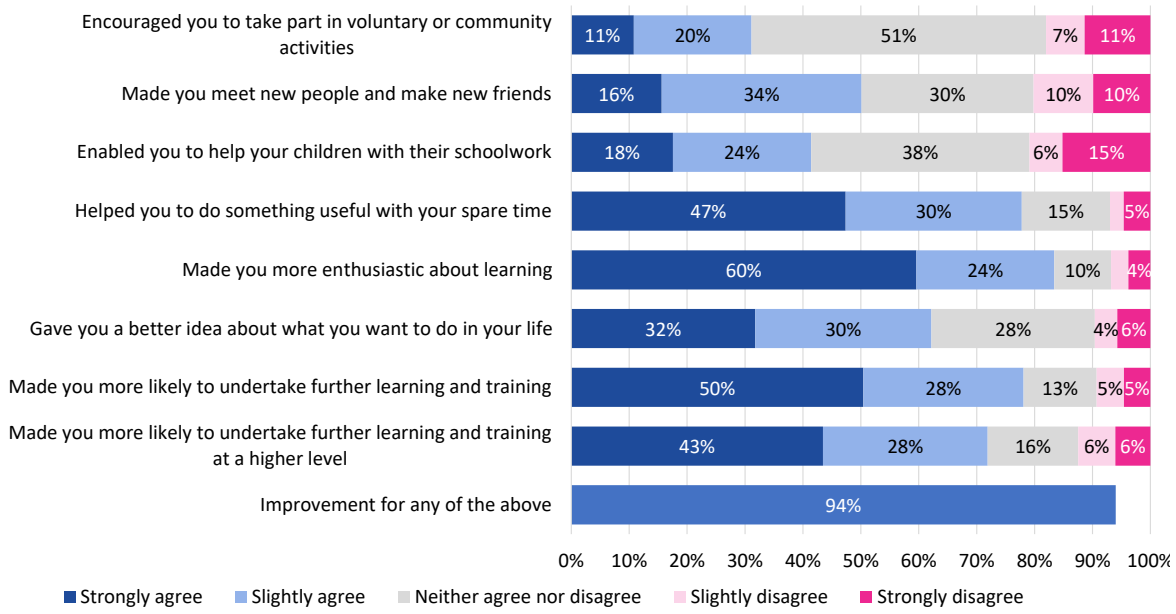
Across all of the general skills categories, **more than nine in ten** respondents indicated that at least one of the identified benefits had occurred since completing the learning with The Open University. Amongst respondents who had completed full qualifications (as opposed to credit-bearing modules), the proportion reached **96%**.

7.3 Personal development and well-being

In addition to the impact of Open University learning on respondents' working lives and skills, the survey also sought to measure the extent to which learning experiences at The Open University had an impact on respondents' **personal development and well-being**.

Figure 29 explores to what extent alumni agreed with a number of statements relating to their **personal development**.

Figure 29 'In terms of your personal development, to what extent do you agree or disagree that the qualification/module which you completed at The Open University…?'



Note: Based on 983 respondents. Between 13 and 476 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

[104] A previous comparable analysis for the University of York (see London Economics, 2018) identified that the proportion of respondents indicating that their numeracy and literacy skills had 'improved a lot' or 'improved a little' stood at **52%** and **76%** respectively, which compares to the corresponding estimates for Open University alumni of **48%** and **73%** respectively. In relation to problem solving, presentation and communication skills, the analysis of Open University alumni identified an impact of **76%**, **73%** and **71%** respectively, compared to **90%, 77%** and **86%** respectively for University of York alumni. Amongst Open University alumni, IT skills were identified to have improved by **65%** of respondents, which compares to **63%** of University of York alumni respondents.

Tackling youth violence online

Youth violence is a serious social concern. Increasingly, this type of violence occurs not just on the streets but also online, in the form of cyber bullying often leading to suicides. **The Open University's research for the cross-party Youth Violence Commission (YVC), led by Dr Keir Irwin-Rogers, has played a central role in driving major changes to public, private and third-sector policies and practices to reduce youth violence.**

Engaging with policymakers

Following a debate in Parliament, the cross-party Youth Violence Commission was launched in 2017 to examine the key causes of youth violence in England, Scotland, and Wales. The Commission consults young people and works with academics and practitioners to better understand how serious violence manifests itself in many young people's lives. **The Open University was one of two academic leads in the evidence sessions**, dedicated to the following topics:

- Youth Services and Community Work;
- Mental Health and a Public Health Approach to Violence;
- Early Years, Education and Employability;
- Housing and Communities;
- Media, Music and Role Models; and
- Policing and Criminal Justice.

The YVC's overarching recommendation that national and regional governments adopt a **public health approach to reducing serious youth violence**, overseen and coordinated by regional Violence Reduction Units (VRUs), has been accepted and adopted by the Home Secretary and the Mayor of London.

The YVC work in turn ensured that each of the general election manifestos for the Conservative, Labour and Liberal Democrat parties pledged support for public health approaches to reducing youth violence accompanied by increased funding for VRUs, with the subsequent Conservative Government **pledging £35 million for VRUs in 2020**.

Engaging with social media platforms

Following the publication of a research report on social media and serious violence, Dr Irwin-Rogers was invited to the London Headquarters of Google and YouTube for three private meetings during 2018 to inform their policies around online safety. During these meetings, **Dr Irwin-Rogers recommended that Google and YouTube should take the lead in establishing social media safeguarding training for professionals working with young people**.

Based on research from The Open University, Google pledged a **£600,000 grant** to fund social media training workshops for **500 professionals** who work with young people.

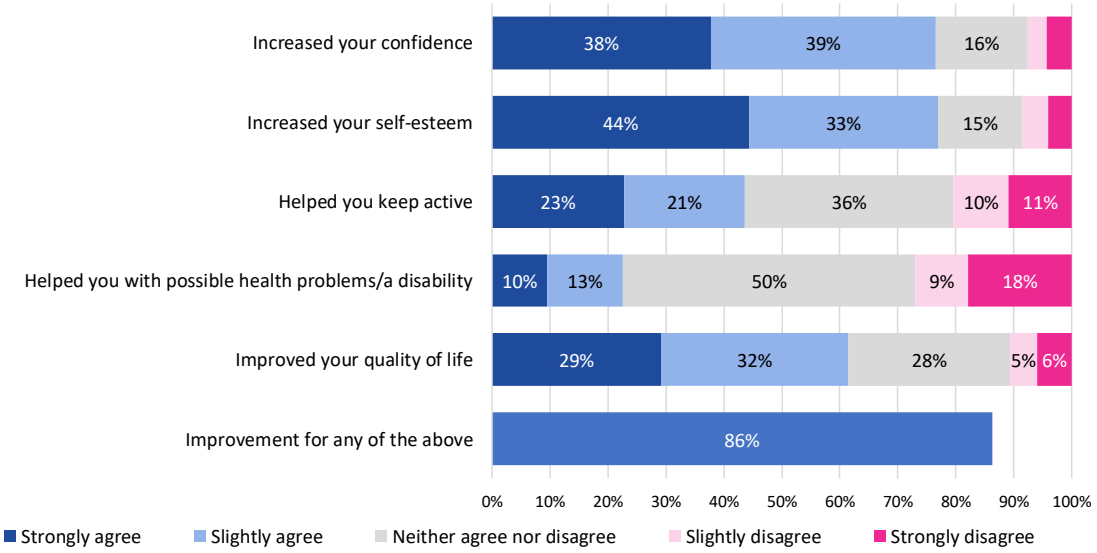
In December 2018, based on Dr Irwin-Rogers' research and the YVC's recommendations, Google announced a grant of £600,000 to fund the creation and delivery of a programme of social media training workshops for 500 frontline professionals working with young people. Dr Irwin-Rogers was asked if he would act as an Advisory Board member for the project, and has continued to inform the content and delivery of the workshops in this capacity. Interim evaluations have shown that the workshops have served to significantly improve the policies and practices of numerous professionals and their organisations.

The analysis indicates that **84%** of respondents felt that they had become **more enthusiastic about learning**; **78%** of respondents believed that their experience at the University made them **more likely to undertake further learning and training at *any level*** (with **71%** reporting that they were **more likely to undertake further learning and training at a *higher level***); **77%** thought that the studies helped them **do something useful with their spare time**; **62%** felt that they had a **better idea about what they wanted to do in their life**; **50%** felt that they **met new people and made new friends**; **42%** reported that their studies **enabled them to help their children with their schoolwork**; and **31%** reported that they were encouraged to **take part in voluntary or community activities**[105].

Across all of the measures of personal development, **94%** of respondents indicated that at least one of the identified benefits had occurred since completing the learning with The Open University.

In terms of wider **well-being**, Figure 30 shows that **77%** of respondents agreed (either 'strongly' or 'slightly') that they had become **more confident** as a result of their Open University studies and felt that their degree had helped **increase their self-esteem**; **61%** suggested that their studies had **improved their quality of life**; **44%** felt that their studies had **helped them keep active**; and **23%** reported that their studies helped them manage possible **health problems and/or disabilities**[106].

Figure 30 'In terms of your well-being, to what extent do you agree or disagree that the degree which you completed at The Open University…?'



Note: Based on 983 respondents. Between 21 and 363 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

Again, reiterating the impact of the Open University on the well-being of its students, across all of the relevant measures, approximately **86%** of respondents indicated that at least one of the

[105] Again, to place these estimates into context, the analysis of the economic and social value of the University of York in relation to personal development indicated that **78%** of respondents felt that they had become more enthusiastic about learning (OU **84%**); **73%** of respondents believed that their experience at the University of York made them more likely to undertake further learning and training at *any level* (OU **78%**); **70%** reported that they were more likely to undertake further learning and training at a *higher level* (OU **71%**); **62%** thought that their studies had helped them do something useful with their spare time (OU **77%**); and **68%** felt that they had a better idea about what they wanted to do in their life (OU **62%**).

[106] Again, these results are comparable with previous estimates identified for other higher education institutions. **77%** of respondents agreed (either 'strongly' or 'slightly') that they had become more confident as a result of their Open University studies and felt that their learning had helped increase their self-esteem **(84%** and **78%** respectively for University of York alumni); and **61%** suggested that their studies had improved their quality of life (**76%**).

identified well-being benefits had occurred since completing the learning with The Open University. Amongst respondents who had completed full qualifications (as opposed to credit-bearing modules), the proportion reached **88%**.

7.4 The regional distribution of Open University alumni

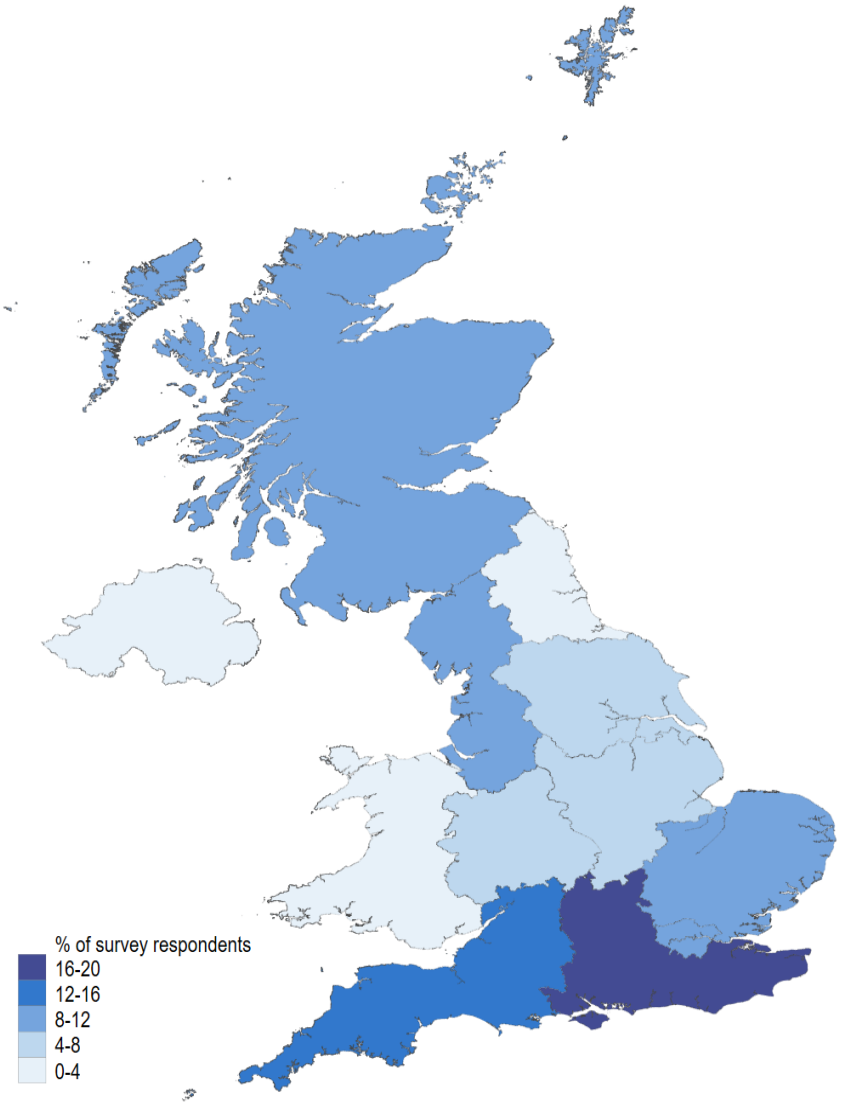
Finally, to further understand the social impacts associated with The Open University's teaching and learning activities, we analysed the **regional distribution** of Open University alumni (based on information provided by OU alumni on their residential address at the time of the survey (i.e. as of May 2020)). This information is presented in Figure 31.

The highest proportion of Open University alumni (**18.8%**) were living in the **South East** region, followed by the **South West** (**12.7%**), the **East of England** (**11.7%**), **Scotland** (**10.3%**) and the **North West** (**9.5%**). Interestingly, less than 10% of the survey respondents indicated that they were living in **London** (**8.9%**). Elsewhere, the **West Midlands** accounted for approximately **7.5%** of alumni survey responses, followed by **Yorkshire and The Humber** (**6.2%**) the **East Midlands** (**5.6%**), **Wales** (**3.9%**), the **North East** (**2.5%**), and **Northern Ireland** (**2.3%**)[107]. The findings thus suggest that Open University graduates study and work in all regions of the United Kingdom (rather than being concentrated within one specific region).

In addition, by comparing alumni's current residency with information on their location of study at the time of undertaking their studies with the OU[108], the analysis suggests that **a substantial majority of graduates remain in the location where the study was undertaken**. The fact that the accumulated skills and proficiencies acquired as part of the learning activity remain in the location where the activity initially took place is an important feature of The Open University's model, and supports the objectives of Central Government policies of boosting the economic and societal outcomes within the regions of the UK.

[107] The percentages might not add up to 100% precisely due to rounding.
[108] The information on location of study was also collected as part of the OU alumni survey, asking respondents to indicate their main place of residence while undertaking their OU studies.

Figure 31 Regional distribution of OU alumni at time of survey



Note: Based on 770 respondents. We received 879 responses to the survey question 'What are the first 4 digits of your postcode now?'. Of this total, we excluded 23 responses with invalid postcodes, and 86 responses for which a single UK region could not be identified. We used the May 2020 ONS Postcode Directory to determine the UK region for each postcode included in the dataset. Next, the data was matched with the ONS digital vector boundaries for Local Authority Districts as of January 2018 to generate a final map.

Source: London Economics' analysis of Open University alumni survey data and Office for National Statistics data. Contains National Statistics data, OS data, Royal Mail, Gridlink, LPS (Northern Ireland), ONS, NISRA data, NRS data and Ordnance Survey data © Crown copyright and database right 2020.

Providing young people with a bridge to university-level study

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Over **7,500 young people** across Scotland have experienced university-level study while still at school, through an innovative national programme developed by The Open University in Scotland.

The **Young Applicants in Schools Scheme (YASS)** was designed to bridge the gap between school and university, college, or employment, giving students in their final year of secondary school (S6) access to a range of university-level courses alongside their other subjects. Experience of independent study at degree level, and access to all of The Open University's student facilities, helps to prepare pupils for the transition to university or college and to enhance their career prospects. Moreover, pupils can use the credit they gain towards a qualification with the OU.

The scheme, supported by the Scottish Funding Council, has grown considerably since it was piloted with Highland Council in 2007. Now, **all 32 Scottish education authorities have schools participating in YASS** and the programme's outcomes are included on Insight, the Scottish Government's benchmarking tool for the senior school phase.

The Open University in Scotland is developing the scheme further to increase the proportion of individual pupils from the 40% most deprived areas, and to target schools in areas with low participation in higher education. With **established links in 275 schools**, it is exploring how to build on that presence to promote learning in the wider community via pupils' parents and carers.

YASS has proved to be a very attractive curriculum addition for many schools, particularly those with a small pupil roll, those with limited numbers staying on to S6, and those in remote areas, which encounter difficulties in providing breadth of subject choice for their pupils.

Providing new skills to employees facing redundancy

A pilot project by The Open University in Scotland has provided redundancy support to 850 staff at the international Michelin tyre plant in Dundee, ahead of its intended closure in 2020.

Michelin, a long-standing and respected employer in the city of Dundee, set in place a carefully planned redundancy strategy to help workers find alternative employment following the closure announcement in late 2018. The Open University in Scotland **worked with factory managers, unions and other partners in the city to develop a skills employability package for Michelin's workforce** and their families to help accelerate alternative employment opportunities and strengthen the employment potential of family units. Support included developing a dedicated learning portal for Michelin staff, access to OU advisors, and support on course choices. A range of **free open courses** specifically focused on the core skills that employees identified as most relevant, including **digital skills**, **smart cities**, **renewable energy** and **entrepreneurship**.

'We were supported by a number of different partners during the factory rampdown and closure. The Open University were able to offer our employees a number of different flexible learning options. People really appreciated the breadth of studies and the type of learning that was on offer. A team from The Open University came to our site on a number of different days and spoke to our employees, both in small groups and as individuals. People appreciated this approach. They also liked the fact that they could learn and participate in lots of different ways. Many remarked on how motivated they were by what was being offered. For many, it was a long gap since their last piece of formal education.'

Donald Mackenzie, Head of Personnel, Michelin Tyres, Dundee

The Open University in Scotland is now deploying the Michelin model with **other companies and across other industries in Scotland** to provide essential support for employees needing to reskill due to redundancy.

8 The aggregate economic impact of The Open University

8.1 Total impact

The total economic impact associated with The Open University's activities in 2018-19 across the UK economy was estimated at **£2,771 million** (see Table 14).

The total economic impact associated with the Open University's activities in 2018-19 was estimated to be £2.77 billion.

In terms of the components of this aggregate economic impact, the value of the University's **formal teaching and learning** activities stood at approximately **£1,673 million** (**60%** of total), while the University's **informal teaching and learning** opportunities accounted for approximately **£24 million** (**1%**). In terms of **research** activity, the analysis identified an economic contribution to the UK economy of **£72 million** (**3%**). The economic contribution associated with the **direct, indirect and induced impact** associated with the University's expenditures throughout the UK economy was estimated at **£983 million** (**36%**). The remaining **1%** of economic impact (or **£18 million**) was associated with the University's contribution to **educational exports**.

Table 14 Aggregate economic impact of The Open University's activities in the UK in 2018-19 (£m and % of total)

Type of impact		£m	%
	**Impact of teaching and learning**	**£1,673.0m**	**60%**
	Impact on students	£1,050.4m	38%
	Impact on the Exchequer	£619.4m	22%
	UK validation activities	£3.2m	0%
	**Impact of informal teaching and learning**	**£24.2m**	**1%**
	OpenLearn	£5.2m	0%
	OU YouTube Channel	£0.2m	0%
	FutureLearn	£18.8m	1%
	**Impact of research**	**£71.8m**	**3%**
	Net direct impact	£5.9m	0%
	Spillover impact	£65.9m	2%
	**Impact of exports**	**£18.2m**	**1%**
	Tuition fee income	£13.7m	1%
	Non-tuition fee income	£2.2m	0%
	Income from validated programmes	£2.2m	0%
	**Direct, indirect and induced impacts**	**£983.4m**	**36%**
	Direct impact	£437.5m	16%
	Indirect and induced impacts	£545.9m	20%
Total economic impact		**£2,771m**	**100%**

Note: All estimates are presented in 2018-19 prices, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding. ***Source: London Economics' analysis***

Compared to the University's total operational costs of approximately **£450 million** in 2018-19[109], the total economic contribution of The Open University's activities to the UK in the 2018-19 academic year was estimated to be **£2,771 million**, which corresponds to a **benefit to cost ratio of**

[109] This includes depreciation costs, as well as any expenditures incurred by the University outside the UK, but excludes one-off non-cash expenditure relating to pension provisions.

6.2:1. This is considerably higher than the corresponding ratios generated by many other higher education institutions (e.g. the average benefit-to-cost ratio among Russell Group institutions stands at only approximately **5.5:1**[110]).

8.2 Breakdown by Home Nation

Excluding those elements or strands of activity that cannot be split by Home Nation (i.e. research and educational exports (amounting to a total of approximately **£90 million**)), the total impact on the UK economy associated with The Open University's activities in **England** was estimated to be approximately **£2,239 million** (see Table 15). This corresponds to approximately **84%** of the total attributable economic impact generated by the University.

At least in part as a result of the scale and range of the University's operations, the OU's activities in Scotland, Wales and Northern Ireland also generate significant benefits to the UK economy. In particular, the analysis identified that the economic impact to the UK economy associated with the OU's activities in **Wales** was **£174 million** (**6%**); while the impact generated by the OU's activities in **Scotland** and **Northern Ireland** stood at **£217 million** (**8%**) and **£50 million** (**2%**), respectively.

Table 15 Aggregate economic impact of The Open University's activities in the UK in 2018-19, by Home Nation (£m)

Type of impact	England	Wales	Scotland	Northern Ireland
Impact of teaching and learning	**£1,339.0m**	**£140.6m**	**£160.4m**	**£33.1m**
Impact on students	£833.0m	£94.9m	£101.2m	£21.3m
Impact on the Exchequer	£502.8m	£45.7m	£59.2m	£11.8m
UK validation activities	£3.2m	-	-	-
Impact of informal teaching and learning	**£20.7m**	**£1.0m**	**£2.0m**	**£0.6m**
OpenLearn	£4.4m	£0.2m	£0.5m	£0.1m
OU YouTube Channel	£0.2m	£0.0m	£0.0m	£0.0m
FutureLearn	£16.0m	£0.8m	£1.5m	£0.5m
Impact of research				
Net direct impact				
Spillover impact				
Impact of exports				
Tuition fee income				
Non-tuition fee income				
Income from validated programmes				
Direct, indirect and induced impacts	**£879.5m**	**£32.1m**	**£55.0m**	**£16.8m**
Direct impact	£392.5m	£14.4m	£23.1m	£7.5m
Indirect and induced impacts	£487.0m	£17.7m	£32.0m	£9.2m
Total economic impact	**£2,239.1m**	**£173.6m**	**£217.4m**	**£50.4m**

Note: All estimates are presented in 2018-19 prices, and rounded to the nearest £0.1m. Totals may not add up precisely due to rounding. Gaps arise where a given type of impact could not be disaggregated across the different Home Nations.
Source: London Economics' analysis

[110] See London Economics (2017).

Index of Tables and Figures

Tables

Figures

ANNEXES

Annex 1 References

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Annex 2 Technical Annex

A2.1 Impact of the University's formal teaching and learning activities

A2.1.1 Qualifications and counterfactuals considered in the econometric analysis

Our econometric analyses of the earnings and employment returns to higher education qualifications (described in more detail in Annex A2.1.2) considered **five different higher education qualification groups** (i.e. five **'treatment' groups**) within the Regulated Qualifications Framework: three at postgraduate level (higher degree (research), higher degree (taught) and 'other' postgraduate qualifications[111]) and two at undergraduate level (first degrees and 'other' undergraduate qualifications[112]).

Table 16 presents these different postgraduate and undergraduate level qualifications (i.e. treatment groups) considered in the analysis, along with the associated **counterfactual group** used for the marginal returns analysis in each case. As outlined in Section 2.4.1, we compare the earnings of the group of individuals in possession of the qualification to the relevant counterfactual group, to ensure that we assess the economic benefit associated with the qualification itself, rather than the economic returns generated by the specific characteristics of the individual in possession of the qualification. This is a common approach in the empirical literature and allows for the removal of other personal, regional or socioeconomic characteristics that might influence *both* the determinants of qualification attainment as well as earnings.

Table 16 Treatment and comparison groups – marginal returns

Treatment group – highest academic qualification	Comparison group - highest academic qualification	Treatment and comparison groups – highest possible vocational/professional qualification
Higher degree (research)	First degree	Level 3 vocational
Higher degree (taught)	First degree	Level 3 vocational
Other postgraduate	First degree	Level 3 vocational
First degree	2 or more GCE A-Levels	Level 3 vocational
Other undergraduate	2 or more GCE A-Levels	Level 3 vocational
2 or more GCE A-Levels	5 or more GCSEs at A*-C	Level 3 vocational

Source: London Economics

For the analysis of marginal returns, postgraduate degree holders are compared to first degree holders, while for individuals holding a first degree or 'other undergraduate' level higher education qualifications, the counterfactual group consists of individuals holding 2 or more GCE A-Levels as their highest qualification. For the purposes of estimating the returns to all higher education qualifications, the highest level of professional or vocational qualification that an individual may be in possession of is at Level 3 (for both those in possession of higher education qualifications (the

[111] This relates to Labour Force Survey variables a) HIQUAL11 and HIQUAL15 value labels 'Level 7 Diploma' and 'Level 7 Certificate' and b) HIQUAL4, HIQUAL5, HIQUAL8, HIQUAL11 and HIQUAL15 value labels 'Higher degree' (other than Masters or Doctorate degree).

[112] This includes individuals in possession of Foundation Degrees, HE Diplomas, or 'other higher education below degree'. This latter group is identified through the Labour Force Survey variables HIQUAL4, HIQUAL8, HIQUAL11 and HIQUAL15 value label 'other higher education below degree'.
Interviewers are instructed to use 'other higher education below degree' only if the respondent states that they have 'something from higher education but they do not know what it is'. It is therefore not possible to provide examples of typical qualifications that would normally fall under this category. The response option serves the purpose of confirming that higher education qualifications have been achieved but that the respondent is unaware of the actual qualification title itself.

treatment group) and those individuals not in possession of higher education qualifications (the control group)).

In addition to the analysis of higher education outcomes, we also included a separate specification comparing the earnings associated with GCE A-Levels to possession of 5 or more GCSEs at grades A*-C. This additional analysis was undertaken to take account of the fact that the academic 'distance travelled' by a relatively large proportion of students in the 2018-19 cohort of Open University students (**25%**, see Table 7 in Section 2.1) is **greater** than would be the case for those in possession of levels of prior attainment 'traditionally' associated with higher education entry. Similarly, for other students within the cohort, the academic 'distance travelled' might be **lower** than that associated with the typical prior attainment level (e.g. a proportion of students intending to undertake a first degree may have previously completed a sub-degree level qualification (i.e. a qualification at 'other undergraduate')).

In instances where the level of prior attainment for students at the OU was higher or lower than the counterfactual qualifications outlined in Table 16, the analysis used a **'stepwise' calculation of additional lifetime earnings**. For example, to calculate the earnings and employment returns for a student **in possession of an 'other undergraduate' qualification undertaking a first degree at the OU**, we ***deducted*** the returns to undertaking a 'other undergraduate' qualification (relative to the possession of 2 or more GCE A-Levels) from the returns to undertaking a first degree (again relative to the possession of 2 or more GCE A-Levels). In contrast, to calculate the returns for a student **in possession of GCSEs (or equivalent/below) undertaking a first degree at the OU**, we ***added*** the returns to achieving 2 or more GCE A-Levels (relative to the possession of 5 or more GCSEs at grades A*-C) to the returns to undertaking a first degree (relative to the possession of 2 or more GCE A-Levels)[113].

A2.1.2 Marginal earnings and employment returns to higher education qualifications

Marginal earnings returns

To estimate the impact of qualification attainment on earnings, using information from the Labour Force Survey, we estimated a standard **Ordinary Least Squares** linear regression model, where the dependent variable is the natural logarithm of hourly earnings, and the independent variables include the full range of qualifications held alongside a range of personal, regional and job-related characteristics that might be expected to influence earnings. In this model specification, we included individuals who were employed on either a full-time or a part-time basis. This approach has been used widely in the academic literature.

The basic specification of the model was as follows:

$$\ln(\omega_i) = \alpha + \beta' X_i + \varepsilon_i \qquad \text{for } i = 1 \text{ to n}$$

where $\ln(\omega_i)$ represents the natural logarithm of hourly earnings, ε_i represents an error term, and X_i provides the independent variables included in the analysis as follows:

[113] In some instances, this stepwise calculation would result in *negative* lifetime returns to achieving higher education qualifications; in addition, the (subject-adjusted) marginal earnings returns to some higher educational qualifications were estimated to be negative (and again would result in *negative* lifetime returns to achieving the given qualification). As this seems illogical and unlikely in reality, any negative returns in these instances were set to zero. Hence, the analysis implicitly assumes that all calculated gross lifetime benefits from higher education learning (*before* the deduction of any foregone earnings or other costs) *can only be greater than or equal to zero* (i.e. there can be no wage or employment *penalty* associated with any higher education qualification attainment, irrespective of the level of prior education attainment).

- Gender;
- Age;
- Age squared;
- Ethnic origin;
- Region of usual residence;
- Qualifications held;
- Marital status;
- Number of dependent children under the age of 16;
- Full-time/ part-time employment;
- Temporary or permanent contract;
- Public or private sector employment;
- Workplace size;
- Interaction terms; and
- Yearly Dummies.

Using the above specification, we estimated earnings returns in aggregate and **for men and women separately**.[114] Further, to analyse the benefits associated with different education qualifications over the working life of individuals holding these qualifications, the regressions were **estimated separately across a range of specific age bands** for the working age population. Further note that the analysis of earnings premiums was undertaken at a national (UK-wide) level. However, to adjust for differences across the OU's Home Nation locations (i.e. across students domiciled in England, Wales, Scotland and Northern Ireland), these UK-wide earnings premiums were then combined with:

- Estimates of the (employment-adjusted) **annual age-earnings profiles achieved by individuals in the relevant counterfactual groups** (e.g. 2 or more GCE A-Levels), separately for individuals living in England, Wales, Scotland and Northern Ireland; and
- The relevant **differential direct costs** facing the individual and/or the public purse for students domiciled in the different Home Nations.

To estimate the impact of higher education qualifications on labour market outcomes using this methodology, we used information from **pooled Quarterly UK Labour Force Surveys between 2004 (Q2) and 2019 (Q3)**. The selection of information over this period is the longest time for which information on education and earnings is available on a relatively consistent basis, for all qualifications of interest.

The resulting estimates of the marginal wage returns to higher education qualifications are presented in Table 17. In the earnings regressions, the coefficients relating to the higher education qualifications provide an indication of the additional effect on hourly earnings associated with possession of the respective qualification relative to the counterfactual level of qualification. Taking an example, the analysis suggests that men aged between 41 and 45 years old in possession of a first degree achieve a **26.0%** hourly earnings premium compared to comparable men holding only 2

[114] The econometric analysis of the Labour Force Survey assesses the impact of higher education qualification attainment on earnings and employment outcomes; however, as no information is specifically available on the particular higher education institution attended, the analysis is not specific to Open University alumni. Rather, the findings from the econometric analysis are subsequently adjusted to reflect the characteristics of The Open University cohort in 2018-19 (for instance in terms of mode of study, level of study, subject mix, domicile, gender, average age at enrolment, duration and average completion rates).

or more GCE A-Levels as their highest level of attainment. The comparable estimate for women aged between 41 and 45 stands at **31.9%**.

In addition to estimating marginal earnings returns on average across *all subjects* of study, we repeated the econometric analysis to estimate these returns *separately by subject*[115]. Combining these subject-level returns with the number of students in the 2018-19 cohort of OU students expected to complete qualifications/standalone-credit bearing by subject (and by level of study that they are expected to complete), we then calculated **subject mix adjustment factors** (separately by gender and qualification level[116]). These adjustment factors were then applied to the above average marginal wage returns (across all subjects) to **adjust for the specific subject composition of The Open University's student cohort**.

Table 17 Marginal earnings returns to higher education qualifications (in all subjects), in % (following exponentiation), by gender and age band

Qualification level	Age band									
	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65
Men										
2 or more GCE A-levels[1]	8.9%	5.3%	10.2%	18.6%	25.7%	18.6%	25.6%	16.8%	17.6%	10.7%
Other undergraduate[2]			-2.8%		4.1%	9.7%	8.3%	8.9%	11.7%	12.6%
First degree[2]		10.0%	16.1%	22.0%	20.1%	26.0%	18.6%	25.4%	25.4%	26.1%
Other postgraduate[3]		10.1%	11.1%	8.0%	3.5%	5.1%				
Higher degree (taught)[3]		10.6%	11.4%	8.1%	10.5%	12.5%	12.2%	13.0%	12.2%	11.7%
Higher degree (research)[3]			17.1%	19.0%	19.7%	20.1%	22.9%	28.1%	25.2%	45.2%
Women										
2 or more GCE A-levels[1]	8.0%	5.7%	10.5%	12.7%	17.6%	18.9%	14.0%	14.0%	13.9%	8.0%
Other undergraduate[2]			4.1%	5.3%	9.1%	12.3%	13.3%	18.4%	19.2%	22.8%
First degree[2]		10.3%	17.5%	25.6%	34.3%	31.9%	32.2%	33.6%	27.6%	28.0%
Other postgraduate[3]		9.1%	6.8%	9.4%	5.2%	6.5%	10.8%	15.4%	9.7%	9.6%
Higher degree (taught)[3]		8.2%	5.9%	10.1%	12.6%	15.8%	21.4%	17.0%	27.8%	19.5%
Higher degree (research)[3]		16.2%	18.1%	21.5%	31.4%	26.6%	37.2%	40.9%	31.5%	29.2%

Note: Regression coefficients have been exponentiated to reflect percentage wage returns. In cases where the estimated coefficients are not statistically significantly different from zero (at the 10% level), the coefficient is assumed to be zero; these are displayed as gaps in the table.

[1] Returns to holding 2 or more GCE A-Levels compared to 5 or more GCSEs at A*-C. [2] Returns to first degrees and 'other' undergraduate qualifications are estimated relative to individuals holding 2 or more GCE A-Levels as their highest qualification. [3] Returns to higher degree (taught), higher degree (research) and other postgraduate qualifications are estimated relative to undergraduate degrees.

Source: London Economics' analysis of pooled Quarterly Labour Force Survey data for 2004-2019

Marginal employment returns

To estimate the impact of qualification attainment on employment, we adopted a **probit model** to estimate the likelihood of different qualification holders being in employment or otherwise. The basic specification defines an individual's labour market outcome to be either in employment (working for payment or profit for more than 1 hour in the reference week (using the standard

[115] The HESA Joint Academic Coding System (JACS) was used to classify subject areas. The following subject groups were distinguished: (1) Medicine & dentistry, (2) Subjects allied to medicine, (3) Biological sciences, (4) Veterinary science, (5) Agriculture & related subjects, (6) Physical sciences, (7) Mathematical sciences, (8) Computer science, (9) Engineering & technology, (A) Architecture, building & planning, (B) Social studies, (C) Law, (D) Business & administrative studies, (E) Mass communications & documentation, (F) Languages, (G) Historical & philosophical studies, (H) Creative arts & design, (I) Education and (J) Combined.

[116] Note that, given that the analysis of the marginal earnings and employment returns to HE qualifications was undertaken on a UK-wide basis, the subject-adjustment was *not* undertaken separately for each OU Home Nation location, but was instead undertaken in aggregate across the OU as whole.

International Labour Organisation definition) or not in employment (being either unemployed or economically inactive)). The specification of the probit model was as follows:

$$probit(EMPNOT_i) = \alpha + \gamma' Z_i + \varepsilon_i \qquad \text{for } i = 1 \text{ to n}$$

The dependent variable adopted represents the binary variable *EMPNOT*, which is coded 1 if the individual is in employment and 0 otherwise. We specified the model to contain a constant term as well as a number of standard independent variables including the qualifications held by an individual (represented by Z_i in the above equation) as follows:

- Gender;
- Age;
- Age squared;
- Ethnic origin;
- Region of usual residence;
- Qualifications held;
- Marital status;
- Number of dependent children under the age of 16; and
- Yearly Dummies.

Again, ε_i represents an error term. Similar to the methodology for estimating earnings returns, the described probit model was estimated in aggregate and **separately for men and women**, with the analysis further split by respective **age bands**, and adjusted for the specific **subject mix** of students in the 2018-19 cohort of UK-domiciled students attending The Open University. Further, and again similar to the analysis of earnings returns, employment returns were estimated at the national (i.e. UK-wide) level. The resulting estimates of marginal employment returns to higher education qualifications (on average across *all subjects* of study (i.e. before adjusting for the University's specific subject mix)) are presented in Table 18.

Table 18 Marginal employment returns to higher education qualifications (in all subjects), in percentage points, by gender and age band

Qualification level	Age band									
	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65
Men										
2 or more GCE A-levels[1]	-2.3		2.9	1.3	1.9	1.2	1.7			
Other undergraduate[2]		-2.6	-1.7		-1.8				-3.0	
First degree[2]			1.3	2.6	2.2	2.0	1.8	3.6	2.2	
Other postgraduate[3]		5.1				1.6	1.6	2.9		
Higher degree (taught)[3]			-1.0							
Higher degree (research)[3]						1.6		4.8	6.6	10.5
Women										
2 or more GCE A-levels[1]		3.7	3.6	2.2		1.6	3.0	4.2		
Other undergraduate[2]										
First degree[2]		2.7	3.8	4.7	6.4	4.8	4.5	2.1	3.1	
Other postgraduate[3]		4.4				3.9	3.8	4.2		
Higher degree (taught)[3]			-2.0			3.7	2.7	3.3	5.8	
Higher degree (research)[3]			-3.6	3.2		5.2	7.7	4.5	11.3	16.4

Note: In cases where the estimated coefficients are not statistically significantly different from zero (at the 10% level), the coefficient is assumed to be zero; these are displayed as gaps in the table.

[1] Returns to holding 2 or more GCE A-Levels compared to 5 or more GCSEs at A*-C. [2] Returns to first degrees and 'other' undergraduate qualifications are estimated relative to individuals holding 2 or more GCE A-Levels as their highest qualification. [3] Returns to higher degree (taught), higher degree (research) and other postgraduate qualifications are estimated relative to undergraduate degrees.

Source: London Economics' analysis of pooled Quarterly Labour Force Survey data for 2004-2019

In the employment regressions, the relevant coefficients provide estimates of the impact of the qualification on the probability of being in employment (expressed in percentage points). Again, to take an example, the analysis estimates that a man aged between 41 and 45 in possession of a first degree is **2.0 percentage points** more likely to be in employment than a man of similar age holding only 2 or more GCE A-Levels as his highest level of education. The corresponding estimate for women stands at **4.8 percentage points**.

A2.1.3 'Age-decay' function

As outlined in Section 2.4.1, to adjust the analysis for the particular characteristics of part-time students (as well as full-time students at the OU, given their relatively later age of attainment compared to 'typical' full-time students at UK universities), we applied an **'age-decay' function**. This approach assumes that, as the age of attainment increases, a declining proportion of the potential value of the estimated earnings and employment benefit accrues to the individual. This calibration ensures that those individuals completing qualifications at a relatively older age will see more limited earnings and employment benefits associated with higher education qualification attainment (and potentially reflect different motivations among this group of learners). In contrast, those individuals attaining qualifications earlier in their working life will see a greater economic benefit (potentially reflecting the investment nature of qualification acquisition).

Table 19 presents the assumed age-decay adjustment factors which we apply to the marginal earnings and employment returns to full-time and part-time students undertaking qualifications at The Open University in the 2018-19 cohort. To take an example, we would assume that a 'typical' student completing a full-time first degree at a UK university by the age of 23 would achieve the full (100%) earnings and employment premium identified in the econometric analysis (for their entire working life). However, for a **part-time (full-time) first degree student at The Open University**, we

assume that because of the late attainment (at age **37** (**34**) on average), these students recoup only **65%** (**73%**) of the corresponding and employment premiums from that age (of attainment).

Note that the application of the 'age-decay' function implies that, for *all* qualification levels at the University, the estimated employment and earnings returns for part-time students are lower than the returns for comparable full-time students. These differences reflect the (relatively limited) wider economic literature on the returns to part-time study[117].

[117] In general, these studies suggest that the economic returns to studying part-time are lower than the economic returns associated with studying full-time. This is in part because part-time students are often already employed when undertaking their studies, so the marginal (or additional) impact of the higher education qualification is lower. For instance, six months after graduation, graduates undertaking part-time study were three percentage points more likely to be employed than graduates undertaking full-time study, and less than half as likely (3% compared to 7%) to be unemployed. See Callender et al. (2011).
According to the same study, the salaries of graduates from part-time study grow at a slower pace compared with their full-time peers. Part-time graduates are less likely to see their salaries increase and are more likely to see their salaries stagnate between 6 months and 42 months after graduation: specifically, during this period, 78% of part-time graduates and 88% of full-time graduates saw their salaries rise, while 16% of part-time and 8% of full-time graduates experienced no change in salaries, and 6% of part-time and only 2% of former full-time students saw a drop in their salaries.

Table 19 Assumed age decay adjustment factors applied to students in the 2018-19 Open University cohort

Age	Other undergraduate	First degree	Other postgraduate	Higher degree (taught)	Higher degree (research)
18	100%	100%	100%	100%	100%
19	100%	100%	100%	100%	100%
20	100%	100%	100%	100%	100%
21	100%	100%	100%	100%	100%
22	100%	100%	100%	100%	100%
23	100%	100%	100%	100%	100%
24	98%	98%	100%	100%	100%
25	95%	95%	100%	100%	100%
26	93%	93%	100%	100%	100%
27	90%	90%	100%	100%	100%
28	88%	88%	100%	100%	100%
29	85%	85%	97%	97%	97%
30	83%	83%	94%	94%	94%
31	80%	80%	91%	91%	91%
32	78%	78%	89%	89%	89%
33	75%	75%	86%	86%	86%
34	73%	73%	83%	83%	83%
35	70%	70%	80%	80%	80%
36	68%	68%	77%	77%	77%
37	65%	65%	74%	74%	74%
38	63%	63%	71%	71%	71%
39	60%	60%	69%	69%	69%
40	58%	58%	66%	66%	66%
41	55%	55%	63%	63%	63%
42	53%	53%	60%	60%	60%
43	50%	50%	57%	57%	57%
44	48%	48%	54%	54%	54%
45	45%	45%	51%	51%	51%
46	42%	42%	49%	49%	49%
47	40%	40%	46%	46%	46%
48	37%	37%	43%	43%	43%
49	35%	35%	40%	40%	40%
50	32%	32%	37%	37%	37%
51	30%	30%	34%	34%	34%
52	27%	27%	31%	31%	31%
53	25%	25%	29%	29%	29%
54	22%	22%	26%	26%	26%
55	20%	20%	23%	23%	23%
56	17%	17%	20%	20%	20%
57	15%	15%	17%	17%	17%
58	12%	12%	14%	14%	14%
59	10%	10%	11%	11%	11%
60	7%	7%	9%	9%	9%
61	5%	5%	6%	6%	6%
62	2%	2%	3%	3%	3%
63	0%	0%	0%	0%	0%
64	0%	0%	0%	0%	0%
65	0%	0%	0%	0%	0%

Note: Shaded areas indicate relevant average graduation age per full-time / part-time student at each level of study at the OU (based on the 2018-19 cohort, on average across each of the OU's Home Nation locations):

Full-time students Part-time students

Source: London Economics' analysis based on HESA data provided by The Open University

A2.1.4 Gross and net graduate premiums and public purse benefits

Table 20 and Table 21 present our estimates of the *gross* graduate premium and *gross* Exchequer benefit per student (for part-time students only). Table 22 and Table 23 present our estimates of the *net* graduate premium and *net* Exchequer benefit per student (again, for part-time students only).

Table 20 Gross graduate premiums per part-time student associated with HE qualification attainment at The Open University, by domicile/location of study, study level, gender, and prior attainment

Home Nation and level of study	Prior attainment and gender													
	GCSE or below		A-levels		Other undergraduate		First degree		Other postgraduate		Higher degree (taught)		Higher degree (research)	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
England														
Other undergraduate	£102,000	£42,000	£39,000	£18,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£113,000	£66,000	£67,000	£49,000	£36,000	£34,000	£0	£0	£0	£0	£0	£0	£0	£0
Other postgraduate	£81,000	£70,000	£49,000	£56,000	£22,000	£44,000	£0	£21,000	£0	£0	£0	£0	£0	£0
Higher degree (taught)	£89,000	£67,000	£64,000	£57,000	£43,000	£46,000	£22,000	£28,000	£27,000	£12,000	£0	£0	£0	£0
Higher degree (research)							£39,000	£32,000		£22,000	£25,000	£14,000	£0	
Wales														
Other undergraduate	£80,000	£36,000	£30,000	£15,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£86,000	£55,000	£52,000	£40,000	£28,000	£28,000	£0	£0	£0	£0	£0	£0	£0	£0
Other postgraduate					£16,000	£36,000	£0	£17,000	£0	£0	£0	£0	£0	
Higher degree (taught)					£38,000	£41,000	£21,000	£25,000	£24,000	£10,000	£0	£0	£0	
Higher degree (research)														
Scotland														
Other undergraduate	£92,000	£40,000	£33,000	£17,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£88,000	£54,000	£52,000	£39,000	£28,000	£26,000	£0	£0	£0	£0	£0	£0	£0	£0
Other postgraduate			£42,000		£20,000	£43,000	£0	£21,000	£0	£0	£0	£0	£0	£0
Higher degree (taught)			£52,000		£36,000	£41,000	£20,000	£27,000	£24,000	£11,000	£0	£0	£0	£0
Higher degree (research)														
Northern Ireland														
Other undergraduate	£73,000	£36,000	£28,000	£15,000	£0	£0	£0	£0	£0	£0	£0	£0		£0
First degree	£85,000	£59,000	£51,000	£44,000	£28,000	£31,000	£0	£0	£0	£0	£0	£0		
Other postgraduate					£19,000	£44,000	£0	£21,000	£0	£0	£0	£0		
Higher degree (taught)					£40,000	£47,000	£22,000	£29,000	£26,000	£12,000	£0	£0		
Higher degree (research)														

Note: All values are rounded to the nearest £000. Gaps may arise where there are no students in the 2018-19 Open University cohort expected to complete the given qualification (of the given characteristics). Grey shading indicates instances where the level of study at The Open University is equal to or lower than the level of previous attainment. In these instances, the analysis implicitly assumes that all calculated gross returns (*before* the deduction of any foregone earnings or other costs) can only be larger or equal to zero (i.e. there can be no wage or employment penalty associated with any higher education qualification attainment). Hence, for part-time students (where we assume no foregone earnings during study), each grey-shaded cell is equal to zero.

Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels) (or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU. ***Source: London Economics' analysis***

Table 21 Gross Exchequer benefits per part-time student associated with HE qualification attainment at The Open University, by domicile/location of study, study level, gender, and prior attainment

Home Nation and level of study	Prior attainment and gender													
	GCSE or below		A-levels		Other undergraduate		First degree		Other postgraduate		Higher degree (taught)		Higher degree (research)	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
England														
Other undergraduate	£88,000	£34,000	£34,000	£14,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£100,000	£54,000	£62,000	£40,000	£35,000	£28,000	£0	£0	£0	£0	£0	£0	£0	£0
Other postgraduate	£71,000	£57,000	£44,000	£46,000	£21,000	£36,000	£0	£17,000	£0	£0	£0	£0	£0	£0
Higher degree (taught)	£83,000	£54,000	£61,000	£46,000	£43,000	£38,000	£24,000	£23,000	£28,000	£9,000	£0	£0	£0	£0
Higher degree (research)							£39,000	£26,000		£17,000	£25,000	£11,000	£0	
Wales														
Other undergraduate	£67,000	£27,000	£25,000	£11,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£72,000	£43,000	£43,000	£32,000	£24,000	£23,000	£0	£0	£0	£0	£0	£0	£0	£0
Other postgraduate					£14,000	£29,000	£0	£14,000	£0	£0	£0	£0	£0	
Higher degree (taught)					£32,000	£33,000	£18,000	£21,000	£21,000	£8,000	£0	£0	£0	
Higher degree (research)														
Scotland														
Other undergraduate	£78,000	£32,000	£28,000	£13,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£74,000	£44,000	£44,000	£31,000	£24,000	£22,000	£0	£0	£0	£0	£0	£0	£0	£0
Other postgraduate			£36,000		£17,000	£36,000	£0	£18,000	£0	£0	£0	£0	£0	£0
Higher degree (taught)			£48,000		£35,000	£34,000	£21,000	£22,000	£25,000	£9,000	£0	£0	£0	£0
Higher degree (research)														
Northern Ireland														
Other undergraduate	£62,000	£26,000	£23,000	£12,000	£0	£0	£0	£0	£0	£0	£0	£0		£0
First degree	£72,000	£46,000	£43,000	£36,000	£24,000	£26,000	£0	£0	£0	£0	£0	£0		
Other postgraduate					£16,000	£36,000	£0	£17,000	£0	£0	£0	£0		
Higher degree (taught)					£34,000	£39,000	£19,000	£24,000	£22,000	£10,000	£0	£0		
Higher degree (research)														

Note: All values are rounded to the nearest £000. Gaps may arise where there are no students in the 2018-19 Open University cohort expected to complete the given qualification (of the given characteristics). Grey shading indicates instances where the level of study at The Open University is equal to or lower than the level of previous attainment. In these instances, the analysis implicitly assumes that all calculated gross returns (*before* the deduction of any foregone earnings or other costs) can only be larger or equal to zero (i.e. there can be no wage or employment penalty associated with any higher education qualification attainment). Hence, for part-time students (where we assume no foregone earnings during study), each grey-shaded cell is equal to zero.
Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels) (or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU. ***Source: London Economics' analysis***

Table 22 Net graduate premiums per part-time student associated with HE qualification attainment at The Open University, by domicile/location of study, study level, gender, and prior attainment

Home Nation and level of study	Prior attainment and gender													
	GCSE or below		A-levels		Other undergraduate		First degree		Other postgraduate		Higher degree (taught)		Higher degree (research)	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
England														
Other undergraduate	£103,000	£43,000	£39,000	£18,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000
First degree	£114,000	£68,000	£69,000	£51,000	£38,000	£36,000	£2,000	£2,000	£2,000	£2,000	£2,000	£2,000	£2,000	£2,000
Other postgraduate	£78,000	£67,000	£45,000	£53,000	£19,000	£41,000	-£3,000	£17,000	-£3,000	-£3,000	-£3,000	-£3,000	-£3,000	-£3,000
Higher degree (taught)	£83,000	£61,000	£58,000	£51,000	£37,000	£40,000	£16,000	£22,000	£21,000	£6,000	-£6,000	-£6,000	-£6,000	-£6,000
Higher degree (research)							£35,000	£28,000		£17,000	£21,000	£10,000	-£4,000	
Wales														
Other undergraduate	£83,000	£38,000	£33,000	£18,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000	£3,000
First degree	£93,000	£62,000	£59,000	£47,000	£35,000	£35,000	£7,000	£7,000	£7,000	£7,000	£7,000	£7,000	£7,000	£7,000
Other postgraduate					£12,000	£31,000	-£4,000	£13,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	
Higher degree (taught)					£29,000	£33,000	£12,000	£17,000	£16,000	£2,000	-£8,000	-£8,000	-£8,000	
Higher degree (research)														
Scotland														
Other undergraduate	£92,000	£40,000	£33,000	£17,000	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
First degree	£87,000	£53,000	£51,000	£38,000	£27,000	£26,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000
Other postgraduate			£38,000		£16,000	£39,000	-£4,000	£17,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000
Higher degree (taught)			£44,000		£28,000	£34,000	£12,000	£19,000	£16,000	£3,000	-£8,000	-£8,000	-£8,000	-£8,000
Higher degree (research)														
Northern Ireland														
Other undergraduate	£72,000	£35,000	£27,000	£15,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000		-£1,000
First degree	£83,000	£57,000	£49,000	£42,000	£26,000	£29,000	-£2,000	-£2,000	-£2,000	-£2,000	-£2,000	-£2,000		
Other postgraduate					£15,000	£40,000	-£4,000	£17,000	-£4,000	-£4,000	-£4,000	-£4,000		
Higher degree (taught)					£33,000	£40,000	£15,000	£22,000	£19,000	£5,000	-£7,000	-£7,000		
Higher degree (research)														

Note: All values are rounded to the nearest £000. Gaps may arise where there are no students in the 2018-19 Open University cohort expected to complete the given qualification (of the given characteristics). Grey shading indicates instances where the level of study at The Open University is equal to or lower than the level of previous attainment. In these instances, the analysis implicitly assumes that all calculated gross returns (*before* the deduction of any foregone earnings or other costs) can only be larger or equal to zero (i.e. there can be no wage or employment penalty associated with any higher education qualification attainment). Hence, for part-time students (where we assume no foregone earnings during study), each grey-shaded cell only reflects the *direct* costs of qualification acquisition.
Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels) (or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU. ***Source: London Economics' analysis***

Table 23 Net Exchequer benefit per part-time student associated with HE qualification attainment at The Open University, by domicile/location of study, study level, gender, and prior attainment

Home Nation and level of study	Prior attainment and gender													
	GCSE or below		A-levels		Other undergraduate		First degree		Other postgraduate		Higher degree (taught)		Higher degree (research)	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
England														
Other undergraduate	£81,000	£27,000	£28,000	£7,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000
First degree	£83,000	£37,000	£44,000	£22,000	£17,000	£11,000	-£17,000	-£17,000	-£17,000	-£17,000	-£17,000	-£17,000	-£17,000	-£17,000
Other postgraduate	£70,000	£56,000	£43,000	£45,000	£20,000	£35,000	-£1,000	£16,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000	-£1,000
Higher degree (taught)	£81,000	£53,000	£60,000	£44,000	£42,000	£36,000	£22,000	£22,000	£26,000	£8,000	-£2,000	-£2,000	-£2,000	-£2,000
Higher degree (research)							£33,000	£19,000		£11,000	£19,000	£5,000	-£6,000	
Wales														
Other undergraduate	£61,000	£21,000	£19,000	£5,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000	-£6,000
First degree	£55,000	£26,000	£27,000	£15,000	£7,000	£6,000	-£16,000	-£16,000	-£16,000	-£16,000	-£16,000	-£16,000	-£16,000	-£16,000
Other postgraduate					£12,000	£27,000	-£2,000	£12,000	-£2,000	-£2,000	-£2,000	-£2,000	-£2,000	
Higher degree (taught)					£29,000	£30,000	£14,000	£17,000	£18,000	£5,000	-£3,000	-£3,000	-£3,000	
Higher degree (research)														
Scotland														
Other undergraduate	£74,000	£28,000	£24,000	£9,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000	-£4,000
First degree	£63,000	£32,000	£33,000	£20,000	£12,000	£10,000	-£11,000	-£11,000	-£11,000	-£11,000	-£11,000	-£11,000	-£11,000	-£11,000
Other postgraduate			£33,000		£14,000	£33,000	-£3,000	£15,000	-£3,000	-£3,000	-£3,000	-£3,000	-£3,000	-£3,000
Higher degree (taught)			£43,000		£30,000	£29,000	£16,000	£17,000	£20,000	£4,000	-£5,000	-£5,000	-£5,000	-£5,000
Higher degree (research)														
Northern Ireland														
Other undergraduate	£57,000	£21,000	£19,000	£7,000	-£5,000	-£5,000	-£5,000	-£5,000	-£5,000	-£5,000	-£5,000	-£5,000		-£5,000
First degree	£59,000	£34,000	£30,000	£23,000	£11,000	£13,000	-£13,000	-£13,000	-£13,000	-£13,000	-£13,000	-£13,000		
Other postgraduate					£13,000	£34,000	-£3,000	£14,000	-£3,000	-£3,000	-£3,000	-£3,000		
Higher degree (taught)					£29,000	£34,000	£14,000	£19,000	£17,000	£5,000	-£5,000	-£5,000		
Higher degree (research)														

Note: All values are rounded to the nearest £000. Gaps may arise where there are no students in the 2018-19 Open University cohort expected to complete the given qualification (of the given characteristics). Grey shading indicates instances where the level of study at The Open University is equal to or lower than the level of previous attainment. In these instances, the analysis implicitly assumes that all calculated gross returns (*before* the deduction of any foregone earnings or other costs) can only be larger or equal to zero (i.e. there can be no wage or employment penalty associated with any higher education qualification attainment). Hence, for part-time students (where we assume no foregone earnings during study), each grey-shaded cell only reflects the *direct* costs of qualification acquisition.
Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels) (or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU. ***Source: London Economics' analysis***

A2.1.5 Understanding discount rates and net present values

The **costs** of qualification acquisition and the labour market **benefits** associated with higher education qualification attainment occur over a long period of time – starting at students' initial date of enrolment, and lasting **their entire working lives post-graduation**. As a result, to ensure a proper comparison of these costs and benefits, it is necessary for any analysis to **discount** these benefits and costs accruing at different points in time in the future into **net present values**. This ensures that the comparison of costs and benefits is made using a common 'currency'.

The need to discount future cash flows arises from two main considerations (see HM Treasury, 2018), both of which are based on the opportunity cost of these cash flows. The first of these is known as the '**time preference**' of money, and relates to the general observation that individuals place a higher value on a pound received today than a pound received in the future (in other words, placing a greater value on current consumption compared to future consumption). The second consideration is that there is an **opportunity cost** of investing funds in a particular activity, in terms of the income foregone if the money had been put to a different use (e.g. the opportunity cost to a student investing in attaining a higher education qualification might be the interest that *would* have been accrued if that individual had instead placed the cost of purchasing the education in their savings account).

While there is widespread consensus on the need to discount cash flows when conducting a cost-benefit analysis of a particular project or activity, **the level of the appropriate discount rate is subject to debate**.

In the United Kingdom, the standard real discount rate commonly used for government appraisal and evaluation stands at 3.5%. This is the relevant rate used in the current analysis. However, it is also important to note that 3.5% is not the lowest discount rate in use in the United Kingdom. For instance, in relation to the assessment of the proportion of higher education tuition fee and maintenance loans written off (i.e. to understand the long-run economic cost to the UK government associated with the student support offered through loans), a discount rate of **0.7%** is adopted (having recently been adjusted downwards from 2.2%[118]). However, in some other jurisdictions, higher discount rates are used compared to the United Kingdom. For instance, Australian Government Agencies in general use a **7.0%** real discount rate, as recommended by the Office of Best Practice Regulation (2016).

In the following section, we analyse the sensitivity of our estimates of the net graduate premium and net Exchequer benefit associated with The Open University's teaching and learning activities to changes in the assumed discount rate, comparing our central estimates (using a **3.5% real discount rate**) to **alternative estimates assuming a 0% discount rate** (i.e. undiscounted).

Why is the choice of discount rate important?

Fundamentally, **the lower the discount rate, the greater the value of the economic benefits that occur in the future**. As Table 24 illustrates, there are significant differences in the net present values of a (hypothetical) £1,000 cash flow (at different points in time) when calculating using these alternative discount rates, with the discrepancies increasing the further in the future the cash flows occur. For example, compared to an undiscounted £1,000 received in 40 years' time, using a 3.5% discount rate, the same £1,000 is worth **£261** today. Conversely, under a 7% discount rate, £1,000 received in 40 years' time is worth **£71** in today's money terms.

[118] See HM Treasury (2018).

Table 24 Value of £1,000 received at different points in time under alternative discount rates

£1,000 received in…	Net present value, £		
	7.0% discount rate	3.5% discount rate	0% discount rate
…10 years	£544	£734	£1,000
…20 years	£277	£520	£1,000
…30 years	£141	£369	£1,000
…40 years	£71	£261	£1,000
…50 years	£36	£185	£1,000

Note: Where applicable, all calculations apply discounting at the end of each year (i.e. values in the first year have not been discounted).

Source: London Economics' analysis

What is the impact of different discount rates?

Essentially, a higher discount rate places a higher value on those costs that accrue earlier in time, and a lower value on benefits occurring in the distant future. In the case of higher education qualification attainment, this means that (compared to undiscounted cashflows) the use of a 3.5% discount rate *places a higher value* on the costs that occur during study, and *diminishes* the value of the benefits that occur post-graduation.

Table 25 presents the estimates of the net graduate premium and net Exchequer benefit per student associated with higher education qualification attainment at The Open University under two discount rate assumptions – the standard 3.5% real discount rates adopted in the main analysis and a 0% real discount rate (i.e. presenting the net graduate premium and net Exchequer benefit in *undiscounted* terms).

Compared to the 3.5% discount rate, a discount rate of 0% would **essentially double** the estimated net graduate premium achieved by a representative student in the 2018-19 Open University cohort undertaking a part-time **undergraduate first degree** (relative to A-level attainment) - from **£55,000** to **£100,000**. At postgraduate level, the net graduate premium associated with a part-time **taught postgraduate degree** (relative to possession of an undergraduate degree) would increase from **£19,000** to **£33,000**.

The estimated net Exchequer benefits per student would also increase significantly under the 0% discount rate, increasing from **£29,000** to **£64,000** for part-time **undergraduate first degree** students (again relative to A-level attainment). The comparable estimates for students undertaking **taught postgraduate degrees** in the 2018-19 Open University cohort would increase from **£21,000** to **£33,000**.

Table 26 presents the full set of net graduate premiums and net Exchequer benefits achieved by UK-domiciled part-time students in the 2018-19 Open University cohort in undiscounted terms (i.e. based on a 0% real discount rate, separately by domicile, study level, gender and prior attainment).

Table 25 Net graduate premium per UK-domiciled part-time OU student, by study level and gender, all Home Nations (£)

Discount Rate		3.5%	0%	3.5%	0%
Gender and study level	Prior attainment	Net graduate premium		Net Exchequer Benefit	
Men					
Other undergraduate	A-levels	£37,000	£68,000	£26,000	£52,000
First degree	A-levels	£66,000	£121,000	£41,000	£89,000
First degree	GCSEs or below	£109,000	£197,000	£78,000	£152,000
Other postgraduate	First degree	-£3,000	-£3,000	-£1,000	-£1,000
Higher degree (taught)	First degree	£16,000	£27,000	£21,000	£33,000
Higher degree (research)	First degree	£35,000	£61,000	£33,000	£57,000
Women					
Other undergraduate	A-levels	£18,000	£35,000	£7,000	£19,000
First degree	A-levels	£49,000	£87,000	£21,000	£49,000
First degree	GCSEs or below	£66,000	£118,000	£35,000	£73,000
Other postgraduate	First degree	£17,000	£27,000	£16,000	£23,000
Higher degree (taught)	First degree	£22,000	£37,000	£21,000	£33,000
Higher degree (research)	First degree	£28,000	£46,000	£19,000	£33,000
All					
Other undergraduate	A-levels	£25,000	£47,000	£14,000	£31,000
First degree	A-levels	£55,000	£100,000	£29,000	£64,000
First degree	GCSEs or below	£83,000	£148,000	£52,000	£104,000
Other postgraduate	First degree	£9,000	£15,000	£9,000	£14,000
Higher degree (taught)	First degree	£19,000	£33,000	£21,000	£33,000
Higher degree (research)	First degree	£32,000	£53,000	£26,000	£45,000

Note: The averages across OU students domiciled in England, Wales, Scotland and Northern Ireland have been weighted by the underpinning estimated number of completers from each domicile within the 2018-19 cohort of Open University students). Averages across both genders are similarly weighted by the number of student completers in the 2018-19 cohort (by gender).
All values are presented in 2018-19 prices and rounded to the nearest £000. Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU.
Source: London Economics' analysis

Table 26 Undiscounted net graduate premium and net Exchequer benefit per UK-domiciled part-time student at The Open University, by domicile/location of study, study level and gender

Gender and study level	Prior attainment	Net graduate premium					Net Exchequer benefit				
		England	Wales	Scotland	Northern Ireland	All	England	Wales	Scotland	Northern Ireland	All
Men											
Other undergraduate	A-levels	£72,000	£56,000	£60,000	£51,000	**£68,000**	£56,000	£38,000	£47,000	£39,000	**£52,000**
First degree	A-levels	£128,000	£101,000	£92,000	£95,000	**£121,000**	£96,000	£60,000	£67,000	£69,000	**£89,000**
First degree	GCSEs or below	£207,000	£160,000	£153,000	£155,000	**£197,000**	£163,000	£109,000	£118,000	£119,000	**£152,000**
Other postgraduate	First degree	-£3,000	-£4,000	-£4,000	-£4,000	**-£3,000**	-£1,000	-£2,000	-£3,000	-£3,000	**-£1,000**
Higher degree (taught)	First degree	£29,000	£23,000	£22,000	£27,000	**£27,000**	£35,000	£24,000	£26,000	£24,000	**£33,000**
Higher degree (research)	First degree	£61,000				**£61,000**	£57,000				**£57,000**
Women											
Other undergraduate	A-levels	£36,000	£32,000	£33,000	£29,000	**£35,000**	£20,000	£14,000	£20,000	£17,000	**£19,000**
First degree	A-levels	£90,000	£80,000	£68,000	£77,000	**£87,000**	£51,000	£37,000	£41,000	£49,000	**£49,000**
First degree	GCSEs or below	£122,000	£106,000	£95,000	£105,000	**£118,000**	£76,000	£55,000	£62,000	£68,000	**£73,000**
Other postgraduate	First degree	£27,000	£20,000	£27,000	£27,000	**£27,000**	£24,000	£18,000	£23,000	£23,000	**£23,000**
Higher degree (taught)	First degree	£38,000	£31,000	£33,000	£39,000	**£37,000**	£34,000	£28,000	£28,000	£33,000	**£33,000**
Higher degree (research)	First degree	£46,000				**£46,000**	£33,000				**£33,000**
All											
Other undergraduate	A-levels	£49,000	£41,000	£43,000	£38,000	**£47,000**	£33,000	£23,000	£30,000	£26,000	**£31,000**
First degree	A-levels	£104,000	£88,000	£78,000	£84,000	**£100,000**	£67,000	£45,000	£51,000	£57,000	**£64,000**
First degree	GCSEs or below	£155,000	£127,000	£117,000	£128,000	**£148,000**	£110,000	£76,000	£83,000	£91,000	**£104,000**
Other postgraduate	First degree	£15,000	£12,000	£15,000	£12,000	**£15,000**	£14,000	£11,000	£13,000	£11,000	**£14,000**
Higher degree (taught)	First degree	£34,000	£28,000	£28,000	£34,000	**£33,000**	£34,000	£27,000	£27,000	£29,000	**£33,000**
Higher degree (research)	First degree	£53,000				**£53,000**	£45,000				**£45,000**

Note: The averages across OU students domiciled in England, Wales, Scotland and Northern Ireland have been weighted by the underpinning estimated number of completers from each domicile within the 2018-19 cohort of Open University students). Averages across both genders are similarly weighted by the number of student completers in the 2018-19 cohort (by gender).
All values are presented in 2018-19 prices and rounded to the nearest £000. Gaps may arise where there are no students in the 2018-19 Open University cohort expected to complete the given qualification (of the given characteristics). Prior attainment of 'A-levels' refers to any qualification at RQF Level 3 (e.g. including GCE A-levels or equivalent in Scotland). Prior attainment of 'GCSEs or below' refers to any qualification at Level 2 or below, including individuals with no formal qualification prior to studying at the OU.
Source: London Economics' analysis

A2.2 Impact on educational exports

Table 27 Tuition fee income per international student in the 2018-19 OU cohort (present value over total study duration), by qualification level, domicile and mode of study

Level and mode of study	Domicile	
	EU	Non-EU
Full-time students		
Other undergraduate	-	-
First degree	-	-
Other postgraduate	-	-
Higher degree (taught)	-	-
Higher degree (research)	£26,300	£19,000
Part-time students		
Other undergraduate	£5,800	£5,300
First degree	£15,600	£14,300
Other postgraduate	£4,400	£3,200
Higher degree (taught)	£8,300	£6,000
Higher degree (research)	£11,800	£8,500

Note: Gaps may arise where there are no students in the 2018-19 The Open University international offshore cohort expected to complete the given qualification (of the given characteristics). All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £100.
Source: London Economics' analysis

Table 28 Non-tuition fee income per international student in the 2018-19 OU cohort (present value over total study duration), by qualification level, domicile and mode of study

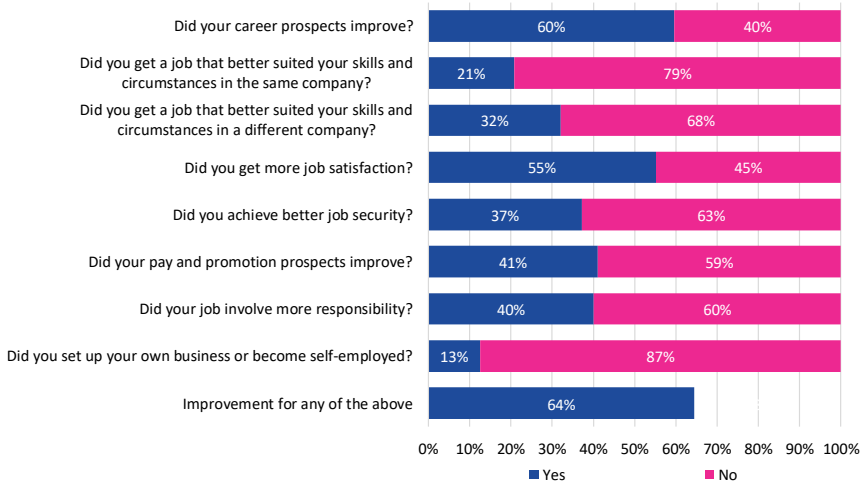
Level and mode of study	Domicile	
	EU	Non-EU
Full-time students		
Other undergraduate	-	-
First degree	-	-
Other postgraduate	-	-
Higher degree (taught)	-	-
Higher degree (research)	£1,000	£1,200
Part-time students		
Other undergraduate	£1,000	£1,200
First degree	£1,000	£1,200
Other postgraduate	£1,000	£1,200
Higher degree (taught)	£1,000	£1,200
Higher degree (research)	£1,000	£1,200

Note: Gaps may arise where there are no students in the 2018-19 The Open University international offshore cohort expected to complete the given qualification (of the given characteristics). All estimates are presented in 2018-19 prices, discounted to reflect net present values, and rounded to the nearest £100.
Source: London Economics' analysis

A2.3 The University's social impacts – supplementary results

The following figures provide a breakdown of the core OU alumni survey results, separately across alumni who completed standalone modules vs. full qualifications at The Open University.

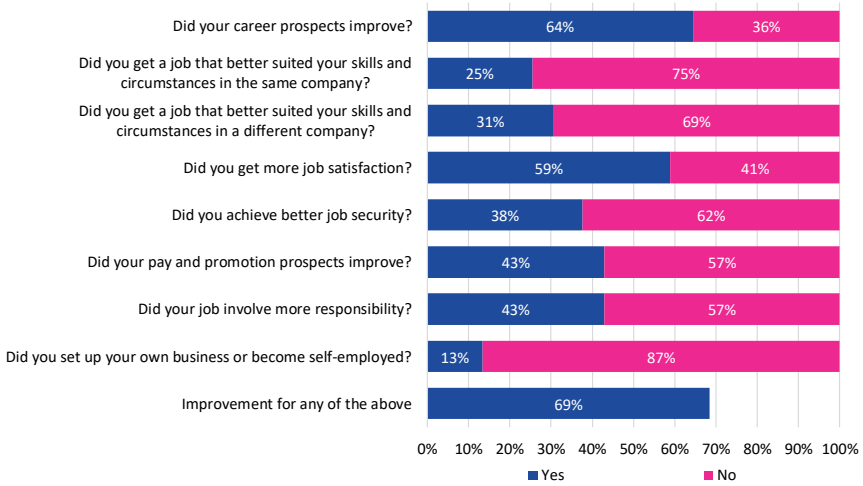
Figure 32 'Have any of the following things happened since completing your studies at The Open University?' – Alumni who completed modules



Note: Based on 428 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University. Between 62 and 101 respondents selected 'Don't know / Not applicable' for any given option and were not included in the analysis.

Source: London Economics' analysis of Open University alumni survey data

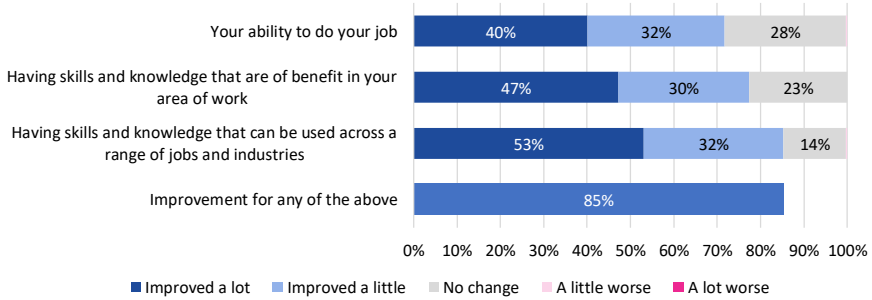
Figure 33 'Have any of the following things happened since completing your studies at The Open University?' – Alumni who completed qualifications



Note: Based on 254 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University. Between 30 and 46 respondents selected 'Don't know / Not applicable' for any given option and were not included in the analysis.

Source: London Economics' analysis of Open University alumni survey data

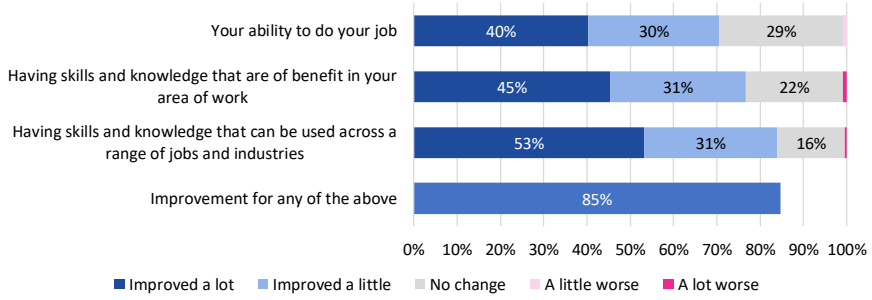
Figure 34 'Following completion of your studies at The Open University, what impact did this have on your job-related set of skills?' – Alumni who completed modules



Note: Based on 421 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University *and* were currently employed, unemployed or economically inactive (excluding 7 respondents who indicated a current employment status of 'other'). Between 33 and 47 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

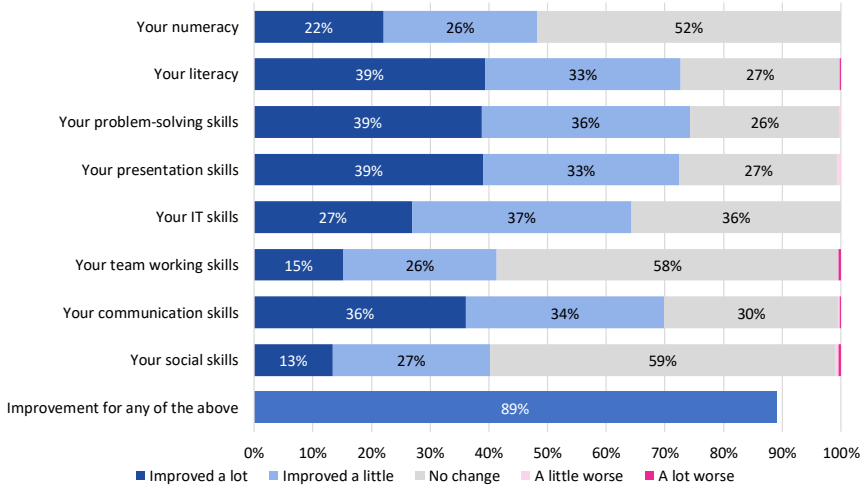
Figure 35 'Following completion of your studies at The Open University, what impact did this have on your job-related set of skills?' – Alumni who completed qualifications



Note: Based on 248 respondents who indicated that they had been employed or self-employed at some point since the completion of their studies at The Open University *and* were currently employed, unemployed or economically inactive (excluding 6 respondents who indicated a current employment status of 'other'). Between 17 and 21 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

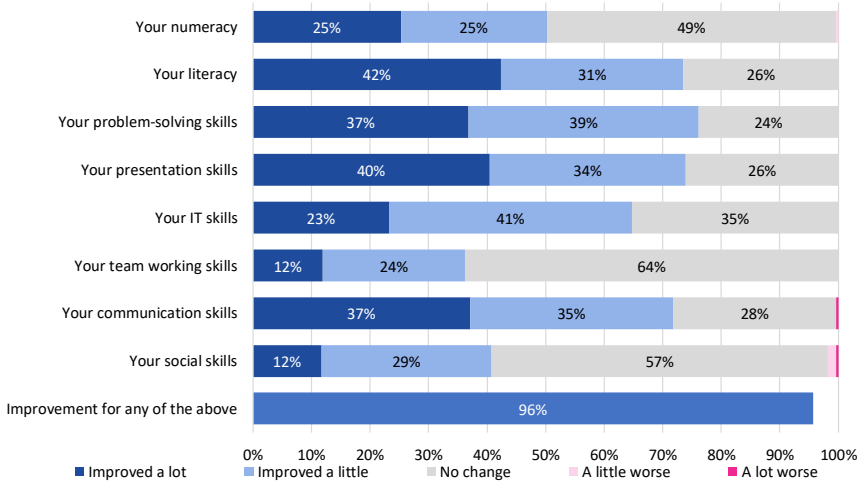
Figure 36 'Following completion of your studies at The Open University, what impact did this have on your general set of skills?' – Alumni who completed modules



Note: Based on 581 respondents. Between 23 and 69 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

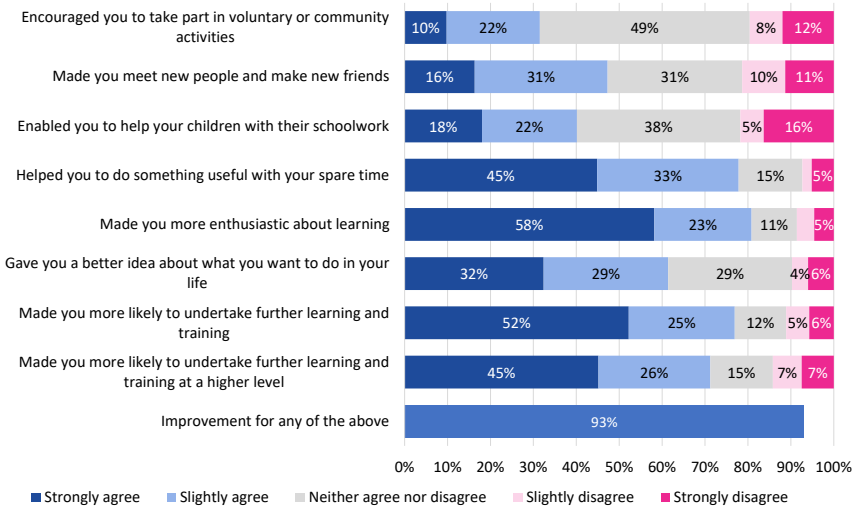
Figure 37 'Following completion of your studies at The Open University, what impact did this have on your general set of skills?' – Alumni who completed qualifications



Note: Based on 303 respondents. Between 8 and 30 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

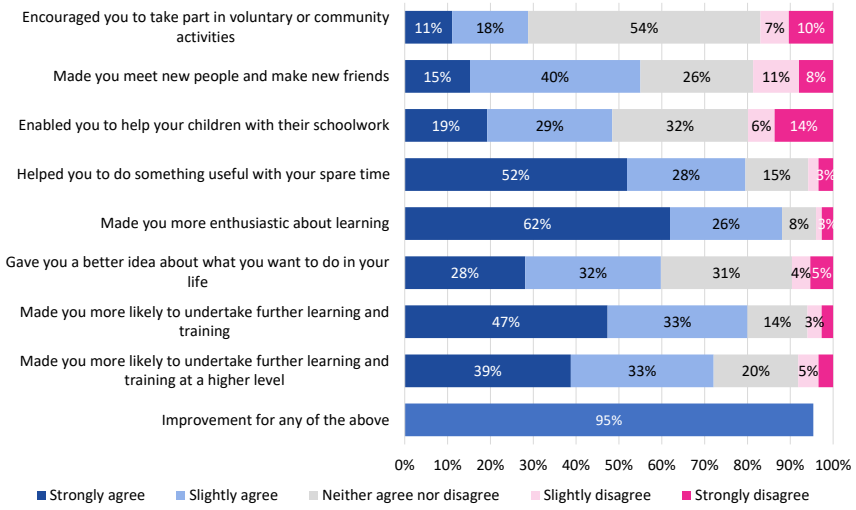
Figure 38 'In terms of your personal development, to what extent do you agree or disagree that the qualification/module which you completed at The Open University…?' – Alumni who completed modules



Note: Based on 581 respondents. Between 12 and 287 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

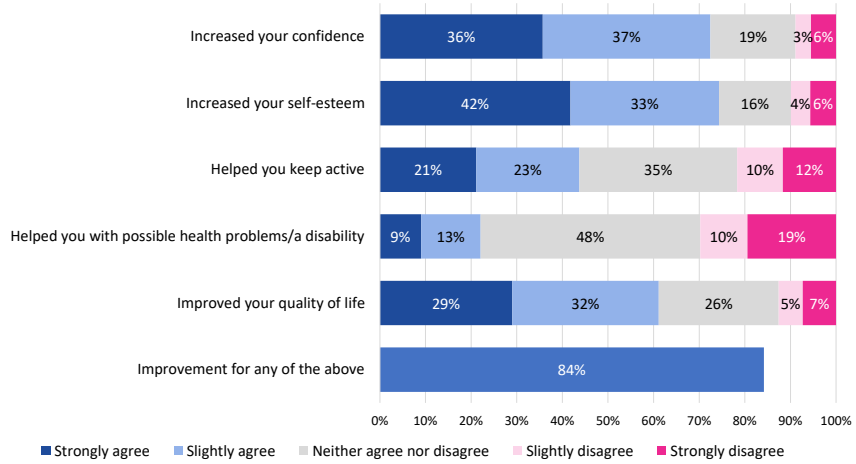
Figure 39 'In terms of your personal development, to what extent do you agree or disagree that the qualification/module which you completed at The Open University…?' – Alumni who completed qualifications



Note: Based on 303 respondents. Between 1 and 142 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

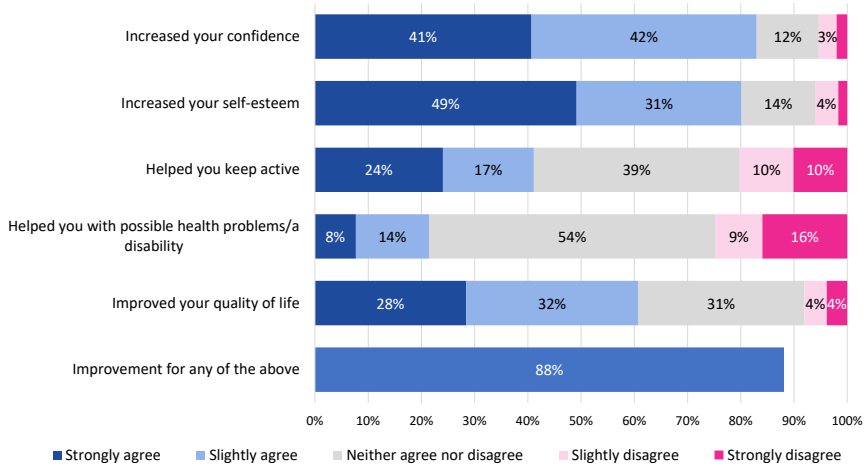
Figure 40 'In terms of your well-being, to what extent do you agree or disagree that the degree which you completed at The Open University…?' – Alumni who completed modules



Note: Based on 581 respondents. Between 16 and 205 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

Figure 41 'In terms of your well-being, to what extent do you agree or disagree that the degree which you completed at The Open University…?' – Alumni who completed qualifications



Note: Based on 303 respondents. Between 3 and 121 respondents selected 'Don't know / Not applicable' for any given option and were excluded from the analysis.

Source: London Economics' analysis of Open University alumni survey data

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