



# The economic impact of the University of West London





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# Executive Summary

## *The University of West London creates economic activity through three channels...*

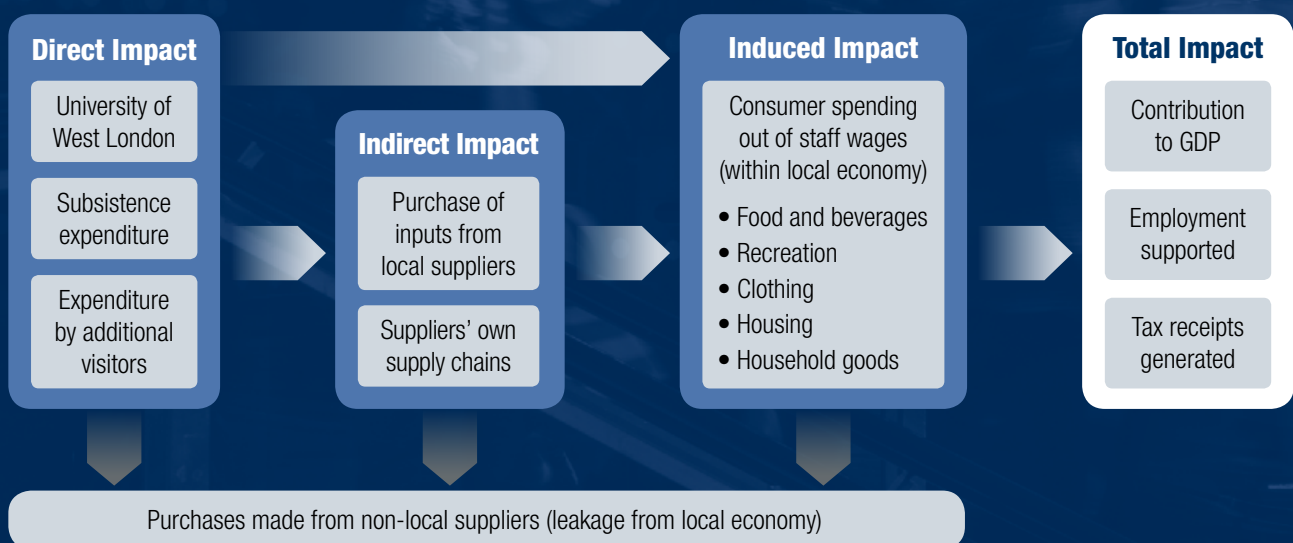
The University of West London creates economic impacts in its home Borough of Ealing, in the wider London economy and through the UK as a whole. The University supports economic activity through:

- Its own direct activities and employment; the purchases it makes and the supply chain this supports, known as the indirect impact; and the spending of wages by employees whose jobs depend on the University, the so-called induced impact;
- The subsistence spending by 'additional' students – those students who would not be in Ealing, London or the UK if the University did not exist – and the supply chain this supports; and,
- The spending by friends and relations visiting 'additional' students.

## *The University's own activities supported a value-added contribution of almost £56 million to Ealing's economy...*

- The University of West London's own operation, in terms of the £37 million it spends on employing 995 staff and the £25 million of outside purchases it makes, accounts for the majority of its total impact.
- The procurement from its immediate supply chain percolates throughout the UK economy as these suppliers make additional purchases from their own suppliers to meet the demand created by the University. At the same time the spending of wages earned by University staff and by employees in the supply chain whose jobs depend on University expenditure adds another channel of impact.
- In total the University's operations in 2011/12 added £55.8 million of gross value added (GVA) to the Ealing economy and £73.5 million to the London economy in 2011/12, supporting 1,120 and 1,500 jobs in the respective economies.
- Taking into account all the University's supply relationships across the UK expands the overall GVA impact of its operations in the UK to £107.8 million, support for almost 2,400 jobs and tax revenues of over £39 million.

## The channels of economic impact



*...the University attracted almost 1,000 students to Ealing, over 2,100 to London and 1,500 to the UK...*

- Creating estimates for the contribution of student spending and visits by friends and relations to students across the three geographies covered – Ealing, London and the UK – rests on identifying the number of ‘additional’ students living in these respective areas who would not be there but for the draw of the University.
- This is done by comparing data on term-time residence and pre-study domicile. For example, the subsistence spending of a student at the University who lived in Ealing prior to studying is not included in the estimates of economic impact on the Borough, while that of a student moving from elsewhere in the UK to live in another London Borough contributes to the economic impact on London. Similarly, an overseas student is counted as making a University-related contribution to the UK economy, whereas a UK student is not.
- The analysis shows that out of the 12,148 registered students, the University attracted 946 ‘additional’ students to Ealing, 2,132 to London and 1,510 to the UK.

*...whose subsistence spending generated a further £4.5 million in value-added and supported 120 jobs in Ealing...*

- On the basis of average spending in 2011/12 of £11,400 per full-time student and of £18,130 per part-time student, the total contribution of ‘additional’ student subsistence spending to the GVA of the Ealing economy amounted to £4.5 million, supporting over 120 jobs locally.
- The GVA impact in London was £13.8 million and £19.3 million for the UK as a whole, with support for 330 and 570 jobs respectively.

*...and whose visitors support further economic activity*

- Visits by international tourists in 2011/12 to see ‘additional’ overseas students is estimated to have generated spending with local firms of £150,000 in Ealing, over £430,000 in London and almost £540,000 in the UK. Domestic visitors to the University’s students who normally reside outside of Ealing and London are estimated to spend £50,000 and £99,000 in the two economies, respectively.
- Family and friends visits to the University’s students are estimated to have supported a £83,000 gross value added contribution to GDP in Ealing and 3 people in employment for a year in the Borough.
- Visitors to the University’s students are estimated to have supported a £298,000 gross value added contribution and 9 people in employment for a year in the whole of London, and a £540,000 value-added contribution to the UK economy, supporting 19 jobs.

*In total, the University of West London contributed £60 million in value added to the Ealing economy, and supported 1,250 local jobs in 2011/12*

- The University made a value-added contribution to the **Ealing** economy of **£60 million**, supporting 1,250 jobs in the Borough, resulting in tax payments of £24 million to the Exchequer in 2011/12.
- At the same time the University contributed **£88 million** in value-added to **London’s economy**, supporting 1,850 jobs in the city, resulting in tax payments of £37 million to the Exchequer.
- Overall, the University supported a value-added contribution to the **UK** economy of **£128 million**, supporting 2,975 jobs, resulting in tax payments of £47 million to the Exchequer.



# 1

## Introduction

Universities generate substantial economic benefits for their local area, region and for the nation as a whole. Based in the Borough of Ealing, the University of West London attracts students from across London to the Borough, from the rest of the UK to London, and from the rest of the world to the UK. Providing an education for these students requires significant day-to-day spending, stimulating economic activity in supply chains, and a large number of staff. The presence of students in the Borough, London and the UK – who would not be there if the University did not exist – also injects important additional spending into the local, regional and national economies through their everyday subsistence spending and the spending of their visitors. Each of these aspects combines to determine the total economic contribution of the University of West London.



## 1.1 Purpose of report

This report presents an assessment of the scope and scale of the University's impact on the local, regional and national economies. It quantifies for 2011/12<sup>1</sup> the economic contribution of the University's own activities and its supply chain, the impact of subsistence spending by the University's students, and the share of tourism spending in the UK that can be attributed to the University.

The remainder of the report is structured as follows:

- **Chapter 2** details the methodology of a standard economic impact assessment and how this has been employed by this study to quantify the impact of the University over the three geographical areas.
- **Chapter 3** quantifies the size of the contribution to the economies of Ealing, London and the UK supported by the University's own activities.
- **Chapter 4** determines the number of 'additional' students that the University brings to its local area, to London and to the UK as a whole.
- **Chapter 5** calculates the spending injected into each geographical area due to the subsistence expenditure of additional students, and the wider flow of economic activity that this generates.
- **Chapter 6** explores the share of tourism spending that can be attributed to the 'additional' students present in each area and the economic activity that this supports.
- **Chapter 7** concludes by presenting the total economic impact of the University on Ealing, London and the UK, and compares the scale of multipliers against those produced in studies for other higher education institutions.

## 1.2 Acknowledgements

To complete this project, the study team relied on the delivery of a substantial amount of data from the University. The team are grateful for the assistance they received from the individuals who participated in the collection process. Particular thanks are given to Maureen Skinner, University Secretary and Clerk to the Board of Governors, who coordinated the data collection process, and Ben Makepeace, Finance Administrator, for his efforts in collating procurement data.



<sup>1</sup> The University of West London's financial year operates from 1<sup>st</sup> August to 31<sup>st</sup> July. The period considered in the study is, therefore, August 2011 to July 2012.



# 2

## Measuring the economic impact of the University

This chapter outlines how the University of West London impacts on the economies of Ealing, London and the UK. It sets out the methodology of a standard impact assessment and how this is applied at a local and regional level. Finally, the chapter introduces the metrics of impact assessments.

### Key points

- The University contributes to the economies of Ealing, London and the UK through its own activities, the subsistence spending of those students that are 'additional' to these areas and the spending of people visiting these 'additional' students.
- Each of these contributions impacts the economy through three channels: the direct, indirect and induced effects.
- The contribution the University makes to its local, regional and national economy is measured in terms of gross value added, employment and tax receipts.





## 2.1 How the University impacts on the economy

A university requires substantial inputs of goods and services, and a considerable workforce to deliver education and research. The scale of each of these aspects impacts on the size of a university's contribution to an economy.

In turn, a university brings people – students, staff and visitors – to a locality. Many of these people would not have lived in or visited the area if the university did not exist. These 'additional' people create economic impacts that spread through the economy.

Quantifying the total impact of the University of West London, therefore, requires determining the economic impact of three channels through which the University contributes to the economies of Ealing, London and the UK:

- The activities of the University itself;
- The subsistence spending of the 'additional' students who would not be in the geographical areas considered – Ealing, London and the UK – if the University did not exist; and,
- The spending of visitors who come to Ealing, London and the UK to visit these 'additional' students.

## 2.2 The channels of economic impact

A standard economic impact assessment identifies three categories of impact that stem from an activity:

- The first channel of impact is the *direct effect*. This encompasses the activity generated by the University itself, and in the businesses supplying goods and services where 'additional' students and their visitors spend their money.
- The second channel of impact – *indirect effect* – encapsulates the activity supported in the University's supply chain and the supply chains of the businesses providing goods and services to 'additional' students and their visitors in the economy.
- The final channel captures the impact of the everyday spending of those people employed as a part of the direct and indirect effects. These people will spend their incomes on normal household and personal items, supporting activity in retail outlets, consumer goods companies and a range of service industries. This final channel of impact is known as the *induced effect*.



The total impact of the University of West London is the sum of the direct, indirect and induced effects for the University's own activities, the subsistence spending of its 'additional' students, and the spending of visitors to these 'additional' students.

For each aspect of the University's impact the direct effect is calculated using official University data or national statistics produced by the Office for National Statistics (ONS).<sup>2</sup> At the UK level the indirect and induced impacts are calculated using the input-output model<sup>3</sup> produced for the UK by the ONS.<sup>4</sup> Input-output tables detail the linkages that exist between all industries in the economy, enabling supply chains to be mapped at a UK level and derive economic multipliers.

While an input-output model for the UK is published by the ONS, no such models exist for Ealing or London. However, techniques developed by Flegg, et al. (1995) using regional employment data published by the ONS, can be used to derive input-output models for local and regional economies.<sup>5</sup> With this approach a thorough assessment of the University's impact in Ealing and London becomes possible.

- 2 Detail of these calculations is presented in the relevant chapter for each aspect of the impact.
- 3 An overview of input-output tables is presented in the Appendix.
- 4 Office for National Statistics (2011).
- 5 Further detail on the construction of the Ealing and London input-output models is presented in the Appendix.

## 2.3 The metrics of economic impact

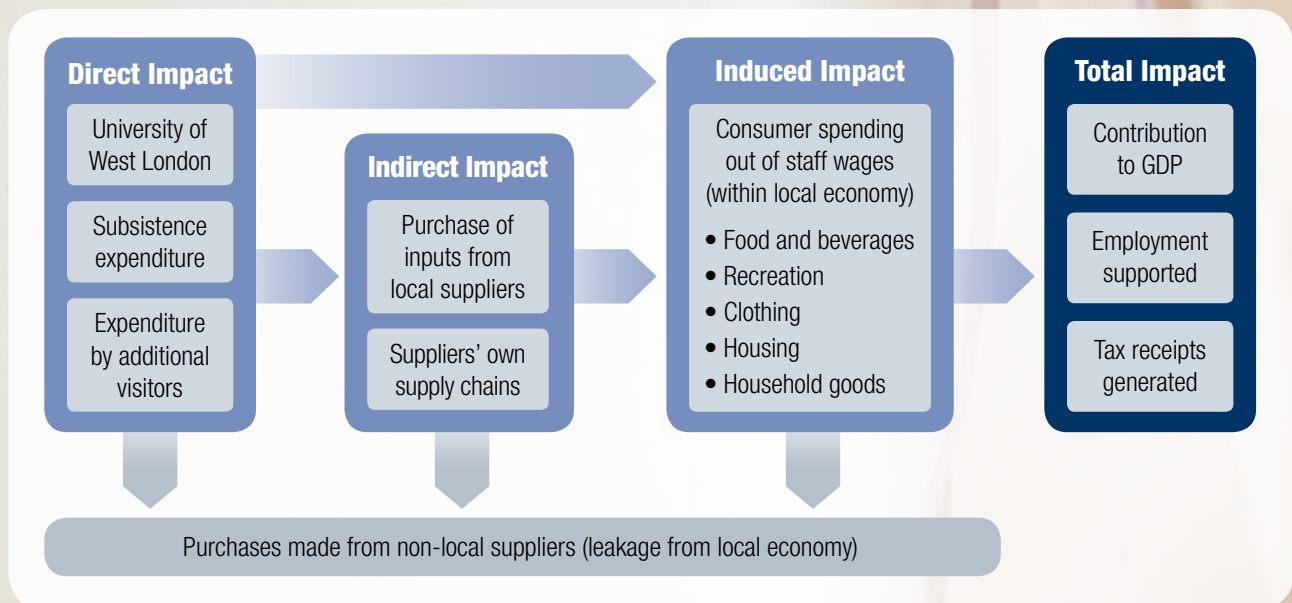
In accordance with standard economic impact assessments, the scale of the impact of the University is measured using three metrics:

■ **Gross value added** – Gross value added (GVA) is the contribution an institution or company makes to Gross Domestic Product (GDP).<sup>6</sup> The sum of the gross value added of all UK organisations is – with minor adjustments for taxes and subsidies – equal to UK GDP. Similarly the sum of GVA for all organisations in a geographical region is equivalent to that area's GDP. GVA is most simply understood as turnover (i.e. value of sales) minus the cost of bought in goods and services; this is equivalent to the sum of employee costs and profits (defined as earnings before interest, taxation, depreciation and amortization (EBITDA)).

■ **Employment** – The employment supported by an activity is measured in terms of headcount rather than full-time equivalence. This enables comparisons to be made with the official statistics for the UK produced by the ONS, which are recorded as headcounts. Employment is also reported by workplace rather than residence – in other words a job held by a person employed in Ealing but living in Brent is recorded as one person employed in Ealing.

■ **Tax receipts** – Increases in profits and employment translate into additional tax revenues for the Exchequer. This study considers the receipts generated from Income and Corporation taxes, employee and employer National Insurance contributions, and other indirect taxes paid by employees (including Council Tax and VAT).

**Figure 2.1: The channels of economic impact**



<sup>6</sup> GDP is the main 'summary indicator' of economic activity in the UK economy. References to the rate at which the UK economy is growing (or when it enters recession) are made using GDP.





# 3

## The impact of the University's own activities

This chapter highlights the scale of the University of West London's activities, the income it generates and the employment it supports. Supply chain information is then used to calculate the economic footprint of the University on the Ealing, London and UK economies in 2011/12.

### Key points

- The 12,148 students registered at the University of West London paid £43 million in tuition fees. Tuition fees accounted for 56% of the University's £76.4 million income in 2011/12.
- The University employed 995 people to provide its services to these students in 2011/12. Spread across academic, administrative, maintenance and management roles, the University paid £37.1 million in employee costs in 2011/12. This equated to 54% of total operating expenditures of £69.3 million.
- The University adds value to the economies of Ealing, London and the UK through the profit it makes (measured before interest, taxation, depreciation and amortization) and the payments it makes to its employees. In 2011/12 therefore, the University made a value-added contribution of £49.6 million to the economies of Ealing, London and the UK.
- For its day-to-day operations the University purchased inputs of goods and services worth £24.6 million in 2011/12. Of this total, the University procured £2.9 million of inputs from businesses in Ealing, £11.4 million from businesses based in the rest of London, and £9.8 million from businesses based in the rest of the UK.
- These purchases support economic activity in supply chains in each area. This indirect effect amounted to a value-added contribution of £1.4 million to the Ealing economy, £8.3 million to the London economy and £20.8 million to the UK as a whole.
- The people employed directly and indirectly by the University spend their incomes on everyday purchases, generating further activity in each economy. This study calculates that this spending supported a further value-added contribution of £4.8 million to the Ealing economy, £15.6 million to the London economy and £37.4 million to the UK economy in 2011/12.
- In total, the University's activities supported a value-added contribution of £55.8 million to the Ealing economy in 2011/12, supporting 1,120 jobs locally. When the geography is broadened to the whole of London, this contribution increased to £73.5 million and 1,500 jobs. At the UK level, the University's activities contributed £107.8 million to GDP, supporting 2,370 jobs and generated tax revenues of £39.2 million in 2011/12.



## 3.1 University activity

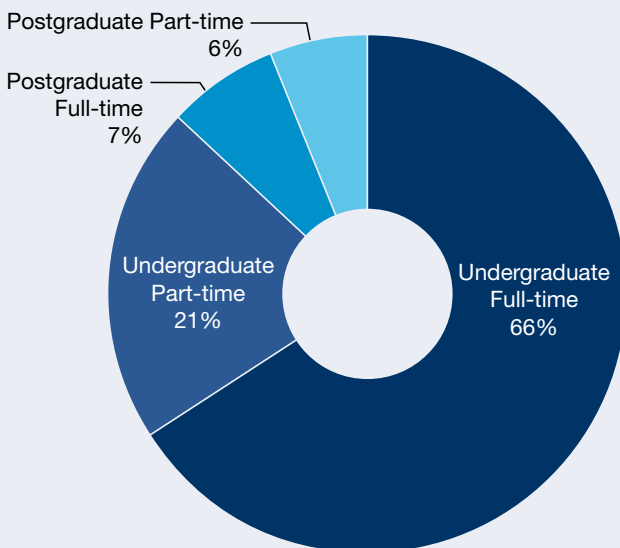
University records indicate that there were 12,148 students registered at the University in 2011/12. The majority of these students (87%) were undertaking undergraduate courses, with 8,020 of these students doing so on a full-time basis. The remaining 13% of students were engaged in postgraduate study, 681 of whom study on a part-time basis.

In total, the University received almost £43 million from the fees paid by its students in 2011/12. These fees accounted for over 56% of the £76.4 million income the University collected in 2011/12. In addition to student fees, grants from funding councils were a major source of the University's income, with £27.5 million received in 2011/12 – £24.4 million of which came from the Higher Education Funding Council

for England (HEFCE) – representing 36% of total income. Of the remaining income, funding for research accounted for £456,000 (University of West London, 2012).

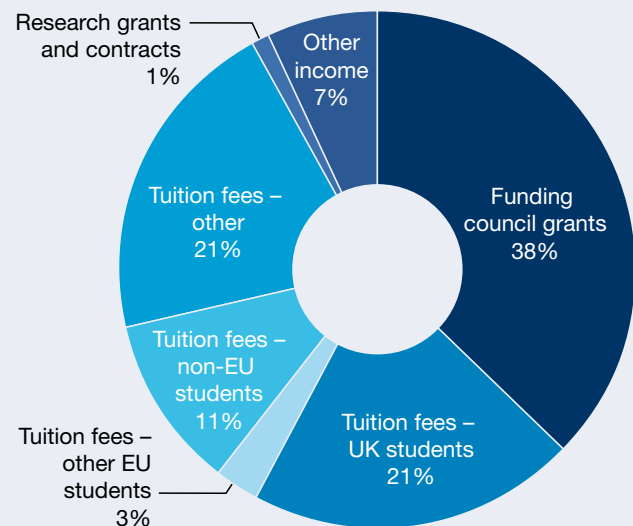
To deliver education services to its students the University employed 995 people in 2011/12 across a range of activities. Academic teaching and research accounted for the largest number of employees (470), with over 55% of these employees part-time. Almost 360 people were employed in the University's administrative departments, with just less than 200 employed full-time. The technical, estates, maintenance and other professional activities conducted in the University employed a further 100 people, and the University's executive and management team numbered almost 50.

**Chart 3.1: University of West London students by study mode, 2011/12**



Source: University of West London

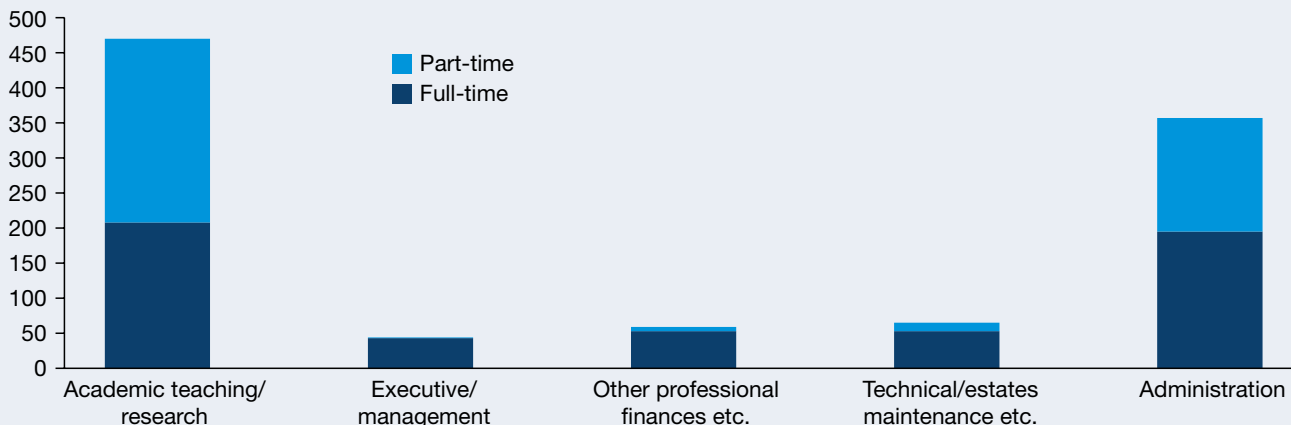
**Chart 3.2: University of West London income by source, 2011/12**



Source: University of West London

**Chart 3.3: University of West London staff by activity, 2011/12**

### Employees

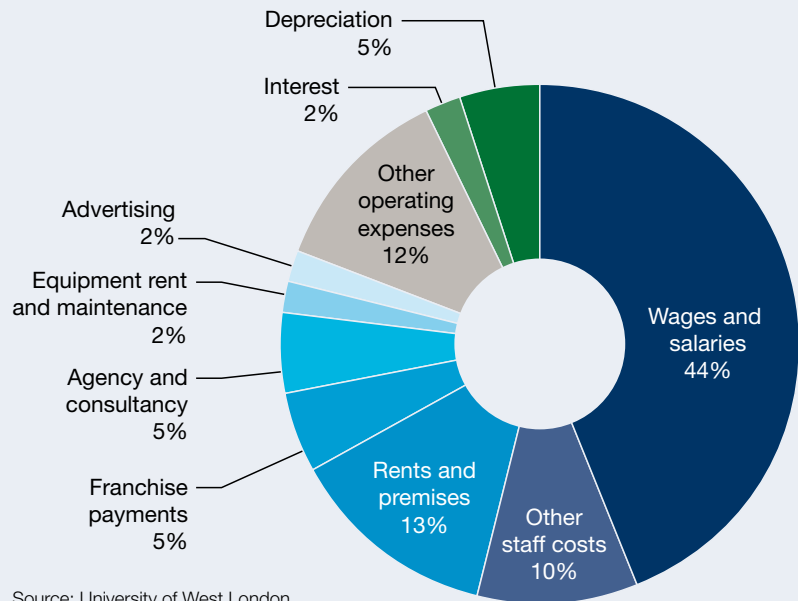


Source: University of West London

## The economic impact of the University of West London

The University paid its staff a total of £30.2 million in wages and salaries in 2011/12, with a further £7 million spent on National Insurance and pension contributions, and other employment costs. In total the University's expenditure reached £69.3 million in 2011/12. Operating expenses (excluding staff costs) accounted for 39% of expenditure, with spending on rents and premises the largest single spend item (£9.3 million). Significant payments were also made by the University for the operation of franchises (£3.6 million) and in agency and consultancy fees (£3.1 million).

**Chart 3.4: University of West London expenditure by activity, 2011/12**

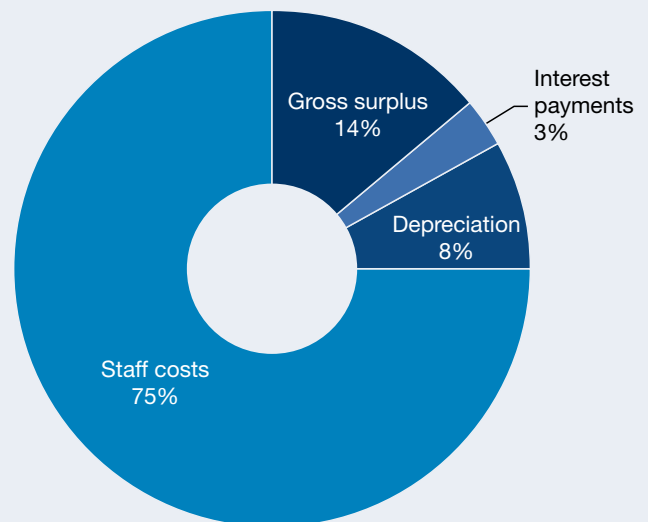


### 3.2 The direct effect of the University on the economy

With income exceeding expenditure, the University recorded a surplus of £7.1 million in 2011/12. This surplus does not equate to the University's contribution to the economies of Ealing, London and the UK. As discussed in Chapter 2, the University's direct impact on these economies is equal to the gross value added it creates, which itself is the sum of the University's earnings before taxation, interest, depreciation and amortisation (EBITDA), and the University's employee costs.

The surplus reported in the University's Financial Statements<sup>7</sup> represents the University's earnings before taxation, but after interest, depreciation and amortisation payments. Using the University's Financial Statements to adjust the reported earnings figure leaves the University's EBITDA at £12.5 million. Combining this figure with the £37.1 million the University spent on employee costs results in the University's value-added contribution to GDP being £49.6 million in 2011/12. As the vast majority of the University's activities take place in Ealing, the direct contribution of the University to the economies of Ealing, London and the UK are the same. The University's direct contribution generated £1 in every £126 of GDP created in the borough of Ealing.

**Chart 3.5: University of West London gross value added by source, 2011/12**

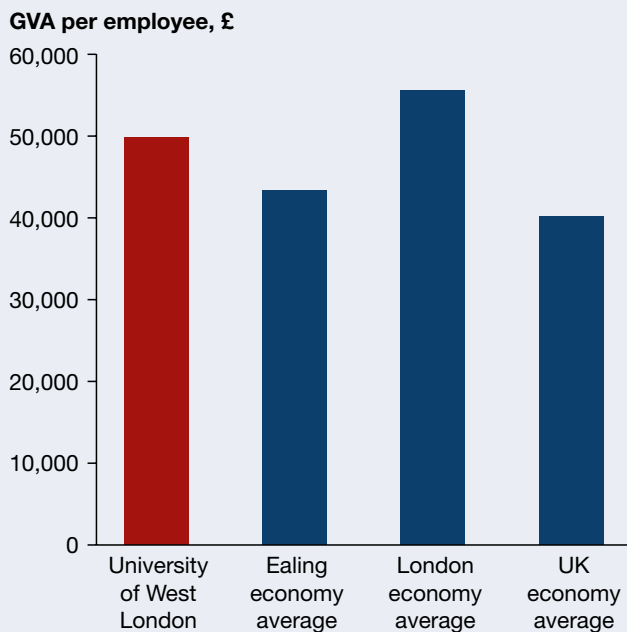


<sup>7</sup> University of West London (2012)



As previously noted, the University employed 995 people in 2011/12 – this is the University's direct employment contribution to the economies of Ealing, London and the UK. Thus, direct GVA per head of the University of West London in 2011/12 was £49,900. To place this into context, University employees were 15% and 25% more productive than the average Ealing and UK employee respectively.

**Chart 3.6: University of West London productivity in context, 2011/12**

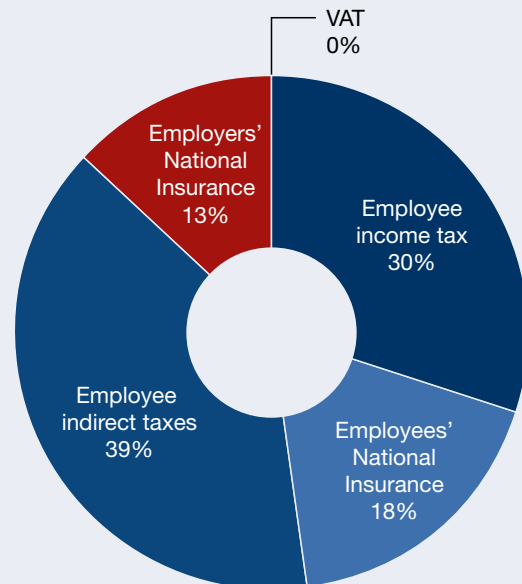


Source: Oxford Economics; ONS

In 2011/12 the University paid almost £2.6 million in taxes to the Exchequer. These comprised of employer's National Insurance contributions (£2.5 million) and irrecoverable VAT (£25,000). The University's direct tax impact also includes the taxes paid by its staff. Although exact payments of direct taxes by University employees are not presented in the Financial Statements, based on average staff salaries the total direct tax receipts from University staff are estimated at £9.2 million in 2011/12, consisting of Income Tax payments of £5.7 million and employee National Insurance contributions of £3.5 million. University employees will also pay indirect taxes such as Council Tax and VAT. These sources are likely to have generated a further £7.3 million for the Exchequer from University employees.

Summing across these different sources of tax revenue shows that the University's direct tax contribution to the Exchequer in 2011/12 was £19 million.

**Chart 3.7: University of West London's direct tax contribution by source, 2011/12**



Source: University of West London; Oxford Economics

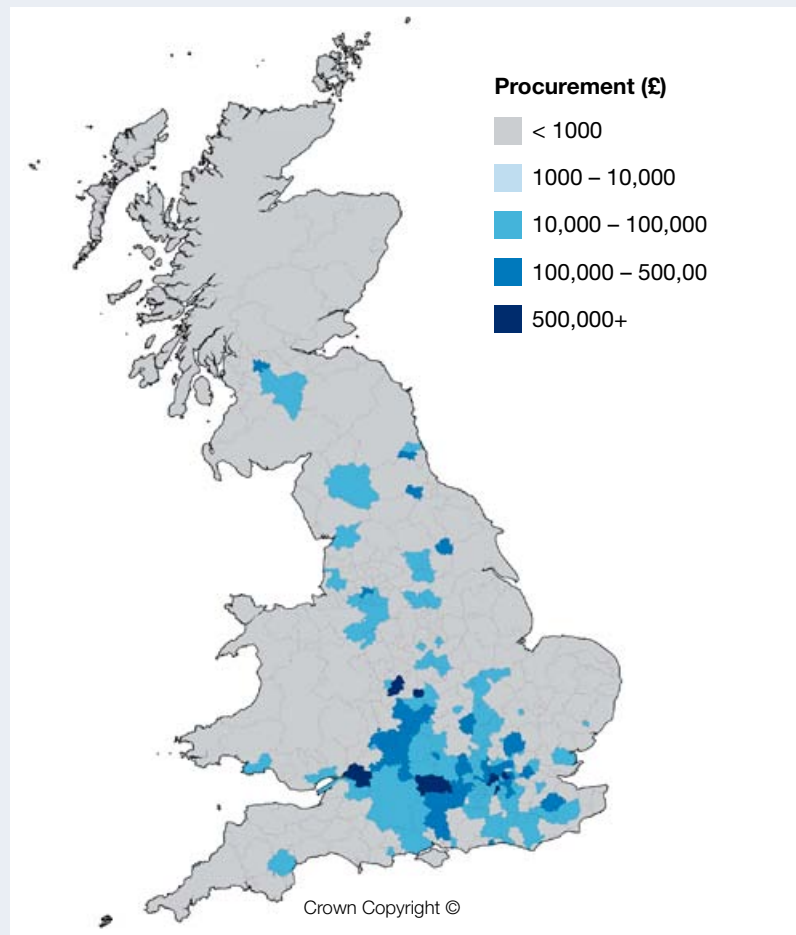


### 3.3 The University's supply chain

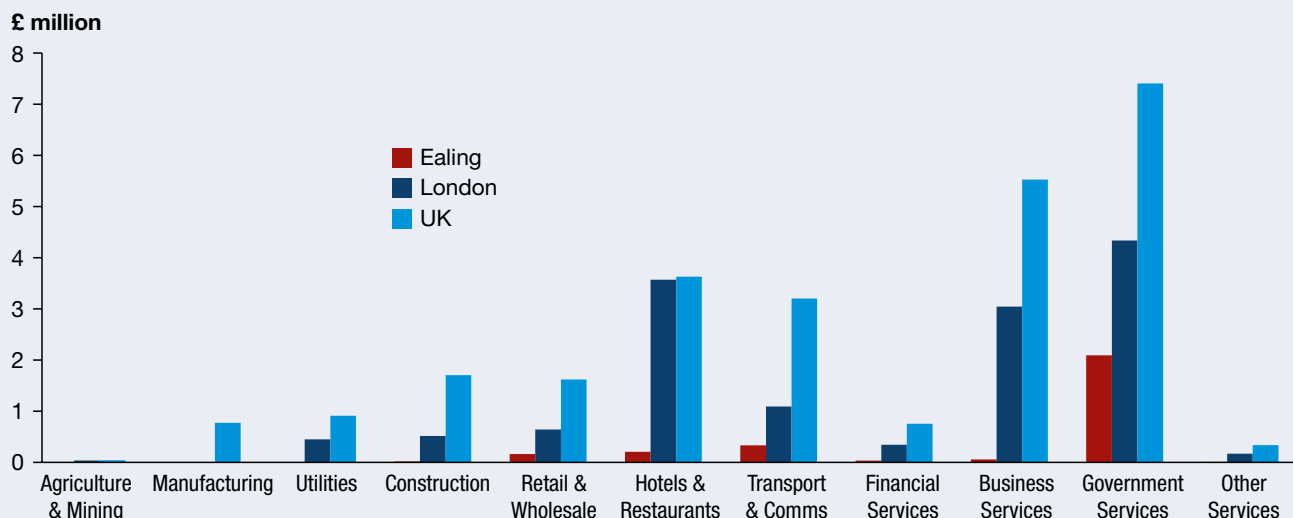
Detailed procurement data obtained from the University indicate that purchases worth £24.6 million were made from businesses supplying goods and services. The data indicate that businesses within Ealing supplied the University with inputs of goods and services worth £2.9 million in 2011/12 (12% of the total). Suppliers based in the rest of London accounted for over 45% of total procurement (worth £11.4 million), and suppliers in the rest of the UK accounted for a further 40% (£9.8 million); £540,000 (2% of total) of University procurement was sourced directly from overseas suppliers.

Analysis of the businesses supplying the University's inputs of goods and services highlights the differences in the inputs sourced from each of the geographies considered. The data indicate that government services (including education) accounted for almost one-third of all procurement in the UK, rising to over 70% of all procurement in Ealing. Procurement from suppliers of business services accounted for over 20% of all purchases within London and the UK, however it only represented 2% of purchases from Ealing-based organisations. Similarly, procurement of inputs from hotels and restaurants accounted for only 7% of purchases within Ealing, but rises to equate to 25% of those in London.

**Figure 3.1: Spatial distribution of the University of West London's UK procurement, 2011/12**



**Chart 3.8: University of West London procurement by sector and geography, 2011/12**



Source: Oxford Economics; University of West London

### 3.4 The wider impact of the University on Ealing

The University's spending on inputs of goods and services supports further activity in the economies of Ealing, London and the UK, with the scale of the activity supported dependent on the level and type of spending.

The £2.9 million procurement of goods and services the University sourced from suppliers based in Ealing in 2011/12 supported further activity in the Borough's economy as these suppliers made purchases from their own Ealing-based supply chains. These relationships are captured by the input-output model developed for Ealing. On this basis spending by the University in Ealing supported a further value-added

contribution of £1.4 million to the local economy in 2011/12, supporting nearly 50 non-University jobs in the local economy.

Data provided by the University indicate that approximately one-quarter of the University's employees live in Ealing. These employees and the people employed in the University's local supply chain will spend their incomes on everyday purchases within the Borough. The results of the input-output modelling indicate that this spending generated a further £4.8 million in value-added for the Ealing economy in 2011/12, supporting just under 80 jobs locally.

### 3.5 The wider impact of the University on London

Reflecting the relative size of the two economies, the University's London-based supply chain was significantly larger than that located in Ealing. The input-output model developed for London indicates that the £14.3 million of purchases made from the University's London supply chain supported an indirect value-added contribution to the London economy of £8.3 million and over 250 jobs in 2011/12.

Also as University data indicate that over two-thirds of the University's employees live within London the scale of the induced impact of the University is substantially larger than that witnessed in Ealing. Consequently, the spending of the University's employees and those employed in its London supply-chain supported a further value-added impact of £15.6 million to London's economy and just under 250 jobs.

### 3.6 The wider impact of the University on the UK

The scale of the University's indirect impact increases further when the geographic scope widens to the UK as a whole. This is a function of not only capturing almost all procurement spend by the University, but also results from a reduction in the level of leakage to other areas from the University's suppliers' own supply chains – a consequence of a larger economy providing a greater degree of options for suppliers to purchases goods within the geographical area.

The result of these factors is that the £24.1 million the University spends on purchases supported a value-added contribution of £20.8 million to the UK economy and 500 jobs. The spending of the University's employees and those employed in its UK-wide supply chain supported an additional value-added contribution of £37.4 million to the UK, supporting around 870 jobs.

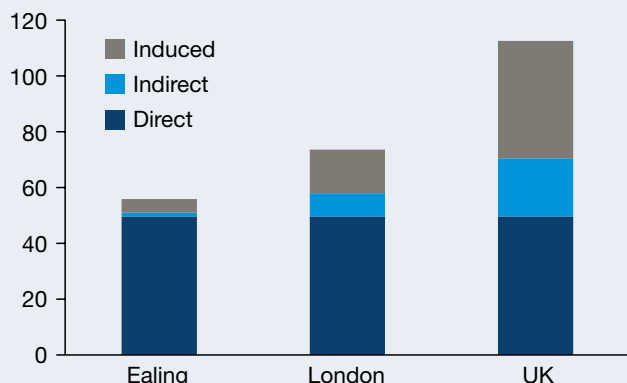
### 3.7 The total impact of the University's activities

The total economic impact the University's activities had on the economies of Ealing, London and the UK is equal to the sum of the direct, indirect and induced effects of the University in each area. The University, therefore, supported £55.8 million in value added within Ealing's economy in 2011/12 and 1,120 jobs. The consequent tax payments to the Exchequer amounted to nearly £22 million.

The scale of the University's impact increases as the geography considered grows due to the lower level of leakage occurring in its supply chain. In 2011/12 the University supported a value-added contribution of £73.5 million to the London economy, 1,500 jobs and £29.8 million of tax revenues. When the whole UK is considered, this impact increased to £107.8 million, 2,470 jobs and £39.2 million.

**Chart 3.9: Total economic impact of the University of West London by geography, 2011/12**

Contribution to GDP (£ million)



Source: Oxford Economics



## Determining the number of 'additional' students

The subsistence spending of the University's students and the additional visitor spending they attract can only be attributed to the University if students would not be in Ealing, London or the UK if the University did not exist. This chapter details where the University's students in 2011/12 come from, and where they lived during term-time. It then uses this data to calculate the number of 'additional' students the University attracts to each area.

### Key points

- Over half of the 12,148 students registered at the University of West London in 2011/12 came from London. A further 22% came from the South East region of the UK and 1,510 came from overseas.
- The vast majority (72%) of the University's students in 2011/12 lived in London, however only 18% lived in the Borough of Ealing. The rest of the University's students lived elsewhere in the UK, with 2,600 living in the South East region.
- Only 'additional' students that the University attracts to Ealing, London and the UK contribute to the University's economic footprint. The number of students who are 'additional' is calculated as the difference between the number reporting a term-time address in each geography and the number reporting a domicile address in each geography.
- In 2011/12, the University attracted 946 'additional' students to Ealing, 2,132 'additional' students to London, and 1,510 'additional' students to the UK.

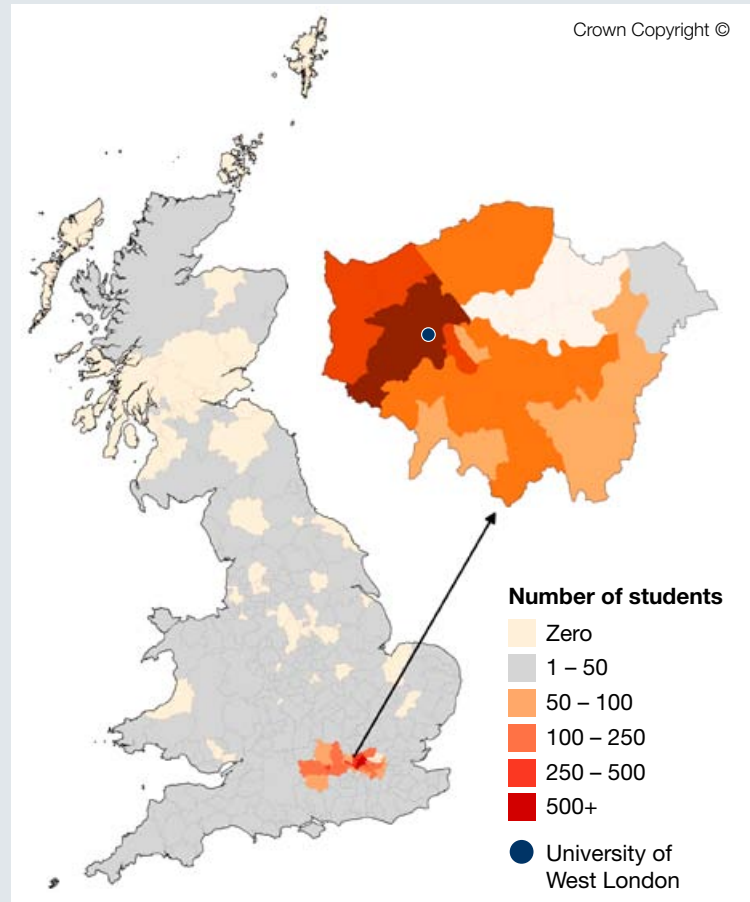
## 4.1 Where students come from

The University provided detailed information on the composition of its student body in 2011/12. Included within this information were details of students' home domiciles – that is the location from which they were recruited to the University. For students from the UK this domicile information took the form of a postcode, while for overseas students it was the country from which they were recruited.

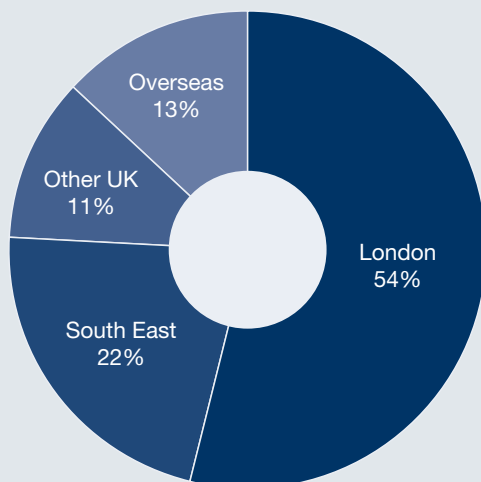
The University's data indicate that over half (54%) of all students came from London, with 18% of these reporting Ealing as their domicile and a further 34% coming from neighbouring Boroughs.<sup>8</sup> Outside of London, students from the South East region of the UK accounted for 22% of the total, while the rest of the UK provided a further 11%. In 2011/12, 13% of the student body came from overseas.

The University's data indicate that 1,510 students from 91 countries outside the UK studied at the University in 2011/12. India was by far the largest provider of international students, accounting for 44% (657 students) of the total. The next largest sources of students, Nepal and Ireland, both accounted for 8% of the total. In terms of continents, students from Asia accounted for over two-thirds of all international students at the University in 2011/12; Europe accounted for over a quarter.

**Figure 4.1: Spatial distribution of the University of West London's UK-domiciled students, 2011/12**

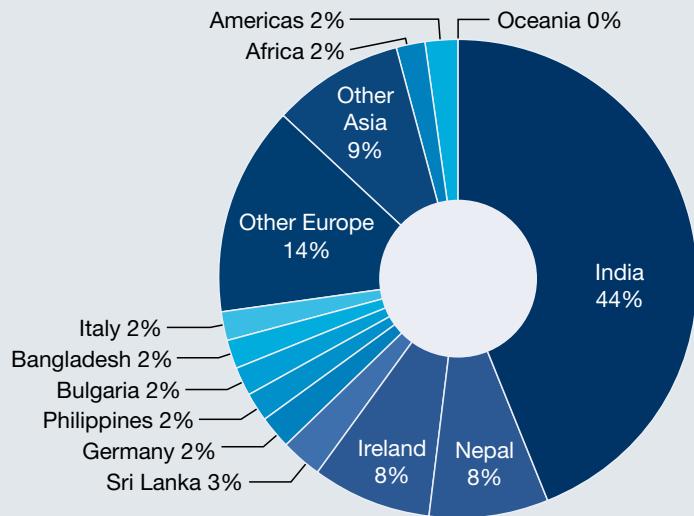


**Chart 4.1: Students at the University of West London by domicile, 2011/12**



Source: University of West London

**Chart 4.2: Overseas students at the University of West London by domicile, 2011/12**



Source: University of West London

<sup>8</sup> Ealing's neighbouring Boroughs are Brent, Hammersmith and Fulham, Hounslow, Hillingdon and Harrow.

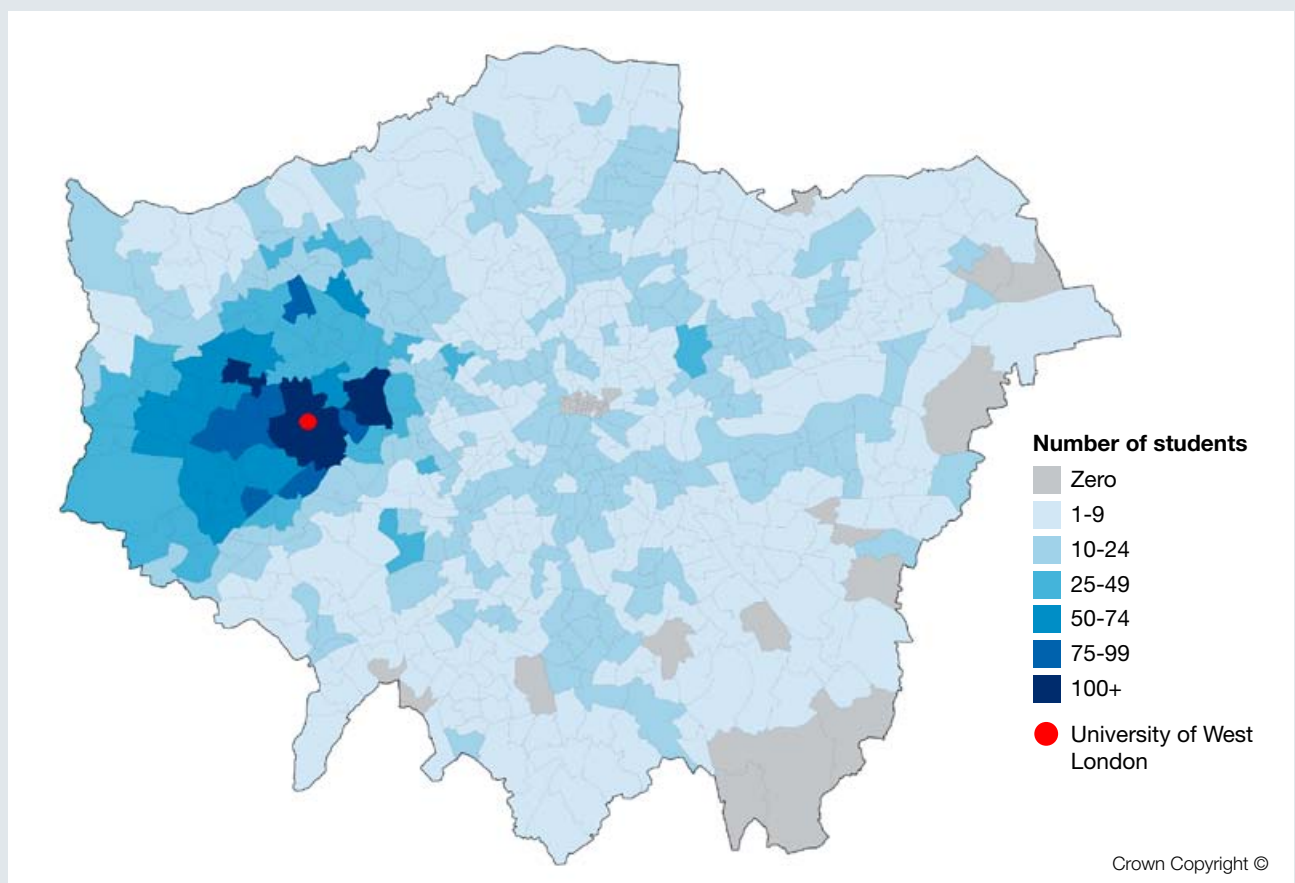
### 4.2 Where students lived during term-time

The data provided by the University also include details of the term-time postcodes of students in 2011/12. These data indicate that despite the University's base in Ealing, only 17.5% of the student body (2,130 students) lived in the Borough in 2011/12. A further 6,576 students lived in London, with a concentration in the Boroughs neighbouring Ealing – Hounslow was home to 1,228 students, Brent was home to 599 students, and 581, 320 and 308 students lived in Hillingdon, Hammersmith and Fulham, and Harrow, respectively. Together these five Boroughs and Ealing were home to 60% of the University's students who lived in London in 2011/12.

A sizable proportion of students lived outside of London, with 2,600 students (21% of the total) living in the South East region of the UK. A further 7% of students lived elsewhere in the UK (829 students).



**Figure 4.2: Spatial distribution of the University of West London's in London, 2011/12**





## 4.3 The number of ‘additional’ students

The subsistence spending of the University’s students, and the additional visitor spending they attract can only be attributed to the University if students would not be in Ealing, London or the UK if the University did not exist. Therefore, it is necessary to calculate how many of the University’s students are ‘additional’ to each of these geographies.

In terms of the geographies under consideration in this study, students are deemed to be ‘additional’ if they fulfil the following criteria:

- A student is ‘additional’ to Ealing if they live in Ealing during term-time *and* their domicile is not in Ealing.
- A student is ‘additional’ to London if they live in London during term-time *and* their domicile is not in London.
- A student is ‘additional’ to the UK if they live in the UK during term-time *and* their domicile is overseas.

Filtering the student data provided by the University by domicile and term-time addresses shows that 946 students were ‘additional’ to Ealing in 2011/12 (2,130 students lived in Ealing during term time and 1,184 reported Ealing as their domicile). Of this number, 929 students were enrolled in a full-time study course.

The University data also reported that 8,706 students lived in London during term-time, while 6,574 recorded London as their domicile, meaning that the University was responsible for 2,132 ‘additional’ students (2,073 of whom were full-time students) in London in 2011/12. The number of students considered ‘additional’ to the UK is equal to the number of overseas students studying at the University – in 2011/12 this equalled 1,510 students, of which 1,453 were enrolled in full-time courses.



**Figure 4.3: Calculation of the University of West London’s ‘additional’ students, 2011/12**

	Term-time address is in ...		Domicile is in ...		“Additional” students in ...
Ealing	2,130	–	1,184	=	946
London	8,706	–	6,574	=	2,132
UK	12,148	–	10,638	=	1,510

# 5

## The impact of students' subsistence spending

The economic impact of the University extends beyond the impact of its own activities. The impact of the subsistence spending of the 'additional' students the University attracts to Ealing, London and the UK is an important source of economic benefit for these economies.<sup>9</sup> This chapter highlights the scale of this spending and the total economic impact this supports in each economy.

### Key points

- Subsistence expenditure refers to students' spending on all goods and services they purchase while studying at the University, excluding tuition fees.
- Full-time students spent £11,400 on average in 2011/12, while part-time students' expenditure was £18,130 on average. Food, personal items and rent account for nearly 60% of full-time student expenditure and half of part-time student spending.
- The total contribution of 'additional' student subsistence spending to the Ealing economy was £4.5 million in value added in 2011/12, supporting over 120 jobs locally.
- The total value-added contribution of the subsistence spending by the University's 'additional' students living in London equated to £13.8 million, supporting 330 jobs.
- The subsistence spending of the University's overseas students contributed £19.3 million to the UK economy, supporting 570 jobs and generating tax revenues of £7.4 million.



<sup>9</sup> The 'additional' staff that the University attracts to Ealing, London and the UK have a similar spending impact, however this has already been captured in the induced effect measured in Chapter 3.

## 5.1 Students' subsistence expenditure

Subsistence expenditure refers to students' spending on all goods and services they purchase while studying at the University. This measure of spending does not include the payment of tuition fees, as the impact of these is already captured in the calculation of the University's own impact. It does, however, include spending on food, rent, transport and entertainment.

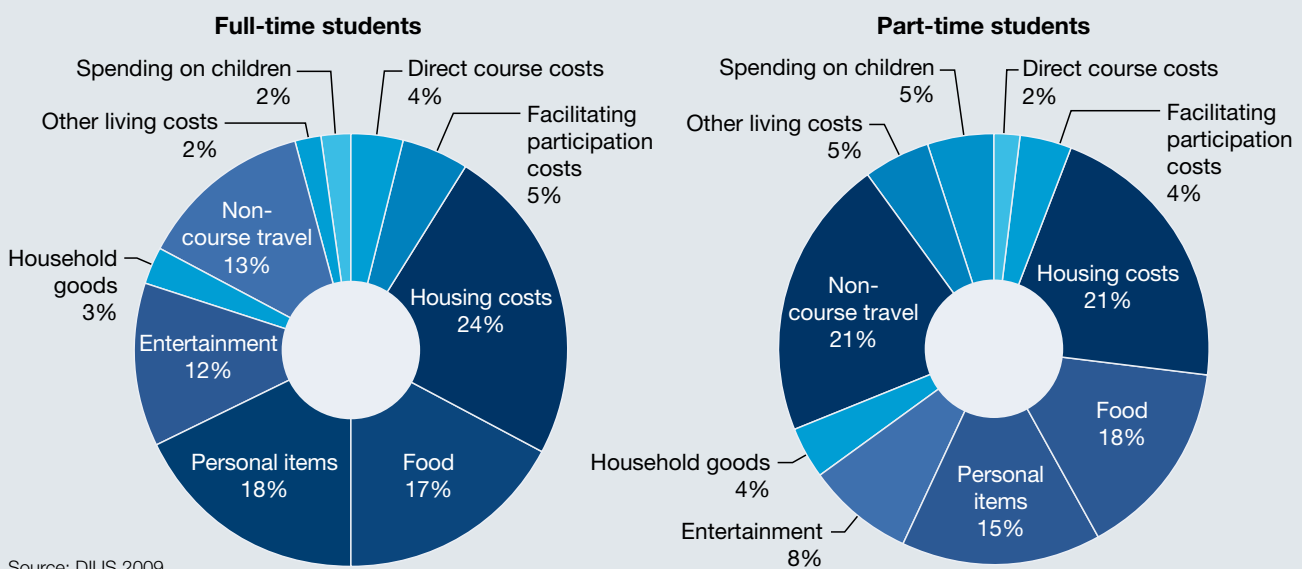
The UK Government, through the Department for Business, Innovation and Skills (BIS) undertakes periodic surveys of the composition of student income and expenditure; the most recent survey produced covered the 2007/08 academic year.<sup>10</sup> This survey found that in 2007/08 full-time students living in London spent £10,235 covering living expenses each year and part-time students spent £16,275 annually. The survey does not make a distinction between domestic and international students forcing the assumption that international students' pattern of spending is the same as that for all students.

For full-time students housing cost is the largest spending item, accounting for 24% of the total. Non-course travel takes the largest share (24%) of part-time student budgets, followed by housing costs (20%). Food and other personal items account for a further 35% and 30% of total spending by full- and part-time students, respectively.

As the data reported in the latest *Student Income and Expenditure Survey* reflect spending in 2007/08, they do not take account of changes in the cost of living that have occurred in the intervening years between the survey and 2011/12. Making allowance for inflation since 2007/08 takes full-time student spending to £11,403 per annum and the average part-time student spending to £18,132 per year in 2011/12. In the absence of new data the composition of spending is kept the same as reported in 2007/08.

The different goods and services that students purchase must be mapped against the sectors from which these products are supplied to capture the economic impact that is derived from students' subsistence expenditure. For example, student spending on rent is allocated to the real estate sector, spending on transport to the transport sector and food purchases to the retail sector. Following this mapping, the retail sector is the largest recipient of student spending, followed by real estate for full-time students and transport for part-time students.

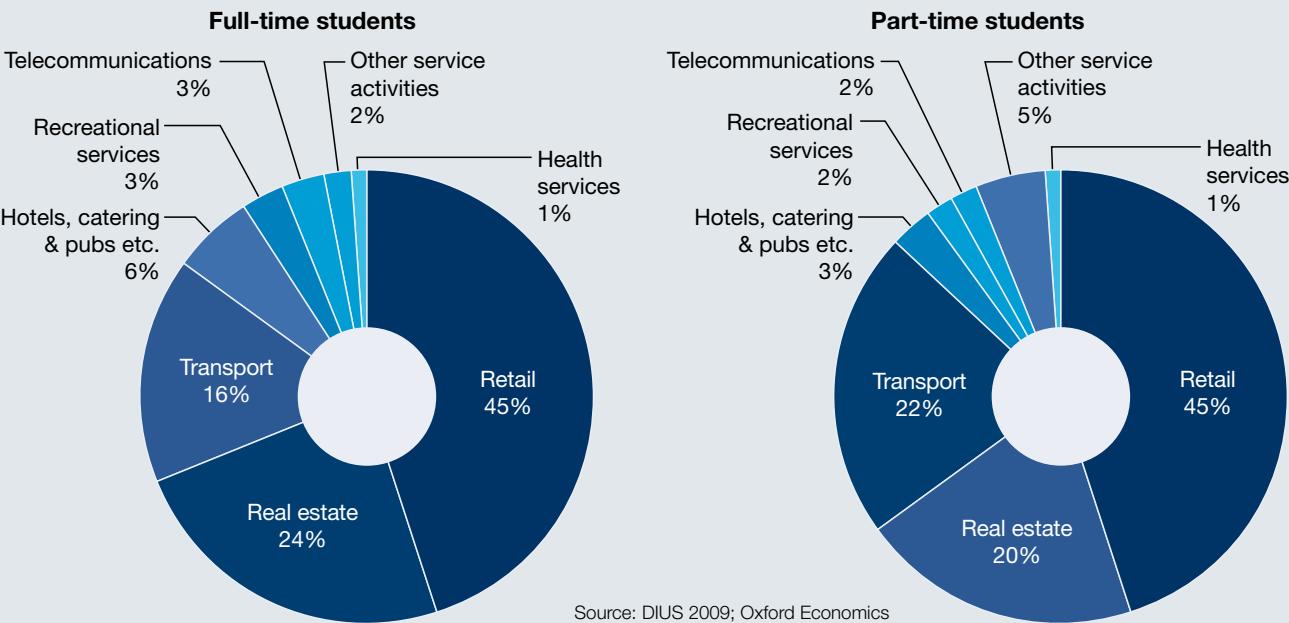
**Chart 5.1: Student subsistence expenditure by spending item, 2007/08**



<sup>10</sup> The 2007/08 survey was produced by BIS' predecessor, the Department for Innovation, Universities and Skills (Department for Innovation, Universities and Skills, 2009).



**Chart 5.2: Student subsistence expenditure by sector, 2011/12**



It should be noted that the subsistence spending measured in this section is only that of students living in Ealing. Students living outside of Ealing and travelling to the University will likely make purchases from shops, cafes and bars in Ealing, supporting further economic activity in the Borough. Unfortunately, no data detailing the level of student spending

that occurs either on campuses or around a University exist. Therefore, the authors have decided to exclude the potential impact of these non-resident students to maintain the robustness of the methodology presented in this study. The authors do, however, acknowledge that this exclusion leads the findings presented here to be conservative.



## 5.2 The impact of students' subsistence expenditure on Ealing

The 946 'additional' students the University attracted to Ealing in 2011/12 spent £10.9 million at retail outlets, real estate agents, transport and hotels and restaurants in the Borough. This spending generated a direct value-added contribution of £3.5 million to the Ealing economy.

The firms providing goods and services will purchase some of their own inputs from other businesses in the Borough. These Ealing-based supply chains support further economic activity in the Borough and are described by the model of the Ealing economy built for this study. The Ealing model indicates that the subsistence spending of the 'additional' students living in Ealing indirectly contributed £380,000 in value-added to the economy.

When these effects and the impact of those employed directly and indirectly spending their incomes in the Borough are considered, the total contribution of student subsistence spending to the Ealing economy was £4.5 million in value added, supporting over 120 jobs locally.

## 5.3 The impact of students' subsistence expenditure on London

Over 2,100 of the University's students were deemed 'additional' to London in 2011/12. Together, these students spent £24.7 million at businesses within London, generating a direct value-added contribution of £8 million to the London economy in 2011/12.

Expanding the analysis to account for London-based supply chains results in a further, indirect value-added contribution to London's economy of £3.2 million. The spending of those people employed directly and indirectly by the University's students' spending in London supported a further, induced value-added contribution of £2.6 million.

The total value-added contribution, therefore, of the subsistence spending by the University's students living in London equated to £13.8 million in 2011/12, supporting 330 jobs.

## 5.4 The impact of students' subsistence expenditure on the UK

At a UK level, the 'additional' students the University attracts to the UK are those from outside the UK. The total number of 'additional' students, therefore, is equal to the number of overseas students studying at the University in 2011/12. These 1,510 students spent £17.6 million while living in the UK in 2011/12, supporting a direct value-added contribution of £10.2 million.

The spending throughout UK-based supply chains required to support this activity generated a further indirect value-added contribution of £5.1 million, and the spending of those employed directly and indirectly supported a further induced value-added contribution of £4 million in 2011/12.

In total, the subsistence spending of the University's overseas students contributed £19.3 million to the UK economy, supporting 575 jobs and tax revenues of over £7 million.

# 6

## The impact of additional visitors

The final channel by which the University impacts on an economy is through the spending of additional visitors to Ealing, London and the UK who visit the 'additional' students in each area. This chapter outlines the scale of this impact on Ealing, London and the UK.

### Key points

- Students from outside Ealing, London and the UK receive visits from friends and relations. These trips would not occur without the presence of the University.
- Visits by international tourists in 2011/12 to see overseas students is estimated to have generated spending with local firms of £150,000 in Ealing, over £430,000 in London and almost £540,000 in the UK. Visitors to UK-domiciled students spent £52,000 in Ealing and £99,000 in London.
- Family and friends' visits to UWL students are estimated to support a £83,000 gross value added contribution to GDP in Ealing and 3 people in employment for a year in the Borough.
- International and domestic visitors to UWL students are estimated to have injected £529,000 in additional expenditure into the London economy. This is estimated to have supported a £298,000 gross value added contribution, 9 people in employment for a year and a £148,000 contribution to tax receipts in 2011/12.



## 6.1 Calculating additional visitor spending

The presence of students from places outside of Ealing, London and the UK can lead to an increased number of tourists visiting these students. These visitors will spend money on goods and services – including accommodation, recreational activities and retail – in the areas they visit. This spending supports economic activity in the locations where tourists visit, both directly through their spending and indirectly through the associated indirect and induced effects of this spending. The visitor spending that can be attributed to ‘additional’ students attracted to Ealing, London and the UK is part of the University’s total impact on the economy.

The ‘additional’ students attracted to Ealing, London and the UK can be either domestic students or overseas students, with different methodologies required to capture the respective impacts.

### 6.1.1 Visitors to overseas students

In the *International Passenger Survey* (IPS) the Office for National Statistics<sup>11</sup> records the spending of international visitors to the UK and its regions who have travelled to the UK to visit friends and relatives. While the IPS identifies the spending of these visitors, and does so by their nationality, it does not record who these friends and relatives are, or whether they are students. Therefore it has to be assumed that these visitors are all visiting friends and relatives who share their nationality, and that spending by travellers visiting students is similar to other visitors of that nationality to friends and relatives. For example, there are 526 ‘additional’ students from India living in London as a result of the University and the latest census data<sup>12</sup> indicate that there were 262,250 people from India living in London in 2011, therefore 0.2% of all the spending of visitors to London from India who come to visit friends and relatives can be attributed to the University. The method is applied for all nationality and geographies.

This analysis concludes that in 2011/12, visitors to the University’s 402 overseas students who lived in Ealing spent £151,000 with local firms. Increasing the geographical scope suggests that visitors to the 1,318 overseas students who lived in London in 2011/12 spent over £430,000 in London, while visitors to the 1,510 overseas students who lived in the rest of the UK spent almost £540,000 in 2011/12.

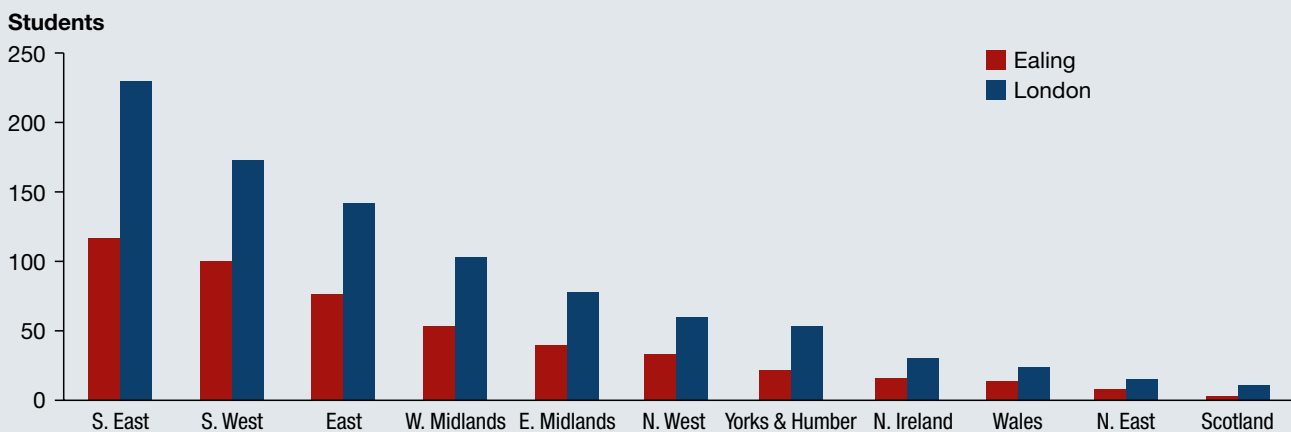
### 6.1.2 Visitors to domestic students

The presence of students from other parts of the UK in Ealing and London will also generate tourist revenues for businesses operating in the industry in these areas. From the data supplied by the University it is possible to determine the UK regions from which students come to the University. In 2011/12 a quarter came from the South East; the University also attracted significant numbers of students from the South West, the East and the West Midlands.

No information is available on how many visitors from within the UK each student from outside London receives. It therefore has been conservatively assumed that each student gets one visitor from home each year. Using Visit Britain’s data<sup>13</sup> on the average spend per trip by those from each of the UK’s countries and regions visiting family and friends for 2011, it is possible to calculate how much additional money is brought into the Ealing and London economies.

Domestic visitors to the University’s students who normally reside outside of Ealing and London are estimated to have spent £52,000 and £99,000 in the two economies, respectively. The expenditure is less than visitors from abroad as the length of stay is shorter and expenditure per day is lower on average.

**Chart 6.1: UWL’s domestic students by place of domicile**



Source: University of West London

<sup>11</sup> Office for National Statistics (2012)

<sup>12</sup> From Office for National Statistics (2012)

<sup>13</sup> Visit Britain (2012)

## 6.2 The impact of additional visitor spending on Ealing

Family and friends' visits to the University's students are estimated to have supported a £83,000 gross value added contribution to GDP in Ealing in 2011/12 and the full time equivalent of 3 people in employment for a year in the Borough. Tax receipts are £42,000 higher than would be the case if the visitors had not visited the University's students.

## 6.3 The impact of additional visitor spending on London

International and domestic visitors to the University's students are estimated to have injected £529,000 in additional expenditure into the London economy. This is estimated to have supported a £298,000 gross value added contribution in 2011/12, the equivalent of 9 people in employment for a year and a £148,000 contribution to tax receipts.

## 6.4 The impact of additional visitor spending on the UK

Expenditure by international visitors to the University's students is estimated to have supported a £539,000 contribution to UK GDP in 2011/12, employed the equivalent of 19 people for a year and raised £210,000 in tax payments. Domestic visitors do not make a contribution at the UK level because their visitor expenditure displaces activity in the regions in which they live.







# 7

## Total impact of the University

This chapter summarises the total economic impact of the University in 2011/12. It does this for three geographies: the Borough of Ealing, London and the UK.

### Key points

- In 2011/12, the University of West London supported 1% of all the GDP and 0.9% of all the employment created in the Borough of Ealing.
- The University supported a £87.6 million gross value added contribution to GDP, 1,850 jobs in employment and almost £40 million in tax receipts in the capital.
- The University of West London supported a gross value added contribution to GDP of £127.6 million in 2011/12. Including multiplier impacts it generated 2,975 jobs.



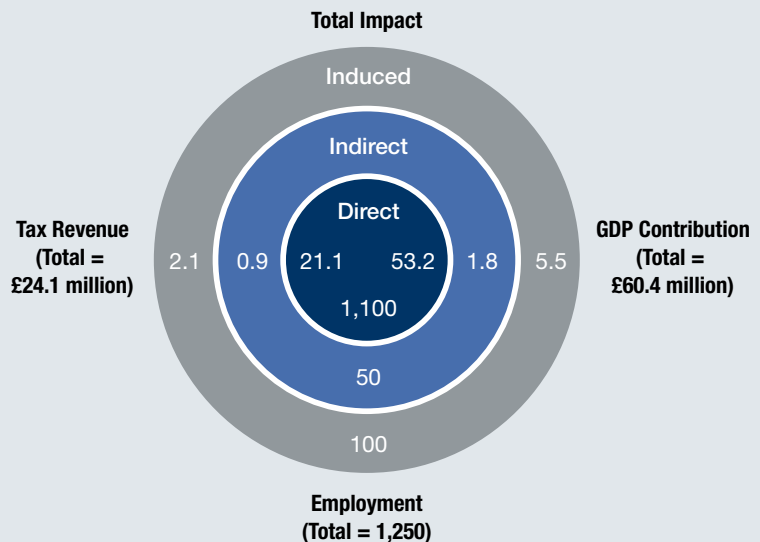
## 7.1 Impact on Ealing

Aggregating across the impact of the University itself, students' subsistence expenditure and visitors to students spending, the University of West London is estimated to have supported a £60.4 million contribution to the Ealing economy. This is 1% of the total GDP created in the Borough. Most (92%) of the impact is from the economic activity supported by the University itself.

In total, the University supported 1,250 people in employment in the Borough of Ealing (or 0.9% of total) in 2011/12. Some 995 of these are employed by the University. The University's procurement and staff spending supported an additional 125 people in jobs. This is roughly the same as the numbers supported by students' subsistence expenditure.

The University is estimated to have supported a £24.1 million contribution to tax receipts. The majority (90%) of these are supported by the University itself, rather than student subsistence or visitor spending.

**Figure 7.1: The economic contribution of the University of West London to Ealing in 2011/12**



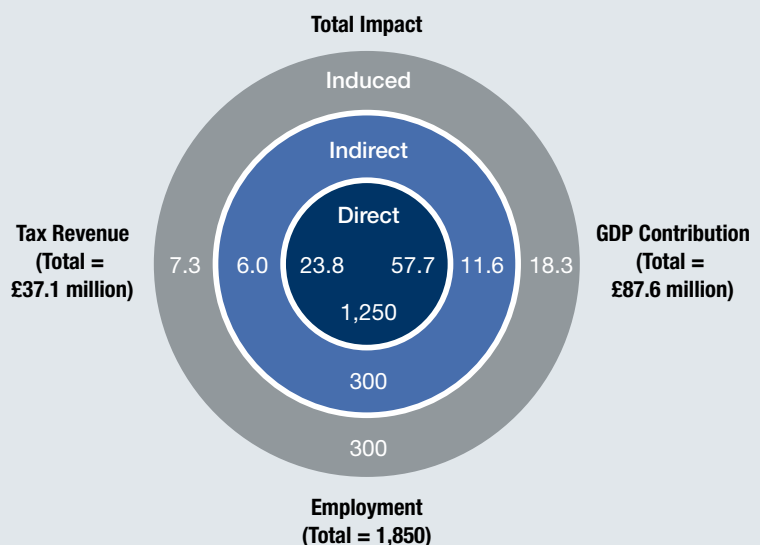
## 7.2 Impact on London

The University of West London supported a £87.6 million contribution to London's GDP in 2011/12. So £1 in every £3,200 generated by the London economy is in some way dependent on the University. Most of the University's contribution (85%) reflects its own economic activity, with the majority of the remainder being generated by students' subsistence spending.

In 2011/12, the University is estimated to have supported 1,850 people in employment in the capital. The majority of these (1,250) were at the University, or as a result of students' subsistence or their visitors' spending. Supply chain impacts and wage consumption effects kept another 700 in employment.

The University is estimated to have supported £37.1 million in tax receipts in London. Some 82% of these resulted from the University's activities. Virtually all of the remainder resulted from students' subsistence expenditure.

**Figure 7.2: The economic contribution of the University of West London to London in 2011/12**



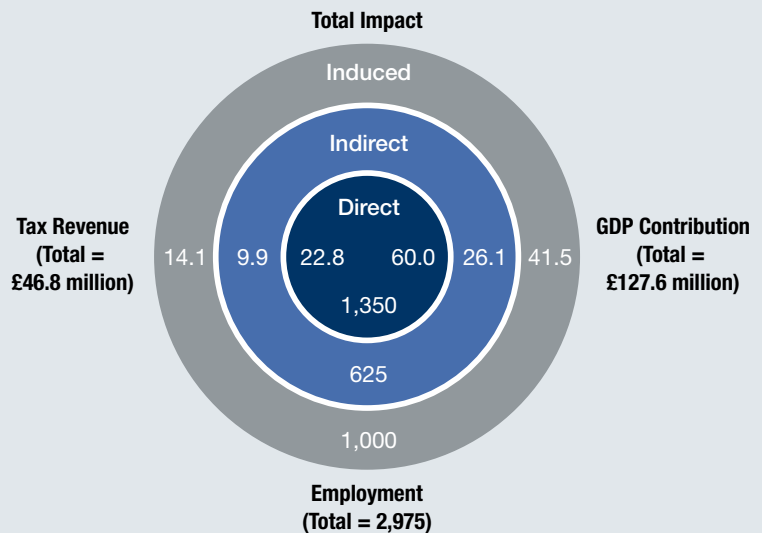
## 7.3 Impact on the UK

In 2011/12, the University of West London supported a £127.6 million gross value added contribution to UK GDP. The largest component of this was the impact of the University itself, and the economic activity generated by students' subsistence and visitors' spending (at £60 million); induced and indirect impacts ranked second and third in size, respectively.

In total, the University is estimated to have supported some 2,975 people in employment in the UK. Some 44% of this was due to direct impacts. Supply chain and wage consumption contribute 36% and 20% each.

The University of West London supported a total contribution to HM Exchequer of £46.8 million in 2011/12. Of this, 92% originated from the University itself.

**Figure 7.3: The economic contribution of the University of West London to London in 2011/12**



## 7.4 Comparison with other HEIs' economic contribution

Many studies have looked at quantifying the economic impacts of UK higher education institutions (HEIs). As with this study, nearly all earlier studies have used an input-output approach to measure the direct, indirect and induced impacts of university-related expenditure. However, making direct comparisons between studies is often complicated due to different studies using different sources, or focusing on different geographical areas of impact (e.g. local, regional or national level impacts) or simply quantifying different aspects of university-related expenditure (e.g. spending by the university, its additional non-local UK residents, its international students or a combination of all three). Other studies, including this one, also seek to quantify the tourism impact generated by the expenditure of people who visit international and EU students who are studying at a UK university.

This comparison concentrates on some of the more recent studies of the output, GDP and employment impact of Universities in the UK. To enable a like-with-like comparison, the initial comparisons (Chart 7.1) show estimated output and employment multipliers<sup>14</sup> at the local level derived from university expenditure and subsistence spending by additional non-local students. The estimates exclude additional visitors, such as friends and relatives, these non-local students attract to the local area, as these impacts were not captured in the earlier studies.

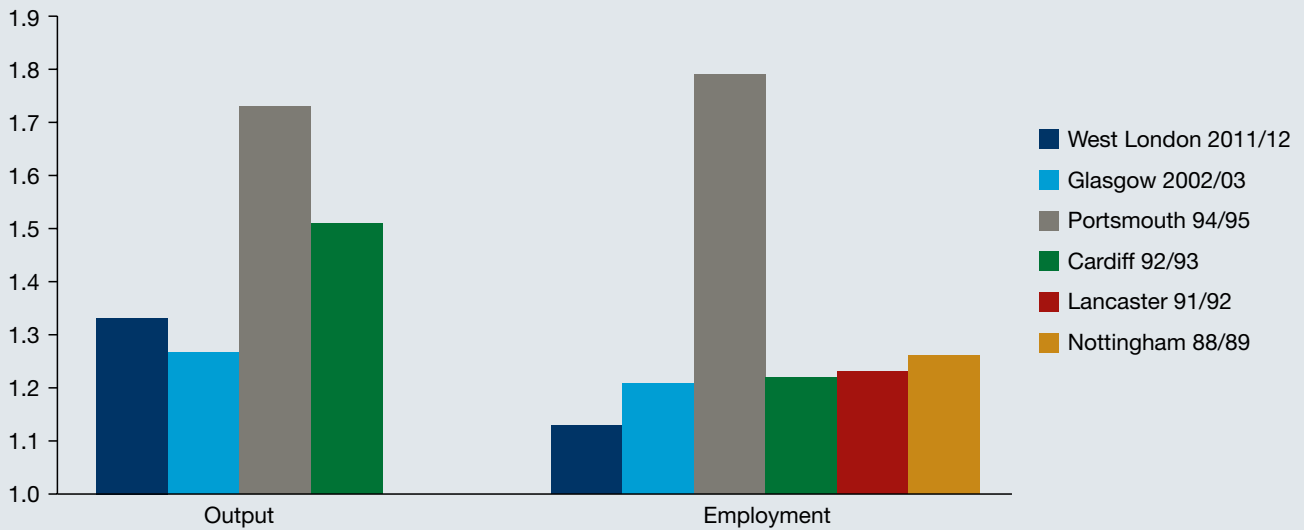
Chart 7.1 shows that the University has an output multiplier impact on the London Borough of Ealing of 1.33, which is slightly higher than the estimate of the impact of the University of Strathclyde on the Glasgow economy, but smaller than the estimates for the University of Wales, Cardiff (1.51) and for Portsmouth University (1.73). The relatively high output multiplier for Portsmouth may be the result of the multiplier impact being reported for the Portsmouth Travel to Work Area (TTWA). Estimates of multipliers generally become higher as the geographical area of analysis is broadened because the impact of spending by the University, its staff and its students, can be provided by a greater number of local suppliers - in effect spending leakages from the local economy are lowered. A TTWA is more akin to a true 'local economy' as it is defined as an area where as least 75% of residents live and work.

The employment multipliers are broadly consistent across the studies, with the exception of the Portsmouth study, which seem implausibly high. Though the estimates show the University to have the lowest employment multiplier impact (1.13) this will mostly reflect the higher level of productivity across industries in the Ealing economy relative to the other study areas - a high productivity level will mean that fewer workers are required to produce the additional demand for goods and services from the University, its staff and its students.

<sup>14</sup> Technically the Type 2 multipliers.



**Chart 7.1: Comparison of local area multiplier impacts with those calculated for other universities**



University	Author	Area of analysis
West London	Oxford Economics (2013)	London Borough of Ealing
Strathclyde	Kelly et al. (2004)	Glasgow Unitary Authority
Portsmouth	Harris (1997)	Portsmouth TTWA
Wales, Cardiff	Huggins and Cooke (1996)	Cardiff Unitary Authority
Lancaster	Armstrong et al. (1993)	Lancaster Local Authority District
Nottingham	Bleaney et al. (1992)	Nottingham Local Authority District

Table 7.1 focuses on regional and national impacts and shows that University multipliers are of similar size – albeit slightly lower for output in London – both to those for Strathclyde University's impact on the Scottish and UK economy and to UK-level output and employment multipliers estimated for all London-based universities by Universities UK (2009). And, as expected, the output and employment multiplier impacts of the University on both the regional (London) and UK economies are much higher than for the Ealing economy.

**Table 7.1: Comparison of regional and national level multiplier impacts with those calculated for other universities**

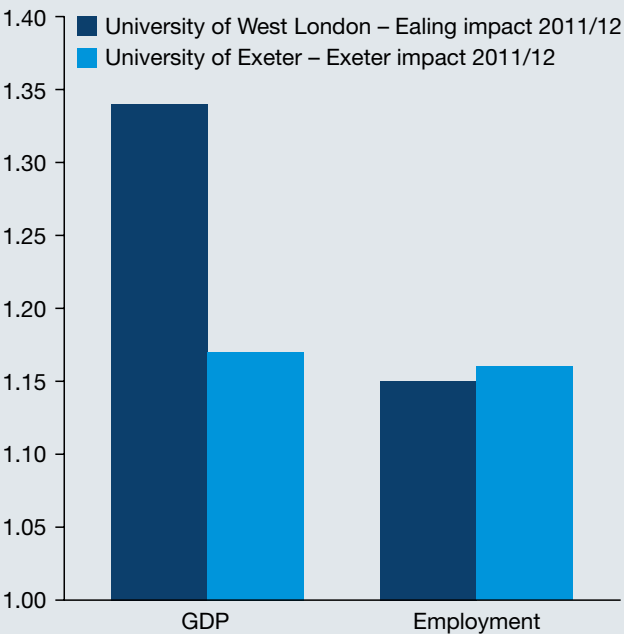
University	Region	Output multiplier		Employment multiplier	
		Region	UK	Region	UK
University of West London	London	1.65	2.41	1.48	2.21
Strathclyde University	Scotland	1.84	2.38	1.52	2.34
All London Universities	London	2.02	2.53	2.08	2.12

Source: Oxford Economics (2013), Strathclyde University (2004), Universities UK (2009)

# The economic impact of the University of West London

Comparisons of tourism multiplier impacts generated by the expenditure of people who visit international and EU students who are studying at a UK university are illustrated in Chart 7.2. Both available studies have been conducted by Oxford Economics following the same methodology.<sup>15</sup> The University is shown to have a higher (15%) local impact in terms of the GDP multiplier compared with the University of Exeter, due to the expenditure pattern of visitors who purchase more locally produced goods and services relative to visitors to the University of Exeter. Both Universities have similar employment multiplier impacts, with the University impact low relative to its GDP impact due to both the mix of spending and higher productivity levels across industries in Ealing compared to Exeter.

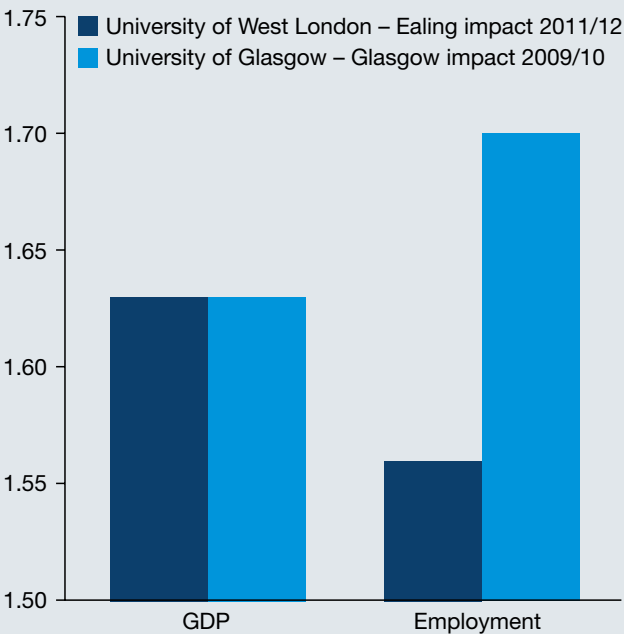
**Chart 7.2: Comparison of local multiplier impacts generated by additional tourism related visitors**



Source: Oxford Economics

Finally, the estimated GDP and employment multipliers for the University that include visitor spending can be compared against similar estimates for the University of Glasgow.<sup>16</sup> Both studies have been conducted by Oxford Economics and adopted the same methodological techniques, utilised the same core datasets and considered the impact of the operations of the university, subsistence spending and additional visitors. On the basis of the estimates, the University and the University of Glasgow have the same local impact in terms of the GDP multiplier, but the University has a lower employment multiplier impact (1.56 versus 1.70) due to the higher productivity levels across relevant industries in Ealing compared to Glasgow.

**Chart 7.3: Comparison of local GDP and employment multipliers**



Source: Oxford Economics

15 Oxford Economics (2012)

16 University of Glasgow (2011)

## 7.5 Catalytic effects of the University of West London

The focus of this study has been on the quantifiable impacts of the University, however it is worth highlighting that the University's contribution to Ealing, London and the UK extends beyond these areas. Collectively this benefit can be termed the 'catalytic' impact of the University, and includes, but is not limited to, the following aspects.

- **Skills impact** – By educating students, the University is responsible for supplying the Ealing, London and UK labour markets with highly skilled and dynamic workers, enhancing productivity in these economies. However, even if these graduates leave the Borough, London or the UK, the links they establish with the area can manifest in other ways.
- **Future students** – Alumni can act as a powerful promotional tool for the University once they have graduated by recommending studying at the University to potential students. A 2011 study of Welsh universities indicated that almost two-thirds of alumni were very likely to promote studying in Wales to prospective students.<sup>17</sup> There is no reason to suggest why this outcome would differ for the University of West London and every student who subsequently comes to the University as a result of these recommendations will have a positive impact on the economies of Ealing, London and the UK through the channels explored in this report.
- **Future tourists** – In the same way that they promote studying at the University, alumni can also play a key role in promoting Ealing, London and the UK as a tourist destination. This promotion can generate additional visitor spending in each economy, supporting jobs in the tourism industry and its supply chain. Alumni can also return as tourists themselves in addition to encouraging others to visit, further enhancing the impact on the tourism industry.
- **University research** – Research plays an important role in the innovation process. It results in the new technologies and processes that bring new products and services to the market place, enhances efficiency, or provides significant social benefits (such as in healthcare). The University contributes to this innovation through the research that is conducted by its staff facilitate increased productivity and economic benefits over the long-term.

Although these effects may be more long-term than those explored in the rest of the study, they will nonetheless have a very real and positive impact on the economies – and society more widely – of Ealing, London and the UK.



<sup>17</sup> Oxford Economics (2011)



# Appendix

## About Oxford Economics

Oxford Economics - formerly Oxford Economic Forecasting - was founded in 1981 to provide independent forecasting and analysis tailored to the needs of economists and planners in government and business. It is now one of the world's leading providers of economic analysis, advice and models, with over 300 clients including:

- International organisations, such as the World Bank, OPEC and the Asian Development Bank.
- Government departments in many countries, including HM Treasury in the UK; the US Department of Treasury and US Office of Transnational Issues; Ministries of Finance in, for example, Saudi Arabia, Slovakia, Bulgaria, Azerbaijan, Turkey and Egypt; the Economic Development Board in Libya; and tourism boards in the EU, US, Abu Dhabi, Dubai and the Caribbean.
- Central banks around the world, ranging from the UK and Spain to Chile, Hong Kong, Korea and Thailand.
- A large number of multinational blue-chip companies across the whole industrial spectrum, including, for example, IBM, Intel, BP, Shell, Unilever, HSBC, Banco Santander, Swiss Re, DaimlerChrysler and Boeing.
- Oxford Economics commands a high degree of professional and technical expertise, both in its own staff of over 70 professionals based in Oxford, London, Belfast, Paris, the UAE, Singapore and Philadelphia, and through its close links with Oxford University and a range of partner institutions in Europe and the US.

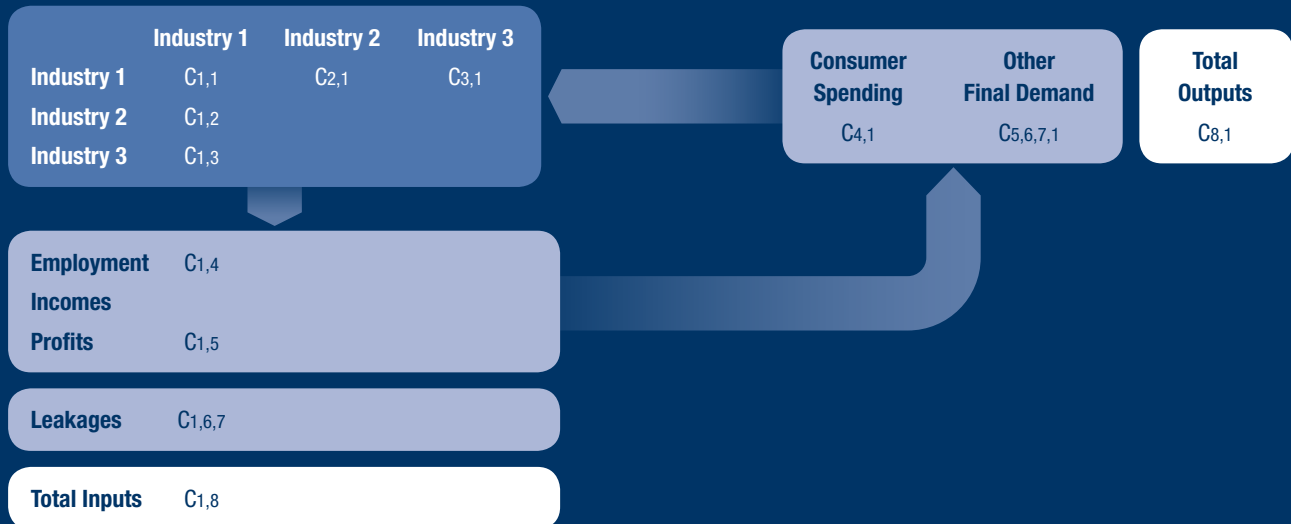
Oxford Economics' services include:

- International macroeconomic, sectoral and regional forecasts – with country briefing reports covering 180 countries; detailed projections for 80 sectors; and forecasts for local areas throughout the EU and cities in Asia.
- Bespoke econometric modelling – building detailed forecasting and simulation models and training clients' staff to use them to support budget planning and policy decision-making.
- Detailed market analysis - translating our economic forecasts into forecasts for market segments and providing advice on market opportunities.
- Briefings for ministers, senior officials and executives – both presentations and tailored written reports on key economic issues.
- Outsourced economics support – providing on-call advice, data, modelling, briefing and policy advice.
- Economic impact assessments – analysing the economic and social contribution of particular sectors, investment projects or tax proposals.

The key framework in which Oxford Economics' analysis is conducted is its own Global Econometric Model, which covers some 45 economies in detail and headline statistics for another 35 economies. This Model – which is unique among the commercial economic consultancies – provides a rigorous and consistent structure for analysis and forecasting, and allows the implications of alternative global scenarios and policy developments to be readily analysed at both the macro, sectoral and regional level. It is provided with very powerful, user-friendly software that enables Oxford Economics' clients to use its Global Model to generate their own forecasts and undertake detailed scenario and policy analysis.

# Input-output models

## A simple Input-Output model



An input-output model gives a snapshot of an economy at any point in time. The model shows the major spending flows from “final demand” (i.e. consumer spending, government spending investment and exports to the rest of the world); intermediate spending patterns (i.e. what each sector buys from every other sector – the supply chain in other words); how much of that spending stays within the economy; and the distribution of income between employment incomes and other income (mainly profits). In essence an input-output model is a table which shows who buys what from whom in the economy.

The first stage of our estimation of input-output tables for Ealing and London is to develop a base coefficients table (where each cell is expressed as a proportion of that industry’s output, for example any values in the agriculture column are expressed as a proportion of agricultural output, and so on for each different sector) using input-output tables for the UK<sup>18</sup> and the system based on the location-quotient method developed by Flegg *et al.*<sup>19</sup>

Following the Flegg *et al.* approach, a base coefficients table is adjusted to develop new input-output tables for Ealing and London using two steps:

1. The *Size Effect* adjusts the base coefficients matrix for each sector to take into account the differences between the absolute size of a sector in the UK economy and Ealing and London; and,
2. The *Scale Effect* then adjusts the coefficients matrix according to the size of each sector relative to the rest of the economy.

These adjustments ensure that differences between industrial linkages in the three geographies are captured.

Once finalised, the Ealing and London input-output tables can be used to generate industry multipliers by using the Leontief system.<sup>20</sup> Under the Leontief system industry multipliers are achieved through a series of manipulations of the input-output matrix. The first of these manipulations is the creation of a new base coefficients matrix (A matrix) for Ealing and London. The second manipulation is the creation of an identity matrix (I matrix), within which all values are zero except for when the consuming industry (columns) and the producing industry (rows) are the same; these cells are given a value of 1. The third stage of the manipulation is the subtraction of the A matrix from the I matrix. The final stage is the inversion of the matrix produced in the third stage. The result of these manipulations is a matrix in which the values represent the individual cross-multipliers for each industry, showing the impact on each producing industry (row) of an increase in 1 unit of output in a consuming industry (column). The total multiplier for each consuming industry is the sum of the multipliers in the relevant column.

<sup>18</sup> Office for National Statistics (2011)

<sup>19</sup> Flegg *et al.* (1995)

<sup>20</sup> Leontief (1986).

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