The economic impact of the University of York's activities

Report for the University of York

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Table of Contents

Executive Summary

London Economics were commissioned to assess the **economic impact of the University of York's research, knowledge exchange activities, institutional expenditures, and student expenditures on York and North Yorkshire[1] and the UK**, focusing on the 2023-24 academic year. The analysis excludes the impact of the University's teaching and learning activities[2] on boosting human capital and productivity across the UK, and therefore underestimates the total impact of the University's activities.

The aggregate economic impact of the University of York

The total economic impact on the **UK economy as a whole** associated with the University's research, knowledge exchange activities, institutional expenditures, and student expenditures in 2023-24 was estimated at approximately **£1.78 billion** (see Table 1), where:

- The direct, indirect and induced economic impact of the University's **research and knowledge exchange activities** stood at **£213 million** (**12%**);
- The economic impact generated by productivity spillovers associated with the University's **research activities** stood at **£615 million** (**34%**);
- The impact associated with the University's **institutional expenditures** stood at **£794 million** (**45%**); and
- The impact associated with the expenditures of the **University's international students** stood at **£161 million** (**9%**).[3]

Table 1 Total economic impact associated with the University of York on the UK economy in 2023-24 (£m and % of total)

Type of impact	£m	%
Impact of research and knowledge exchange	**£828m**	**46%**
Research activities	£132m	7%
Knowledge exchange activities	£80m	5%
Productivity spillovers	£615m	34%
Impact of the University's expenditure	**£794m**	**45%**
Operating and capital expenditure	£794m	45%
Impact of student expenditure	**£161m**	**9%**
UK domiciled students (from outside York and North Yorkshire)	-	-
Non-UK domiciled students	£161m	9%
Total economic impact	**£1,783m**	**100%**

Note: All estimates are presented in 2023-24 prices, rounded to the nearest £1 million, and may not add up precisely to the totals indicated. The percentages show the proportion of total impact associated with each strand/sub-strand of analysis.
Source: London Economics' analysis

[1] Throughout this report, York and North Yorkshire refers to the area covered by the York and North Yorkshire Combined Authority. This area also aligns with the North Yorkshire International Territorial Level 2 (ITL2) region (see Office for National Statistics (2024)).
[2] Our previous assessment of the University's economic impact for the 2016-17 academic year estimated a teaching and learning impact of **£488 million** (in 2016-17 prices). See London Economics (2018).
[3] As discussed in further detail in Section 4, we do not consider the impact of the expenditure of domestic students at the *UK level*, as this expenditure should *not* be considered as additional to the UK economy as a whole (since it displaces activity elsewhere in the UK). However, the impact of domestic students from outside of York and North Yorkshire (i.e. UK domiciled students who were domiciled outside of York and North Yorkshire before studying at the University of York) can be considered as additional to *York and North Yorkshire's* economy.

The impact of these activities on the UK economy in terms of **GVA** was estimated at **£672 million**, while the corresponding estimate in terms of employment stood at **9,795 FTE jobs**.[4]

The total economic impact on **York and North Yorkshire's economy** associated with the University's research, knowledge exchange activities, institutional expenditures, and student expenditures in the 2023-24 academic year was estimated at approximately **£980 million** (see Table 2). In terms of the components of this impact:

- The direct, indirect and induced economic impact of the University's **research and knowledge exchange activities** stood at **£126 million** (**13%**);[5]
- The impact associated with the University's **institutional expenditures** stood at **£469 million** (**48%**);
- The impact generated by the (non-fee[6]) expenditures of the **University's UK domiciled students (from outside of York and North Yorkshire[7])** stood at **£285 million** (**29%**); and
- The impact associated with the expenditures of the **University's international students** stood at **£101 million** (**10%**).

Table 2 Total economic impact associated with the University of York on York and North Yorkshire's economy in 2023-24 (£m and % of total)

Type of impact	£m	%
Impact of research and knowledge exchange	**£126m**	**13%**
Research activities	£78m	8%
Knowledge exchange activities	£47m	5%
Productivity spillovers*	-	-
Impact of the University's expenditure	**£469m**	**48%**
Operating and capital expenditure	£469m	48%
Impact of student expenditure	**£386m**	**39%**
UK domiciled students (from outside York and North Yorkshire)	£285m	29%
Non-UK domiciled students	£101m	10%
Total economic impact	**£980m**	**100%**

Note: All estimates are presented in 2023-24 prices, rounded to the nearest £1 million, and may not add up precisely to the totals indicated. The percentages show the proportion of total impact associated with each strand/sub-strand of analysis.
* The productivity spillovers associated with the University's research can only be estimated at UK level (but not at York and North Yorkshire level), due to a lack of existing literature that assesses productivity spillovers from research activities at a regional level. As a result, the impact on York and North Yorkshire likely constitutes an underestimate.
Source: London Economics' analysis

The impact on York and North Yorkshire in terms of **GVA** was estimated at **£598 million**, while the corresponding estimate in terms of employment stood at **8,645 FTE jobs**.

[4] GVA and employment estimates do not account for the impact of productivity spillovers, as those impacts can only be expressed in economic output terms.
[5] Note that the productivity spillovers associated with the University's research can only be estimated at UK level (but not at York and North Yorkshire level), due to a lack of existing literature that assesses productivity spillovers from research activities at a regional level. As a result, the impact on York and North Yorkshire likely constitutes an underestimate.
[6] In terms of student expenditure, the economic impact of the University's fee income from its students are implicitly included in the impact of the University's expenditures (so these expenditures are not included separately here, to avoid double-counting).
[7] Note that the expenditures of students coming to study at the University of York from anywhere in York and North Yorkshire (i.e. who were domiciled in York and North Yorkshire prior to starting their studies at the University) are excluded from the analysis, as these expenditures are considered to *not* be additional to the York and North Yorkshire economy or to the UK economy as a whole.

The impact of the University of York's research and knowledge exchange activities

To estimate the economic impact associated with the University of York's **research activities**[8], we used information on the total research-related income received by the University from Research England and other sources (e.g. UK Research Councils, central and local government, charities etc.) in 2023-24, which stood at **£139 million**. We then assessed the **direct, indirect, and induced economic impacts** associated with these activities using economic multipliers derived from a (multi-regional) Input-Output model. After accounting for **£109 million** of Exchequer costs (and adjusting for double-counting with other strands), the **net direct, indirect, and induced impact of the University of York's research** was estimated at **£132 million** in 2023-24.

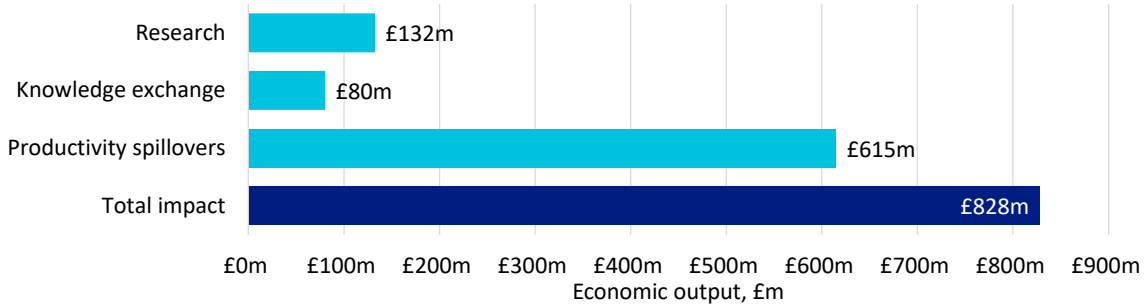
In addition, existing academic literature[9] finds strong evidence of **productivity spillovers** from public investment in university research. The analysis estimates that the total productivity spillovers associated with the University of York's research activities in 2023-24 stood at **£615 million**.

In addition to the University's research, the analysis estimated the direct, indirect, and induced impact associated with the University's **knowledge exchange activities**. These include **contract research** and **consultancy services** provided by the University; **business and community courses**; **facilities and equipment hire**; and **licensing of the University's IP** to other organisations. The analysis estimates that these knowledge exchange activities generated a total of **£80 million** of impact across the UK economy in 2023-24.

The combined economic impact associated with the University's research and knowledge exchange activities in 2023-24 was therefore estimated to be **£828 million** (see Figure 1), including an estimated **£126 million** in York and North Yorkshire.[10]

The impact in terms of **GVA** was estimated at **£126 million** across the UK economy as a whole, while the corresponding estimate in terms of employment stood at **2,020 FTE jobs** across the UK as a whole.

Figure 1 Total UK impact of the University of York's research activities in 2023-24, £m



Note: All values are presented in 2023-24 prices and rounded to the nearest £1 million. Totals may not sum due to rounding.
Source: London Economics' analysis

[8] Note that we do not include the impact of spinouts and start-up companies that are based on the University's research.
[9] See Haskel and Wallis (2010), and Haskel et al. (2014a).
[10] Of this total impact, only the direct, indirect and induced impacts of research and knowledge exchange activities (accounting for £213 million of economic impact) can be geographically disaggregated or provided in GVA and FTE employment terms.

The impact of the University of York's institutional expenditures

The physical footprint of the University of York also supports jobs and promotes economic growth throughout York and North Yorkshire's economy and the wider UK economy. This is captured by the direct, indirect, and induced impact associated with the **University's expenditures**. The **direct impact** of the University's physical footprint was based on its operating and capital expenditures. In the 2023-24 academic year, the University of York incurred a total of **£547 million** of expenditure (including **£511 million** of operating expenditure[11] and **£36 million** of capital expenditure). From this total, we deducted **£158 million** to avoid double-counting across other areas of economic impact, which resulted in a net direct impact of **£389 million**.

Again, the direct increase in economic activity resulting from the University of York's expenditures generates additional rounds of spending throughout the economy (through the University's supply chains and the spending of its staff). Applying relevant economic multipliers, the **total direct, indirect, and induced impact** associated with the University of York's expenditures in 2023-24 was estimated at **£794 million** (see Table 3). The majority of this impact (**£469 million**, **59%**) occurred in **York and North Yorkshire**, while the remainder (**£245 million**, **41%**) was accrued across the rest of the UK.

The impact in terms of **GVA** was estimated at **£452 million** across the UK economy as a whole, supporting an estimated **6,575 FTE jobs** across the UK as a whole.

Table 3 Economic impact associated with the University of York's expenditures in 2023-24

Type of impact	Output, £m	GVA, £m	# of FTE employees
York and North Yorkshire	£469m	£285m	4,375
Yorkshire and the Humber	£549m	£325m	4,975
Total UK	**£794m**	**£452m**	**6,575**

Note: All monetary values are presented in 2023-24 prices and rounded to the nearest £1 million. The employment figures are rounded to the nearest 5.

Source: London Economics' analysis

[11] The total operational expenditure (excluding capital expenditure, and after removing any movements in pension provisions) of the University of York in 2023-24 stood at **£545 million**. From this, for the purpose of the analysis, we excluded **£34 million** in depreciation costs (from non-staff expenditure) as it is assumed that these costs are not relevant from a procurement perspective (i.e. these costs are not accounted for as income by other organisations). This results in total operational expenditure of **£511 million** in 2023-24 included here.

The impact of the University of York's student expenditures

The University of York's students contribute to both the local and national economy through the impact of their living cost expenditures (e.g. including costs related to accommodation, subsistence, course-related purchases, and travel). To assess this, we again examine the impact of the **direct** injection of non-tuition fee income from domestic and international students into the economy, as well as the additional **indirect and induced impacts** of this income through supply chain and wage income effects. We assess the impact of UK domiciled students coming to study at the University from outside of York and North Yorkshire on *York and North Yorkshire's economy*, and the impact of the University's international students on *both the York and North Yorkshire and UK economies*. The analysis focuses on **20,985** relevant students undertaking qualifications at the University of York in the 2023-24 academic year (including **16,195** UK domiciled students from outside of York and North Yorkshire, and **4,790** international students[12]).

The total direct economic impact of the non-fee expenditures of University of York students in 2023-24 was estimated at **£318 million**. Of this total, **£235 million** was generated by the spending of UK domiciled students (from outside of York and North Yorkshire), which can only be considered as additional to the York and North Yorkshire (but not the UK) economy. The remaining **£83 million** was generated by the spending of non-UK domiciled students and can be considered as additional to the UK economy as a whole.

The total (direct, indirect, and induced) economic impact associated with this income was again estimated using relevant economic multipliers, identifying the extent to which the expenditures of the University's students generate additional activity throughout the York and North Yorkshire and UK economies. We thus estimate that the **total impact** on the **UK economy** generated by the non-fee income associated with international students at the University of York in 2023-24 amounts to **£161 million**, including **£101 million** generated in York and North Yorkshire. Adding the local impact of the spending of UK domiciled students from outside of York and North Yorkshire (**£285 million**), the total impact of student expenditure on the **York and North Yorkshire economy** was estimated at **£386 million** (see Table 4).

Table 4 Economic impact associated with the University of York students' expenditures in 2023-24 on York and North Yorkshire and the UK, by domicile

Location of impact and student domicile	Output, £m	GVA, £m	# of FTE employees
York and North Yorkshire			
UK domiciled students (outside York and North Yorkshire)	£285m	£173m	2,160
Non-UK domiciled students	£101m	£61m	765
Total	**£386m**	**£234m**	**2,930**
UK			
UK domiciled students (outside York and North Yorkshire)	-	-	-
Non-UK domiciled students	£161m	£94m	1,200
Total	**£161m**	**£94m**	**1,200**

Note: All monetary values are presented in 2023-24 prices and rounded to the nearest £1 million. The employment figures are rounded to the nearest 5. Totals may not sum due to rounding.
Source: London Economics' analysis

[12] We excluded **1,455** students from York and North Yorkshire, and **5** students for whom domicile information was not available.

The impact in terms of **GVA** was estimated at **£94 million** on the UK economy as a whole, with **£234 million** of impact on York and North Yorkshire. The corresponding estimates in terms of employment stood at **1,200 FTE jobs** across the UK as a whole and **2,930 FTE jobs** in York and North Yorkshire.

1 Introduction

London Economics were commissioned to assess the **economic impact of the University of York's activities on the York and North Yorkshire[13] and UK economies**, focusing on the 2023-24 academic year[14]. Specifically, the analysis focuses on the economic footprint of the University on a local and national level through three channels of impact, considering:

- The impact of the University of York's **research and knowledge exchange activities**;
- The impact of the University's **operating and capital expenditures**; and
- The impact of the **non-fee (i.e. living cost) spending** of the University's students.

The analysis excludes the impact of the University's teaching and learning activities[15] on boosting human capital and productivity across the UK, and therefore underestimates the total impact of the University's activities. Reflecting these channels of impact, the remainder of this report is structured as follows.

Section 2 focuses on the impact of the University of York's **research and knowledge exchange activities**. To estimate the impact of the research undertaken at the University, we combine information on the research-related income accrued by the University in 2023-24 with economic multipliers to estimate the direct, indirect, and induced impact associated with the University's research activities. We then use estimates from the wider economic literature on the extent to which public investment in research activity results in additional private sector productivity (i.e. positive 'productivity spillovers'). In addition, the analysis estimates the direct, indirect and induced impact of the University's knowledge exchange activities, including contract research provided by the University; consultancy services; business and community courses; facilities and equipment hire; and licensing of the University's intellectual property (IP) to other organisations.

Given that the University is a large employer and supports its wide-ranging activities through significant expenditures, the University's substantial physical footprint supports jobs and promotes economic growth throughout York and North Yorkshire and the wider UK economy. **Section 3** presents our estimates of the direct, indirect, and induced economic impacts associated with the **operating and capital expenditures incurred by the University** in the 2023-24 academic year.

Section 4 focuses on the economic impact of the expenditures of the University's domestic and international students, in terms of the **direct, indirect, and induced economic impacts generated by the expenditures of students** studying at the University in 2023-24. We consider the impact of domestic students on York and North Yorkshire's economy (only), and the impact of international students on both the York and North Yorkshire and UK economies.

Lastly, **Section 5** presents the **aggregate economic impact** of the University of York across its research, knowledge exchange activities, institutional expenditures, and student expenditures.

[13] Throughout this report, York and North Yorkshire refers to the area covered by the York and North Yorkshire Combined Authority. This area also aligns with the North Yorkshire International Territorial Level 2 (ITL2) area (for more information, see Office for National Statistics (2024)).
[14] This analysis follows our previous assessment of the University's economic, social, and cultural impacts which focused on the 2016-17 academic year. See London Economics (2018).
[15] Our previous assessment of the University's economic impact for the 2016-17 academic year estimated a teaching and learning impact of **£488 million** (in 2016-17 prices). See London Economics (2018).

2 The impact of the University of York's research and knowledge exchange activities

This section outlines our estimates of the **economic impact of the University of York's research and knowledge exchange activities**.[16]

2.1 The direct, indirect and induced impact of the University of York's research

In this section, we outline our analysis of the **economic impact of the University of York's research activities**, in terms of the research income accrued by the University (i.e. the direct impact) and the subsequent rounds of spending that this income generates across the economy (i.e. the indirect and induced impacts).

2.1.1 The University of York's research income in 2023-24

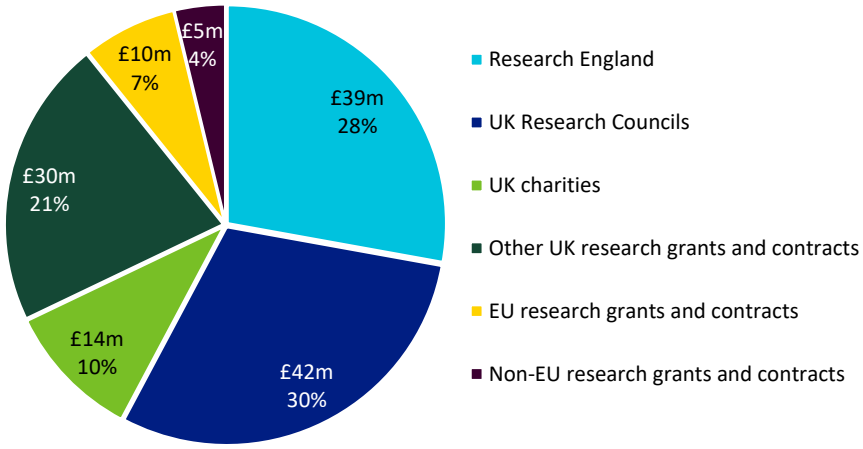
To estimate the **direct impact** generated by the University of York's research activities, we used data provided by the University on the total research-related income accrued by the University in the 2023-24 academic year. This includes:

- Income from **research grants and contracts** provided by:
  - **UK sources**, including the UK Research Councils; UK-based charities; central government bodies, local authorities, and health and hospital authorities; industry and commerce; and other UK sources;
  - **EU sources**, including government bodies, charities, industry and commerce, and other sources;
  - **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 University in the 2023-24 academic year stood at **£139 million** (see Figure 2).[17] Approximately **£39 million** (**28%**) of this income was received through recurrent research grant funding from **Research England**, with an additional **£42 million** (**30%**) received from the **UK Research Councils**, **£14 million** (**10%**) from **UK charities**, and **£30 million** (**21%**) from **other UK sources**.[18] In addition, in terms of funding from international sources, **£10 million** (**7%**) of the University's research-related income was derived from **EU research grants and contracts**, and the remaining **£5 million** (**4%**) was from **non-EU sources**.

[16] Note that we do not include the impact of spinouts and start-up companies that are based on the University's research.
[17] Note that, for the purposes of the analysis, we then adjust this income (i.e. the estimated direct impact of research) to avoid double-counting with knowledge exchange activities, and to deduct the public costs of these research activities (see Sections 2.1.2 and 2.1.3).
[18] This income from 'other UK sources' includes **£28 million** from UK central government bodies, local authorities, and health and hospital authorities; and **£2 million** from UK industry, commerce, and public corporations.

Figure 2 Research income received by the University of York in 2023-24, £m by source



Note: All values are presented in 2023-24 prices and rounded to the nearest £1 million.
Source: London Economics' analysis based on data provided by the University of York

2.1.2 Adjustment for double-counting with knowledge exchange activities

The **£139 million** of research income received by the University of York in 2023-24 includes the income generated by the University from its **collaborative research** and **contract research**.[19] However, the income from these two activities is *also* recorded separately within the Higher Education Statistics Agency's (HESA's) Higher Education Business and Community Interaction Survey (HE-BCI) data,[20] which was provided to us by the University and is used separately to estimate the economic impact associated with the University's knowledge exchange activities (described in further detail in Section 2.2).

Therefore, to avoid any double-counting between the estimated impact of the University's research activity (described in this section) and knowledge exchange activities (described in Section 2.2), we made the following adjustments:

- In terms of the University's income from **collaborative research**, we implicitly account for (publicly funded and cash) income from collaborative research within the **impact of the University's research**. We therefore do *not* take collaborative research income into account in the analysis of knowledge exchange activities. This income represents **£15 million** out of the **£139 million** of total research income received by the University in 2023-24.[21]
- In terms of **contract research**, we account for this activity within the impact of the University's knowledge exchange activities (see Section 2.2). Therefore, to avoid double-counting, we deduct **£21 million** of contract research income from the above total research-related income. We thus estimated that the *gross* **direct impact** (before

[19] Collaborative research involving public funding includes cash or in-kind contributions to research projects with material contributions from at least one external non-academic collaborator. Contract research meets specific research needs of external partners, excluding basic research council grants. The two activities are mutually exclusive.
[20] See Higher Education Statistics Agency (2024).
[21] The **£15 million** in collaborative research funding is made up of **£14.9 million** of public funding and **£0.5 million** of collaborative cash contributions. Note that any income in terms of in-kind contributions to collaborative research (**£2.8 million**) is excluded here, since these contributions do not represent a cash transaction for which we can robustly apply economic multipliers.

deducting public costs) associated with the University's research activity in 2023-24 stands at **£118 million**.

2.1.3 Total direct, indirect, and induced impact of the University of York's research activity

The analysis then assesses the total **direct, indirect, and induced economic impacts** on the UK economy associated with the University of York's research activity in 2023-24. While the direct impact reflects the research income that the University received in the 2023-24 academic year,[22] the indirect and induced effects reflect the chain reaction of subsequent rounds of spending throughout the economy, often referred to as a 'ripple effect'. These are defined as follows:

- **Indirect effect ('supply chain impacts')**: The University of York spends its research income on purchases of goods and services from suppliers, who in turn spend this revenue purchasing inputs to meet the University's demands. This results in a chain reaction of subsequent rounds of spending across industries, often referred to as a 'ripple effect'.
- **Induced effect ('wage spending impacts')**: The University of York's employees (supported by the University's research income) use their wages to purchase consumer goods and services within the economy. This in turn generates wage income for employees within the industries producing these goods and services, again leading to subsequent rounds of spending, i.e. a further 'ripple effect' throughout the economy as a whole.

The total of the direct, indirect, and induced effects constitutes the *gross* economic impact of the University's research activities. An analysis of the *net* economic impact ideally needs to account for two additional factors that potentially reduce 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 (i.e. within the UK).
- **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.[23]

The direct, indirect, and induced impacts are measured in terms of monetary economic output,[24] gross value added (GVA),[25] and full-time equivalent (FTE) employment supported.[26] In addition to measuring these impacts on the UK economy as a whole, the analysis is broken down by geographic region[27] and sector.

[22] Net of contract research income, as discussed above.
[23] It is important to note that, while the analysis (wherever possible) takes account of *leakage* (e.g. adjusting for the extent to which any additional income for supplying industries might be spent on imports of goods and services from outside the UK), the estimated impacts here are *not* adjusted for displacement or additionality (e.g. the extent to which the research income received by the University might otherwise have been used for other purposes by the organisations from which the income is received). Hence, our analysis effectively estimates the direct, indirect, and induced impacts associated with the University of York's research activity in *gross* terms.
[24] In this analysis, economic output is equivalent to income or expenditure (e.g. the direct research income that the University accrued in 2023-24).
[25] Gross value added is used in national accounting to measure the economic contribution of different industries or sectors and is defined as economic output minus intermediate consumption (i.e. minus the cost of goods and services used in the production process).
[26] Full-time equivalent jobs represent the total number of full-time jobs supported, accounting for part-time positions on an equivalent full-time basis.
[27] Specifically, the underlying analysis is broken down into the UK's 41 International Territorial Level 2 (ITL2) areas, based on 2021 ITL boundaries (for more information, see Office for National Statistics (2024)). The ITL classification was revised in 2025, but the 2021 boundaries are used as the underlying data required for the Input-Output analysis is based on the 2021 boundaries.

These impacts of the University of York's research activities were estimated using **economic multipliers** derived from Input-Output tables,[28] which measure the total production output of each industry in the UK economy, and the inter-industry (and intra-industry) flows of goods and services consumed and produced by each sector. In other words, these tables capture the degree to which different sectors within the UK economy are connected, i.e. the extent to which changes in the demand for the output of any one sector impact all other sectors of the economy. To be able to achieve a breakdown of the analysis by region, we developed a **multi-regional Input-Output model**, combining UK-level Input-Output tables (published by the Office for National Statistics[29]) with a range of regional-level data to achieve a granular breakdown by sector *and* region.[30]

To estimate the total direct, indirect, and induced impact, we apply the relevant average economic multipliers[31] derived from the Input-Output analysis associated with organisations in the government, health, and education sector in York and North Yorkshire.[32] These multipliers (for the impact on York and North Yorkshire, all of Yorkshire and the Humber, and the UK economy as a whole) are presented in Table 5.

Based on these estimates, in terms of economic output, we assume that every **£1 million** of research income accrued by the University of York generates a *total* of **£2.04 million** of impact throughout the UK economy (on average), of which **£1.20 million** is accrued in York and North Yorkshire (and **£1.41 million** is generated throughout the whole of Yorkshire and the Humber). In terms of employment, we assume that, for every **1,000** FTE staff employed directly by the University of York, a total of **1,740** staff are supported throughout the UK, of which **1,160** are supported in York and North Yorkshire (and a total of **1,320** are supported throughout the Yorkshire and the Humber region as a whole).

Table 5 Economic multipliers associated with the University of York's research activities

Location of impact	Output	GVA	FTE employment
York and North Yorkshire	1.20	1.18	1.16
Yorkshire and the Humber	1.41	1.35	1.32
Total UK	2.04	1.88	1.74

Note: All multipliers constitute Type II multipliers, defined as [Direct + indirect + induced impact]/[Direct impact].
Source: London Economics' analysis

In addition to the direct, indirect, and induced economic impacts associated with the University's research activities, a similar methodology is applied to estimate the direct, indirect, and induced economic effects associated with the University's knowledge exchange activities (see Section 2.2), operational and capital expenditures (see Section 3), and student expenditures (see Section 4). Further detail on the derivation of the economic multipliers can be found in Annex A2.1.

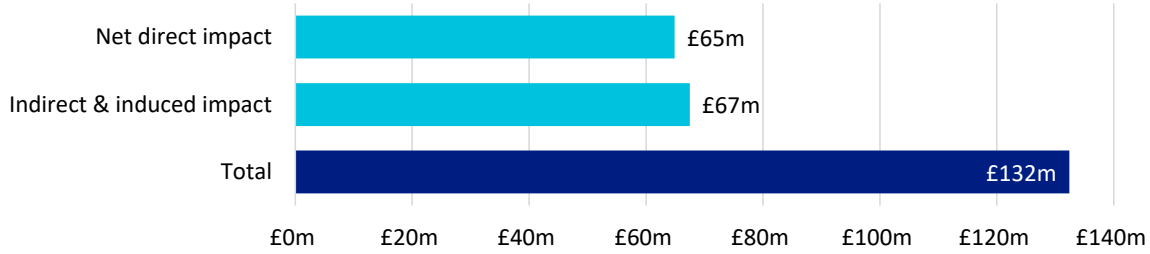
[28] Input-Output tables quantify the interdependencies between different sectors and regions of an economy by detailing the origin and destination of resource flows between each sector and region.
[29] See Office for National Statistics (2023d).
[30] See Annex A2.1 for more details on the Input-Output analysis.
[31] Specifically, the analysis makes use of Type II multipliers, defined as [Direct + indirect + induced impact]/[Direct impact].
[32] I.e. we assume that the expenditure patterns of the University of York are the same as for other institutions operating in York and North Yorkshire's government, health, and education sector.

Adjusting for public costs

To arrive at the ***net* total impact** of the University of York's research activities on the UK economy (**net of public costs**), we deducted the **costs to the public purse** of funding these activities. These public costs include the funding provided to the University by the UK Research Councils (**£42 million**), recurrent research grants provided by Research England (**£39 million**), and other research income from UK central government bodies, local authorities, and health and hospital authorities (**£28 million**).[33] These total public purse costs (**£109 million**) are deducted from the total direct, indirect, and induced impacts of research activity (estimated using the multipliers outlined above). As a result, the **direct, indirect, and induced impact** (net of public costs) associated with the University's research activity in 2023-24 was estimated at **£132 million** (see Table 6)[34], including **£78 million** generated in **York and North Yorkshire**, and **£91 million** occurring in **Yorkshire and the Humber** as a whole.

In terms of GVA and FTE employment, the total direct, indirect, and induced impact associated with the University of York's research was estimated at **£79 million** and **1,255** FTE jobs, respectively.[35]

Figure 3 Net direct, indirect, and induced impacts associated with the University of York's research income in 2023-24, £m



Note: Estimates are presented in 2023-24 prices, rounded to the nearest £1 million, and may not add up precisely to the totals indicated.
Source: London Economics' analysis

Table 6 Economic impact associated with the University of York's research activities in 2023-24

Type of impact	Output, £m	GVA, £m	# of FTE employees
York and North Yorkshire	£78m	£50m	835
Yorkshire and the Humber	£91m	£57m	950
Total UK	**£132m**	**£79m**	**1,255**

Note: All monetary values are presented in 2023-24 prices and rounded to the nearest £1 million. The employment figures are rounded to the nearest 5.
Source: London Economics' analysis

[33] This is included within the **£30 million** of income from 'other UK research grants and contracts' in Figure 2 (which also includes **£2 million** from UK industry, commerce and public corporations).
[34] With a (net) direct impact of **£65 million** (see Figure 3).
[35] To estimate the *direct* GVA and employment supported by the University's research income, we multiplied this income by the average ratio of GVA to output and FTE employees to output within York and North Yorkshire's government, health, and education sector (based on the above-described multi-regional Input-Output model). Again, this approach assumes that the expenditure patterns of the University of York are the same as for other institutions operating in York and North Yorkshire's government, health, and education sector. To estimate the *total direct, indirect, and induced* impacts in GVA and employment terms, we then applied the above-described economic multipliers (see Table 5).

2.2 Productivity spillovers associated with the University of York's research

In addition to the direct, indirect, and induced 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 induce (positive or negative) external effects on other agents in that market (which are not reflected in the price mechanism). In the context of research activities, existing academic literature assesses the existence and size of **positive productivity and knowledge spillovers**, where knowledge generated through the R&D 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.[36] 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.

In order to estimate the productivity spillovers associated with the University of York's research activities, we apply productivity spillover multipliers from the existing literature to the different types of research-related income received by the University in 2023-24 (see Figure 2 in Section 2.1). Specifically, we assign a multiplier of **12.7** to the University's research funding from **UK Research Councils and UK charities**[37] (amounting to **£56 million**), and a multiplier of **0.2** to **all other research funding** received by the University in 2023-24 (amounting to **£83 million**).[38]

The 12.7 multiplier is based on a key study by Haskel and Wallis (2010), while the 0.2 multiplier is based on a study by Haskel et al. (2014a). A recent publication for the Department for Science, Innovation and Technology (2024) replicates the Haskel et al. (2014a) approach (despite a number of significant data limitations and discontinuities within the key dataset on R&D expenditures in the UK). This paper uses more recent data than the Haskel et al. (2014a) study and makes use of a more granular breakdown of industries than was previously possible. The paper finds a somewhat higher productivity multiplier estimate than that found by Haskel et al. (2014a), of 0.4. However, this new estimate is not comparable with the Haskel et al. (2014a) estimate, as it refers to a rate of return of 40% after 6 years, rather than in the year in which the research was undertaken. The authors also highlight that data limitations mean that the results provided may be over-estimates. As a result, we (conservatively) still use the Haskel et al. (2014a) paper for the estimate of the rate of return on public sector research.

Using this approach, we infer a weighted average spillover multiplier associated with the University of York's research activities in 2022-23 of approximately **5.21** – i.e. **every £1 invested in the University of York's research activities generates additional annual economic output of £5.21 across the UK economy**. This captures the impact of the research undertaken by the University in 2023-24 within that same academic year, but excludes any additional (and likely substantial) impacts

[36] Note that there are also 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.

[37] Where the vast majority of funding provided by UK charities relates to projects commissioned through an open competitive process.

[38] 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.

in subsequent years[39]. Applying this weighted average multiplier to the gross direct impact of the University's research (i.e. **£118 million,** which is equivalent to the University's research income excluding contract research income)[40], we estimate that the research conducted by the University of York in 2023-24 resulted in **total market sector productivity spillovers** of **£615 million**.

2.3 Economic impact of the University of York's knowledge exchange activities

In addition to its research activities, the University of York generates economic impacts through a range of **knowledge exchange activities**. Specifically, we assess the impact of:

- **Contract research** undertaken by the University;
- **Consultancy services** provided by the University;
- **Licensing of the University's IP** to other organisations;
- **Business and community courses** offered by the University; and
- **Facilities and equipment hire**, and related activities.

Specifically, the analysis captures the direct, indirect, and induced economic impacts associated with these knowledge exchange activities, again using **economic multipliers** derived from the above-described Input-Output analysis (see Section 2.1.3 above for more detail).[41]

Again, in addition to the direct impact in **economic output terms** associated with each of these activities, we estimate the impact in **GVA** and **FTE employment terms**, by multiplying the direct output (in terms of University income) by the average ratios of GVA to output and of FTE employees to output among organisations within the government, health, and education sector located in York and North Yorkshire.[42]

The **direct impact** of the University of York's knowledge exchange activities is made up of **£7 million** of income from consultancy services, **£21 million** associated with contract research activities, **£3 million** associated with the hire of the University's research facilities, **£7 million** generated from business and community courses, and **£2 million** of IP licensing income. The total direct impact of these activities in 2023-24 therefore stood at **£39 million** (see Figure 4), with an associated impact in GVA terms of **£25 million**, supporting **435** FTE jobs.

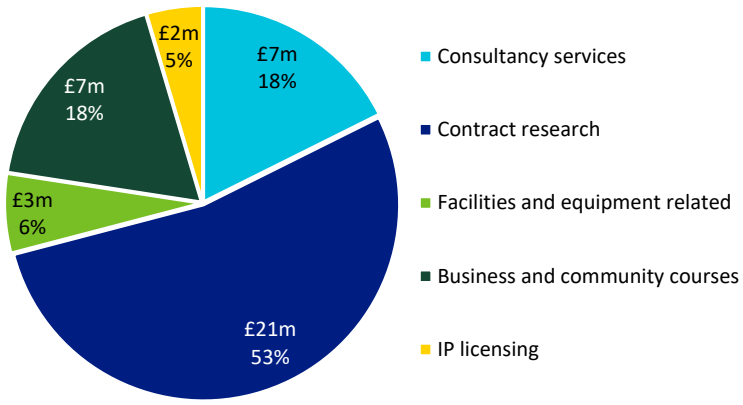
[39] Specifically, the 12.7 multiplier (based on the analysis by Haskel and Wallis (2010)) as well as the 0.2 multiplier (from Haskel et al. (2014a)) constitute the impact of research investment on *annual* UK economic output within a given year (and, in our analysis here, we use these multipliers to estimate the level of private sector spillovers occurring in 2023-24 associated with research undertaken by the University of York in 2023-24). However, we do *not* account for any subsequent productivity spillovers from this research that might occur in subsequent years (i.e. 2024-25 and beyond). For example, as outlined by Haskel et al. (2014a), based on their analysis, 'a one-off increase in public spending [on R&D] generates an infinitely-lived rise in the level of knowledge capital and so an infinitely-lived higher output' (see Haskel et al. (2014a), p. 48) – i.e. their findings suggest that every £1 spent on public R&D results in an additional *annual* output of £0.20 within the UK private sector *in perpetuity* (under their assumption that the public R&D knowledge stock does not depreciate, i.e. a 0% depreciation rate of public R&D; for more information, also see Haskel et al. (2014b)). Here, conservatively, we do *not* estimate any spillover effects in subsequent years, so that our analysis likely underestimates the total spillovers to the private sector associated with the research undertaken by the University in 2023-24.

[40] Note that by applying this weighted average multiplier, we implicitly assume that the source of the University of York's contract research income is representative of all other research income received by the University (in the absence of information related to the source of their contract research income).

[41] Note again that we do *not* include the impact of the University's spinout and startup companies within this analysis.

[42] This follows a similar approach as for the estimated impact of the University's research (see Section 2.1), and again assumes that the expenditure patterns of the University of York are the same as for other institutions operating in York and North Yorkshire's government, health, and education sector.

Figure 4 Income from knowledge exchange activities received by the University of York in 2023-24, £m by activity



Note: All values are presented in 2023-24 prices and rounded to the nearest £1 million.
Source: London Economics' analysis based on data provided by the University of York

To estimate the **total direct, indirect, and induced impacts** associated with these activities, we again multiplied these direct impacts by the estimated average economic multipliers associated with organisations in the government, health, and education sector in York and North Yorkshire. These multipliers are, therefore, the same as those used to estimate the direct, indirect, and induced impacts of the University's research, discussed in Section 2.1.3 above.

Table 7 presents the resulting **aggregate impact** associated with the University of York's **knowledge exchange activities**. The analysis estimates that, in 2023-24, these activities generated a total of **£80 million** of economic output across the UK economy (including **£47 million** generated in **York and North Yorkshire**, and **£56 million** occurring in **Yorkshire and the Humber** as a whole). The total GVA impact was estimated at **£48 million**, with an estimated **765 FTE jobs** supported across the UK economy.

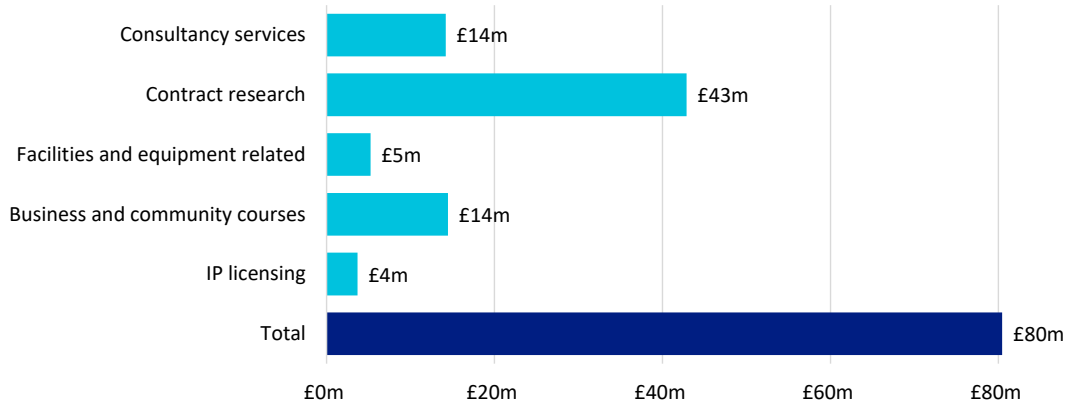
A breakdown of this aggregate impact (on the UK) by type of activity is presented in Figure 5.

Table 7 Economic impact associated with the University of York's knowledge exchange activities in 2023-24

Type of impact	Output, £m	GVA, £m	# of FTE employees
York and North Yorkshire	£47m	£30m	505
Yorkshire and the Humber	£56m	£34m	575
Total UK	**£80m**	**£48m**	**765**

Note: All monetary values are presented in 2023-24 prices and rounded to the nearest £1 million. The employment figures are rounded to the nearest 5.
Source: London Economics' analysis

Figure 5 Total economic impact associated with the University of York's knowledge exchange activities in 2023-24, £m (economic output) by activity



Note: All values are presented in 2023-24 prices and rounded to the nearest £1 million.
Source: London Economics' analysis

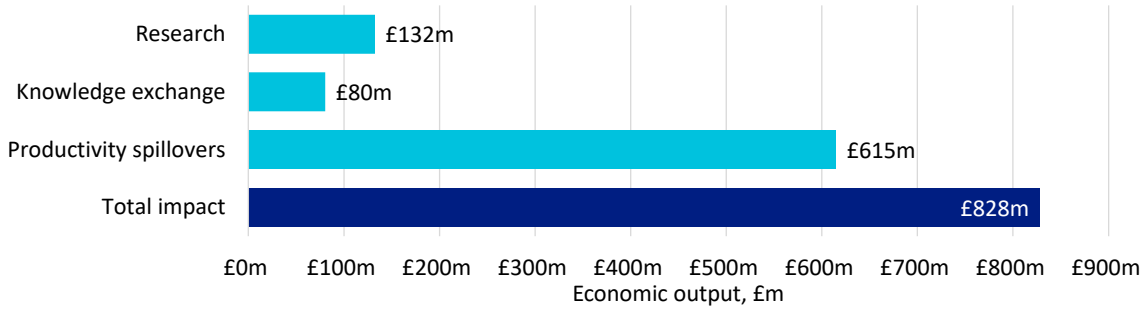
2.4 Total impact of the University of York's research and knowledge exchange activities

Combining the above estimates, the total impact on the UK economy associated with the University of York's research and knowledge exchange activities in 2023-24 was estimated to be approximately **£828 million** (see Figure 6).

Of this total impact, only the direct, indirect and induced impacts of research and knowledge exchange activities (accounting for **£213 million** of economic impact) can be geographically disaggregated or provided in GVA and FTE employment terms. The majority of this direct, indirect and induced impact was generated in York and North Yorkshire (**£126 million**, **59%**), with a further **£21 million** (**10%**) generated in the rest of Yorkshire and the Humber, and the remaining **£66 million** (**31%**) occurring in other regions across the UK.

The impact in terms of **GVA** was estimated at **£126 million** across the UK economy as a whole, while the corresponding estimate in terms of employment stood at **2,020 FTE jobs** across the UK as a whole.

Figure 6 Total impact of the University of York's research activities in 2023-24, £m



Note: All values are presented in 2023-24 prices and rounded to the nearest £1 million. Totals may not sum due to rounding.
Source: London Economics' analysis

3 The impact of the University of York's expenditures

In this section, we outline our estimates of the **direct, indirect, and induced impacts associated with the operational and capital expenditures of the University of York**. The **direct impact** considers the economic output generated by the University itself, by purchasing goods and services (including labour) from the economy in which it operates. Similar to the impact associated with the University's research and knowledge exchange activities (see Section 2), the **indirect and induced economic impacts** of the University's expenditures reflect the chain reaction of subsequent rounds of spending throughout the economy, i.e. a 'ripple effect'. Again, these impacts can be measured in terms of economic output, GVA, and FTE employment, and are derived using the relevant multipliers derived from the above-described multi-regional Input-Output model.

3.1 Direct impact of the University's expenditures

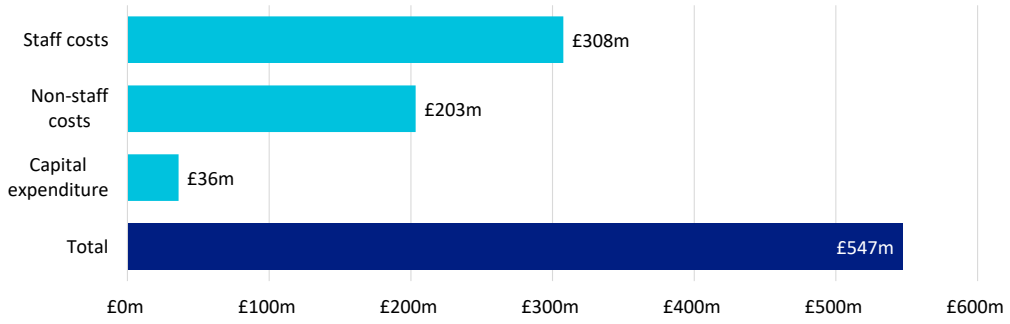
3.1.1 Gross direct impact of the University's expenditures

To measure the direct economic impact of the purchases of goods, services, and labour by the University of York, we used information on the University's operational expenditures (including staff and non-staff spending), capital expenditures, as well as the number of staff employed (in terms of full-time equivalent employees), for the 2023-24 academic year.[43]

Based on this, in terms of monetary economic **output** (measured in terms of expenditure), **the gross direct economic impact** associated with the University of York's expenditures stood at approximately **£547 million** in the 2023-24 academic year (see Figure 7). This includes **£308 million** of operating expenditure on staff related costs, **£203 million** of expenditure on other (non-staff) operating expenses,[44] as well as **£36 million** of capital expenditure incurred in that academic year.

In terms of staff, the University of York employed a total of **5,295** FTE staff in 2023-24, and the University's gross direct impact in terms of **GVA** stood at **£338 million**.

Figure 7 Gross direct economic impact (in terms of output) of the University of York's expenditure in 2023-24, by type of expenditure



Note: All estimates are presented in 2023-24 prices and rounded to the nearest £1m.
Source: London Economics' analysis based on the University of York's financial statements (University of York, 2024).

[43] Based on staff and financial data from the University of York's 2023-24 financial statements (see University of York, 2024).
[44] The total operational expenditure (excluding capital expenditure, and after removing any movements in pension provisions) of the University of York in 2023-24 stood at **£545 million**. From this, for the purpose of the analysis, we excluded **£34 million** in depreciation costs (from non-staff expenditure) as it is assumed that these costs are not relevant from a procurement perspective (i.e. these costs are not accounted for as income by other organisations). This results in total operational expenditure of **£511 million** in 2023-24 included here.

3.1.2 Net direct impact of the University's expenditures

Before arriving at the net direct impact associated with the University of York's expenditures, it is necessary to deduct certain income and expenditure items to avoid double-counting. Specifically, we deducted a total of **£158 million**, including:

- The total research income (excluding contract research income) received by the University in the 2023-24 academic year (**£118 million**), to avoid double-counting with the estimated impact of the University's activities (Section 2.1); and
- The University's income from its knowledge exchange activities (including contract research income) of **£39 million**, to avoid double-counting with the impact of the University's knowledge exchange activities (Section 2.2).

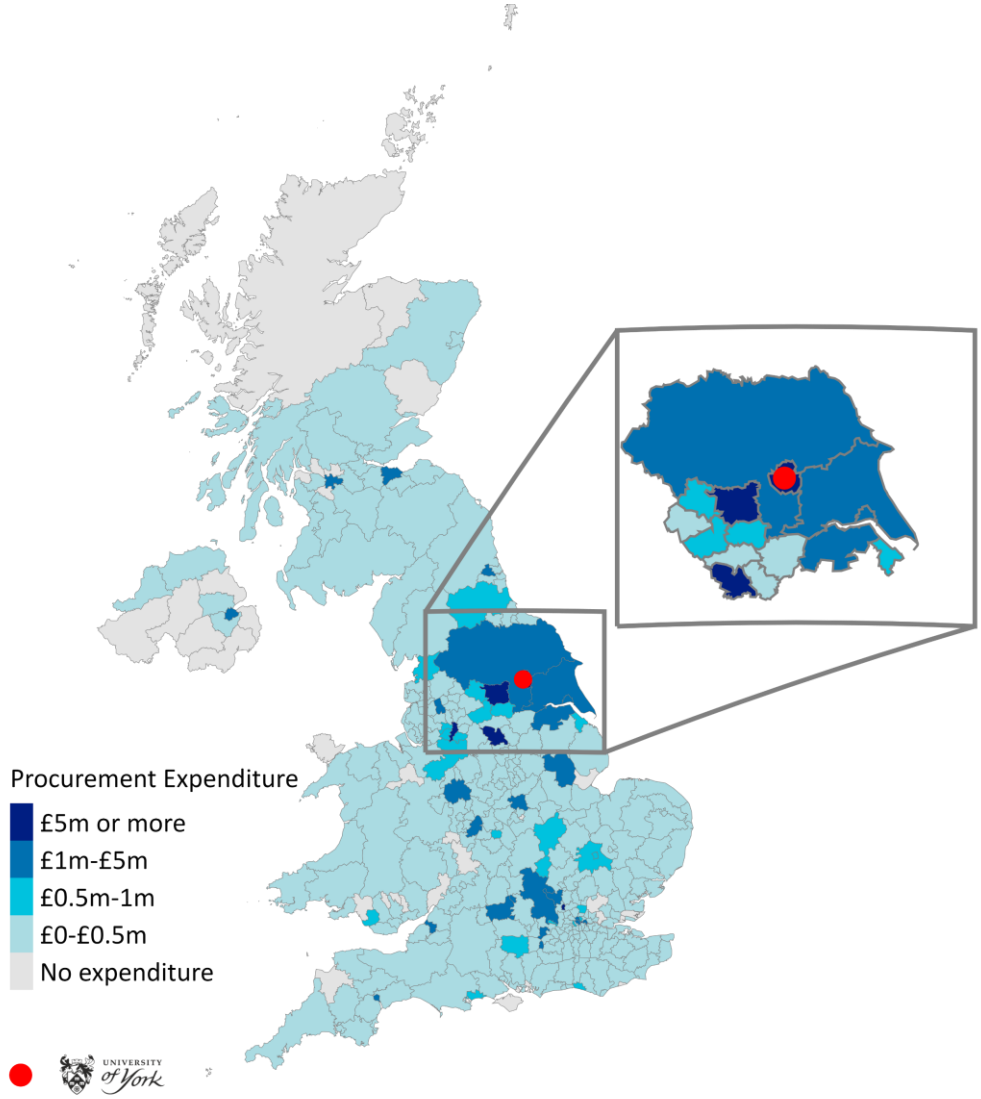
After accounting for these deductions, the net direct impact of the University of York's expenditures in 2023-24 stood at **£389 million**.

3.1.3 The University's geographical footprint

In addition to these total expenditures, we investigated the **geographical breakdown** of the University of York's procurement expenditures, to demonstrate the University's impact across York, North Yorkshire, and the rest of the UK.

Figure 8 presents the distribution of the University of York's UK procurement expenditure (based on invoice data for 2023-24) by Local Authority. The map illustrates a concentration of local procurement expenditure in **Yorkshire and the Humber** (**£58 million**, equivalent to approximately **36%** of total expenditure), with **10%** (**£17 million**) of all UK procurement expenditure taking place in **York and North Yorkshire**. Within York and North Yorkshire, the University of York spent approximately **£13 million** in **York** and **£4 million** in **North Yorkshire**. The University also spent significant amounts on goods and services from suppliers in other regions, including the **South East** (**12%** of UK procurement expenditure), **London** (**11%**), the **East of England** (**9%**), the **North West** (**8%**), and the **South West** (**7%**).

Figure 8 Distribution of the University of York's procurement expenditure in 2023-24 by Local Authority (of invoice address)



Note: We received data on the invoice postcodes associated with £168 million of procurement expenditure from the University of York. Of this total, we excluded expenditure records from outside of the UK or with an invalid postcode (with £8 million of associated expenditure). As a result of these exclusions, the figure is based on a total of £161 million of procurement expenditure. Totals may not add up precisely due to rounding.

Source: London Economics' analysis based on data from the University of York and the Office for National Statistics. Contains National Statistics, OS, Royal Mail, Gridlink, ONS, NISRA, NRS and Ordnance Survey data © Crown copyright and database right 2025.

3.2 Indirect and induced impacts of the University's expenditures

As with the economic impact of the University of York's research and knowledge exchange activities (see Section 2), the assessment of the indirect and induced economic impacts associated with the expenditures of the University is based on economic multipliers derived from the above-discussed multi-regional Input-Output model.[45] We again applied the estimated average economic multipliers associated with organisations in York and North Yorkshire's government, health, and education sector, which mirrors the approach used to assess the impact of the University's income derived from its research and knowledge exchange activities, since this income was accrued (and subsequently spent) by the University itself. Again, this approach asserts that the spending patterns of the University reflect the average spending patterns across organisations operating in York and North Yorkshire's government, health, and education sector. These multipliers are therefore the same as those presented in Table 5 above and are applied to the **net direct impact** of the University's expenditures.

3.3 Aggregate impact of the University of York's spending

Table 8 presents the estimated total direct, indirect, and induced impacts associated with the expenditures incurred by the University of York in the 2023-24 academic year (after the above-described adjustments have been made). The aggregate impact of these expenditures was estimated at approximately **£794 million** in economic output terms. The majority of this impact was generated in York and North Yorkshire (**£469 million**, **59%**), with a further **£80 million** (**10%**) generated in the rest of Yorkshire and the Humber, and the remaining **£245 million** (**31%**) occurring in other regions across the UK.

The impact in terms of **GVA** was estimated at **£452 million** across the UK economy as a whole, while the corresponding estimate in terms of employment stood at **6,575 FTE jobs** across the UK as a whole.

Table 8 Economic impact associated with the University of York's expenditures in 2023-24

Type of impact	Output, £m	GVA, £m	# of FTE employees
York and North Yorkshire	£469m	£285m	4,375
Yorkshire and the Humber	£549m	£325m	4,975
Total UK	**£794m**	**£452m**	**6,575**

Note: All monetary values are presented in 2023-24 prices and rounded to the nearest £1 million. The employment figures are rounded to the nearest 5.
Source: London Economics' analysis

[45] See Annex A2.1 for more information.

4 The impact of University of York students' expenditures

In this section, we provide estimates for the impact of the **non-tuition fee spending** (i.e. living cost expenditures) of the University of York's students in the 2023-24 academic year[46]. In addition to the **direct impact** of these expenditures (captured by the associated income accrued by organisations providing goods and services to the University's students), the analysis also estimates the **indirect and induced economic impacts** associated with this income. These again reflect the chain reaction of subsequent rounds of spending throughout the economy that are generated by this income, i.e. a 'ripple effect'. The analysis of these impacts follows a similar methodology to the one used to estimate the direct, indirect, and induced economic effects associated with the University's research and knowledge exchange activities (see Section 2) and operational and capital expenditures (see Section 3).

This analysis considers the impact of expenditures by both the University's international and domestic students, but treats their impacts differently to account for differences in the **additionality** of their spending to the UK economy:

- We consider the impact of the expenditure of **international students** on both York and North Yorkshire's economy and the UK economy as a whole. In other words, we assume that the spending of international students is **fully additional to the UK economy**, as we assume that those students would have been outside of the UK if they had not studied at the University of York.
- In contrast, we consider the impact of the expenditure of **domestic students to *not* be additional to the UK economy as a whole**, as we assume that those students would have otherwise been elsewhere in the UK if they had not studied at the University of York. However, for those domestic students coming to study at the University of York from **outside of York and North Yorkshire**, we consider their expenditure to be **additional to York and North Yorkshire's economy** (while displacing economic activity from elsewhere in the UK).

4.1 Direct impact of students' expenditures

The University's students' non-fee (i.e. living cost) expenditures incurred during their studies at the University of York[47] include:

- **Accommodation costs** (e.g., rent costs, council tax, household bills etc.);
- **Subsistence costs** (e.g., food, entertainment, personal items, non-course travel etc.);
- **Direct course costs** (e.g., course-related books, subscriptions, computers etc.);
- **Facilitation costs** (e.g., course-related travel costs); and
- **Spending on children** (including childcare that is not related to students' course participation).

To analyse the level of non-tuition fee expenditure associated with students undertaking qualifications at the University of York in 2023-24, we used estimates from the **2021-22 Student**

[46] In terms of the *fee* expenditure of the University's students, this is already implicitly accounted for in the impact of the University's operating and capital expenditures (as these tuition fees are accrued (and subsequently spent) by the University of York itself).
[47] Again, the economic benefits from the University's fee income from its students are implicitly included in the impact of the University's expenditures, covered in Section 3.

Income and Expenditure Survey (SIES).[48] The survey provides estimates of the average expenditures of English domiciled undergraduate students (studying in England or Wales) on living costs, housing costs, participation costs (including tuition fees) and spending on children, separately for full-time and part-time students. For this analysis, we made the following adjustments to the SIES estimates:

- We excluded estimates of **tuition fee expenditure** (to avoid double-counting with the analysis of the impacts of the expenditure of the University of York itself (see Section 3), as the University uses that tuition fee income to fund part of its expenditures).
- We deducted any **on-campus expenditure** that students might incur (again, to avoid double-counting with the analysis of the impacts of the expenditure of the University of York itself (see Section 3)).[49]
- We **uprated the estimates from 2021-22 to 2023-24 prices** using Consumer Prices Index (CPI) inflation.[50]
- Since the SIES results only provide expenditure estimates for English domiciled students, our analysis implicitly assumes that non-tuition fee expenditure levels do not vary significantly between English students, students from the rest of the UK, and international students. For international students, we do, however, adjust the SIES estimates for the expected **average stay durations** in the UK among international students.

Specifically, for **UK domiciled students** (regardless of study level), the analysis implicitly only accounts for the expenditures made by these students during the academic year (equivalent to 39 weeks per year) but excludes any expenditures outside of the academic year (as these expenditures would not be considered as *additional* to the economy). In contrast, following a similar approach as a study for the (former) Department for Business, Innovation and Skills (2011), for **international students**, we assume that **EU domiciled postgraduate** and **non-EU domiciled undergraduate and postgraduate students** spend a larger amount of time in the UK than prescribed by the duration of the academic year (39 weeks), on average (and these expenditures outside of the academic year are considered as *additional* to the UK economy).[51] Hence, we assume that all international postgraduate students (both EU and non-EU domiciled) spend 52 weeks per year in the UK (as they write their dissertations during the summer). Further, we assume that non-EU domiciled and EU domiciled undergraduate students spend an average of 42 and 39 weeks per year in the UK (respectively). The lower stay duration for EU undergraduate students reflects the expectation that these students, given the relative geographical proximity to their home countries and the resulting relative ease and low cost of transport, are more likely to return home during holidays. These assumptions are summarised in Table 9.

Table 9 Assumed average stay durations (in weeks per year) of students, by study level and domicile

Level of study	Domicile		
	UK	EU	Non-EU
Undergraduate	39	39	42
Postgraduate	39	52	52

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

[48] See National Centre for Social Research & Institute for Employment Studies (2023).
[49] Specifically, following the approach undertaken by Oxford Economics (2017) in analysing the collective economic impact of all UK higher education institutions in 2014-15, we assume that 10% of students' non-tuition fee expenditures are spent on campus (i.e. are accrued as income by the University of York itself).
[50] Based on Office for National Statistics (2025) CPI data.
[51] There may be significant variation around these assumed average stay durations depending on individual students' circumstances, such as location of origin, parental income etc.

Based on these assumptions, Table 10 presents the estimated non-tuition fee expenditure per student in the 2023-24 academic year, by domicile, level of study, and mode of study.

Table 10 Non-fee expenditure per University of York student in 2023-24, by level, mode, and domicile

Level of study	UK		EU		Non-EU	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Undergraduate	£14,000	£18,000	£14,000	£18,000	£15,000	£19,000
Postgraduate	£14,000	£18,000	£19,000	£24,000	£19,000	£24,000

Note: All estimates are presented in 2023-24 prices and rounded to the nearest £1,000.
Source: London Economics' analysis

We combined these estimates of non-fee expenditure per student with the number of relevant students studying at the University of York (including both new and continuing students) in 2023-24 by study level, mode, and domicile.[52] As outlined above, we consider all non-UK domiciled students in our analysis, as well as UK domiciled students that originate from *outside of York and North Yorkshire*.[53] Table 11 presents a breakdown of the **20,985** relevant students studying at the University of York in the 2023-24 academic year, by domicile, level of study, and mode of study.

Table 11 Students originating outside of York and North Yorkshire studying at the University of York in 2023-24, by level, mode, and domicile

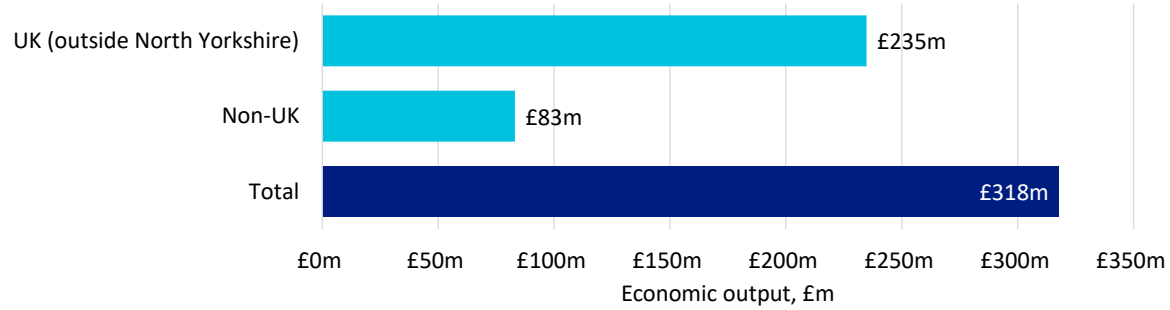
Level and mode of study	Domicile			
	UK *(outside York and North Yorkshire)*	EU	Non-EU	Total
Full-time				
Undergraduate	12,930	85	1,800	**14,815**
Higher degree (taught)	535	5	2,310	**2,850**
Higher degree (research)	580	0	460	**1,040**
Total	**14,045**	**90**	**4,570**	**18,705**
Part-time				
Undergraduate	70	0	25	**95**
Higher degree (taught)	1,895	5	85	**1,985**
Higher degree (research)	185	0	15	**200**
Total	**2,150**	**5**	**125**	**2,280**
Total				
Undergraduate	13,000	85	1,825	**14,910**
Higher degree (taught)	2,430	10	2,395	**4,835**
Higher degree (research)	765	0	475	**1,240**
Total	**16,195**	**95**	**4,695**	**20,985**

Note: All numbers are rounded to the nearest 5, and the total values may not add up precisely due to this rounding. UK domiciled students *exclude* any students originating from York and North Yorkshire, based on HESA's definition of domicile.
Source: London Economics' analysis based on HESA data provided by the University of York

[52] Note that this approach differs to the methodology used in our previous analysis for the University of York (see London Economics, 2018), where we modelled the spending of a cohort of first-year University of York students across the entire duration of these students' higher education courses.
[53] In total, we therefore excluded **1,455** students that were domiciled in York and North Yorkshire, and **5** students for whom domicile information was not available.

The resulting total direct economic impact of the non-fee expenditures of University of York students in 2023-24 (in economic output terms) was estimated at **£318 million** (see Figure 9). Of this total, **£235 million** was generated by the spending of UK domiciled students (from outside of York and North Yorkshire), which can only be considered as additional to the York and North Yorkshire (but not the UK) economy. The remaining **£83 million** was generated by the spending of non-UK domiciled students and can be considered as additional to the UK economy as a whole.

Figure 9 Total direct impact associated with the non-fee expenditure of University of York students in 2023-24, by student domicile



Note: All monetary estimates are presented in 2023-24 prices and rounded to the nearest £1m. UK domiciled students exclude any students originating from York and North Yorkshire, based on HESA's definition of domicile.
Source: London Economics' analysis

4.2 Total economic impact associated with students' expenditures

To estimate the total (direct, indirect, and induced) economic impact associated with the non-fee expenditures of the University of York's students, we again used economic multipliers derived from the above-described multi-regional Input-Output model (see Section 2.1), estimating the extent to which the direct income generated by the University's students results in additional activity throughout the York and North Yorkshire and UK economies. Specifically, we used multipliers based on the final consumption expenditure patterns of households located in York and North Yorkshire[54] and applied them to the estimated off-campus non-tuition fee expenditures of the University's students in the 2023-24 academic year.

Again, these multipliers are expressed in terms of **economic output, GVA**, and **FTE employment**, and are calculated as **total multipliers**[55], capturing the aggregate impact on all industries in the UK economy arising from an initial injection relative to that initial injection. For international student expenditure, we used multipliers for the impact on the UK as a whole, whereas for domestic student expenditure (for UK domiciled students from outside of York and North Yorkshire), we used multipliers only for the impact on York and North Yorkshire itself. Table 12 presents the economic multipliers applied to the expenditures of students at the University of York (in terms of the impact on York and North Yorkshire, Yorkshire and the Humber, and the UK economy as a whole).

[54] In other words, for the purpose of applying relevant economic multipliers, we assume that students studying at the University of York have similar expenditure patterns as households in York and North Yorkshire more generally. To estimate these multipliers, we inserted a separate vector into the multi-regional Input-Output model, capturing the estimated final demand (again by industry and region) of households located in each ITL2 region.
[55] i.e. Type II multipliers.

Table 12 Economic multipliers associated with the non-tuition fee expenditure of University of York students

Location of impact	Output	GVA	FTE employment
York and North Yorkshire	1.21	1.22	1.22
Yorkshire and the Humber	1.39	1.37	1.41
Total UK	1.93	1.87	1.92

Note: All multipliers constitute Type II multipliers, defined as [Direct + indirect + induced impact]/[Direct impact].
Source: London Economics' analysis

Applying the relevant multipliers to the above direct impacts, we estimate the total economic impact on the UK generated by the non-tuition fee expenditure of the University of York's **international students** in 2023-24 to be **£161 million** in **economic output** terms (see Table 13), of which **£101 million** was generated in York and North Yorkshire. In addition, we estimate the total economic impact on York and North Yorkshire of spending by the University's **UK domiciled students (from outside of York and North Yorkshire)** in 2023-24 to be **£285 million** (but with no corresponding impact on the UK economy, due to the above-described additionality considerations). Combining these results leads to a total estimated benefit of the University of York's student expenditure in 2023-24 of **£161 million** on the UK economy as a whole and **£386 million** on the York and North Yorkshire economy.

The impact in terms of **GVA** was estimated at **£94 million** on the UK economy as a whole, with **£234 million** of impact on York and North Yorkshire.[56] The corresponding estimates in terms of employment stood at **1,200 FTE jobs** across the UK as a whole and **2,930 FTE jobs** in York and North Yorkshire.

Table 13 Economic impact associated with University of York students' expenditures in 2023-24 on York and North Yorkshire and the UK, by domicile

Location of impact and student domicile	Output, £m	GVA, £m	# of FTE employees
York and North Yorkshire			
UK domiciled students (outside York and North Yorkshire)	£285m	£173m	2,160
Non-UK domiciled students	£101m	£61m	765
Total	**£386m**	**£234m**	**2,930**
UK			
UK domiciled students (outside York and North Yorkshire)	-	-	-
Non-UK domiciled students	£161m	£94m	1,200
Total	**£161m**	**£94m**	**1,200**

Note: All monetary values are presented in 2023-24 prices and rounded to the nearest £1 million. The employment figures are rounded to the nearest 5. Totals may not sum due to rounding.
Source: London Economics' analysis

[56] To estimate the direct GVA and employment associated with the non-tuition fee expenditure of the University's students, we multiplied this expenditure by the average ratio of GVA to output and FTE employees to output associated with the expenditure of households located in York and North Yorkshire (again based on the above-described multi-regional Input-Output model). In other words, we assume that the non-tuition fee expenditures of the University of York's students support the same levels of GVA and employment (in relative/proportionate terms) as the expenditure of households located in York and North Yorkshire more generally.

5 The total economic impact of the University of York's activities in 2023-24

Finally, in this section, we present the total impact of the University's activities in the 2023-24 academic year on the UK economy as a whole (Section 5.1) and on York and North Yorkshire's economy (Section 5.2). The analysis excludes the impact of the University's teaching and learning activities[57] on boosting human capital and productivity across the UK and therefore underestimates the total impact of the University's activities.

5.1 Impact on the UK

Combining the above strands of analysis, the total economic impact on the UK economy associated with the University of York's research, knowledge exchange activities, institutional expenditures, and student expenditures in the 2023-24 academic year was estimated at approximately **£1.17 billion** (see Table 14). In terms of the components of this impact:

- The direct, indirect and induced economic impact of the University's **research and knowledge exchange activities** stood at **£213 million** (**12%**);
- The economic impact generated by productivity spillovers associated with the University's **research activities** stood at **£615 million** (**34%**);
- The impact associated with the University's **institutional expenditures** stood at **£794 million** (**45%**); and
- The impact associated with the expenditures of the **University's international students** stood at **£161 million** (**9%**).[58]

Table 14 Total economic impact associated with the University of York on the UK economy in 2023-24 (£m and % of total)

Type of impact	£m	%
Impact of research and knowledge exchange	**£828m**	**46%**
Research activities	£132m	7%
Knowledge exchange activities	£80m	5%
Productivity spillovers	£615m	34%
Impact of the University's expenditure	**£794m**	**45%**
Operating and capital expenditure	£794m	45%
Impact of student expenditure	**£161m**	**9%**
UK domiciled students (from outside York and North Yorkshire)	-	-
Non-UK domiciled students	£161m	9%
Total economic impact	**£1,783m**	**100%**

Note: All estimates are presented in 2023-24 prices, rounded to the nearest £1 million, and may not add up precisely to the totals indicated. The percentages show the proportion of total impact associated with each strand/sub-strand of analysis.
Source: London Economics' analysis

[57] Our previous assessment of the University's economic impact for the 2016-17 academic year estimated a teaching and learning impact of **£488 million** (in 2016-17 prices). See London Economics (2018).
[58] As discussed above (see Section 4), we do not consider any impact of UK domiciled students' spending on the UK economy, as these expenditures are not considered to be additional to the UK economy.

The impact of these activities on the UK economy in terms of **GVA** was estimated at **£672 million**, while the corresponding estimate in terms of employment stood at **9,795 FTE jobs**.[59]

5.2 Impact on York and North Yorkshire

The total economic impact on **York and North Yorkshire's economy** associated with the University's research, knowledge exchange activities, institutional expenditures, and student expenditures in the 2023-24 academic year was estimated at approximately **£980 million** (see Table 15). In terms of the components of this impact:

- The direct, indirect and induced economic impact of the University's **research and knowledge exchange activities** stood at **£126 million** (**13%**);[60]
- The impact associated with the University's **institutional expenditures** stood at **£469 million** (**48%**);
- The impact generated by the expenditures of the **University's UK domiciled students (from outside of York and North Yorkshire)** stood at **£285 million** (**29%**); and
- The impact associated with the expenditures of the **University's international students** stood at **£101 million** (**10%**).

Table 15 Total economic impact associated with the University of York on York and North Yorkshire's economy in 2023-24 (£m and % of total)

Type of impact	£m	%
Impact of research and knowledge exchange	**£126m**	**13%**
Research activities	£78m	8%
Knowledge exchange activities	£47m	5%
Productivity spillovers*	-	-
Impact of the University's expenditure	**£469m**	**48%**
Operating and capital expenditure	£469m	48%
Impact of student expenditure	**£386m**	**39%**
UK domiciled students (from outside York and North Yorkshire)	£285m	29%
Non-UK domiciled students	£101m	10%
Total economic impact	**£980m**	**100%**

Note: All estimates are presented in 2023-24 prices, rounded to the nearest £1 million, and may not add up precisely to the totals indicated. The percentages show the proportion of total impact associated with each strand/sub-strand of analysis.
* The productivity spillovers associated with the University's research can only be estimated at UK level (but not at York and North Yorkshire level), due to a lack of existing literature that assesses productivity spillovers from research activities at a regional level. As a result, the impact on York and North Yorkshire likely constitutes an underestimate.
Source: London Economics' analysis

The impact on York and North Yorkshire in terms of **GVA** was estimated at **£598 million**, while the corresponding estimate in terms of employment stood at **8,645 FTE jobs**.

[59] GVA and employment estimates do not account for the impact of productivity spillovers, as those impacts can only be expressed in economic output terms.
[60] Note that the productivity spillovers associated with the University's research can only be estimated at UK level (but not at York and North Yorkshire level), due to a lack of existing literature that assesses productivity spillovers from research activities at a regional level. As a result, the impact on York and North Yorkshire likely constitutes an underestimate.

Index of Tables and Figures

Tables

Figures

ANNEXES

Annex 1 References

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Annex 2 Technical annex

A2.1 Multi-regional Input-Output tables

A2.1.1 Derivation of economic multipliers from multi-regional Input-Output tables

This section provides further detail on the economic multipliers utilised in this analysis, as first introduced in Section 2.1.3. The economic multipliers are calculated based on the UK's 41 International Territorial Level 2 (ITL2) regions.[61]

The multi-regional Input-Output analysis is undertaken by 'regionalising' UK Input-Output tables for 2019 (see Office for National Statistics (2023d)).[62] This technique relies on the assumption that there is 'common technology' (i.e. identical input structures) across all regions. In other words, for each unit of output produced by a sector, the analysis assumes that the same number of units of input from each supplying sector are required, regardless of the region that the producing sector is located in.[63] However, a region's producing sector may not be able to source all of its required inputs from its own region's supplying sectors. The extent to which firms source production inputs from within their *own* regions is determined using Flegg Location Quotients,[64] which are based on employment data by sector and ITL2 region (see Nomis, 2023). Trade *between* different regions is then determined using a gravity model,[65] based on the distance between each of the ITL2 regions, whether regions border each other, and the size (measured in GVA) of the supplying and producing sectors (based on GVA data by sector and region (Office for National Statistics, 2023a)).

The multi-regional Input-Output analysis also relies on a wide range of other data, including data on GVA components by sector and ITL2 region (Office for National Statistics, 2023a); employment by sector and ITL2 region (Nomis, 2023); gross disposable household income by ITL2 region (Office for National Statistics, 2022d); total household income by ITL2 region (Office for National Statistics, 2022d); total residents by Local Authority (converted to ITL2 regions) (Office for National Statistics, 2022b); mean weekly total paid hours worked by industry, for full-time vs. part-time employees (Office for National Statistics, 2022a); employed residents by Local Authority of usual residence and workplace (converted to ITL 2 regions) (Nomis, 2014); and UK imports into each ITL2 region and exports by each ITL2 region by sector, separately for goods and services (Office for National Statistics, 2023b and 2023c).

In terms of sector breakdown, the original UK-level Input-Output tables are broken down into 105 relatively granular sectors. However, the wide range of regional-level data required to generate the multi-regional Input-Output model is not available for such a granular sector breakdown. Instead,

[61] For more information, see Office for National Statistics (2024). The classification is based on the ITL boundaries established as of January 2021.
[62] While more recent UK Input-Output tables have been published (for 2020 and 2021), they are affected by the impact of the Covid-19 pandemic, so 2019 tables are used instead to be more reflective of a 'typical' year (see Office for National Statistics (2022c) and Office for National Statistics (2023d) for more details).
[63] i.e. all firms within a given industry (irrespective of their region) use the same production techniques and have the same input structures to produce their outputs. This assumption helps simplify the Input-Output analysis, by treating each industry as if it were a single, homogeneous entity.
[64] See Flegg & Tohmo (2014) and Flegg et al. (2021) for more detail on the implementation of Flegg Location Quotients. Similar location quotient techniques have been used to generate other Input-Output tables in the UK for different regions, such as for London (see GLA Economics (2019)) and the Glasgow City Region (see Hermannsson (2016)).
[65] Based on the specification and parameters given by Jahn (2016) and Jahn et al. (2020).

the multi-regional Input-Output model is broken down into 10 more high-level sector groups (see Table 16 below).

While Input-Output analyses are a useful tool to assess the total economic impacts generated by a wide range of activities, it is important to note several key limitations associated with this type of analysis. For example:

- Input-Output analyses assume that inputs are complements, and that there are constant returns to scale in the production function (i.e., that there are no economies of scale). The interpretation of these assumptions is that the prevailing breakdown of inputs from all sectors (employees, and imports) is a good approximation of the breakdown that would prevail if total demand (and therefore output) were marginally different.
- Input-Output analyses do not account for any price effects resulting from a change in demand for a given industry/output.
- Input-Output models are 'static' in nature, in the sense that they assume fixed relationships between inputs and outputs, not accounting for changes in technology, prices, or production methods over time.
- Given the complexity of the analysis and reliance on a wide range of industry-level data, the sectors included within Input-Output models are often highly aggregated, therefore masking likely differences between different industries.
- Input-Output models typically do not account for potential supply constraints, i.e. they assume that overall supply can meet any level of demand.

A2.1.2 Industry classifications for multi-regional Input-Output analysis

Table 16 provides an overview of the high-level industry classifications used throughout the multi-regional Input-Output analysis.

Table 16 Industry grouping used as part of the multi-regional Input-Output analysis

Industries included in original UK Input-Output table	High-level industry group [and UK SIC Codes]
Crop and animal production, hunting and related service activities	Agriculture [1-3]
Forestry and logging	
Fishing and aquaculture	
Mining and quarrying	Production [5-39]
Manufacture of food products, beverages, and tobacco products	
Manufacture of textiles, wearing apparel and leather products	
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	
Manufacture of paper and paper products	
Printing and reproduction of recorded media	
Manufacture of coke and refined petroleum products	
Manufacture of chemicals and chemical products	
Manufacture of basic pharmaceutical products and pharmaceutical preparations	
Manufacture of rubber and plastic products	
Manufacture of other non-metallic mineral products	
Manufacture of basic metals	
Manufacture of fabricated metal products, except machinery and equipment	
Manufacture of computer, electronic and optical products	
Manufacture of electrical equipment	
Manufacture of machinery and equipment n.e.c.	
Manufacture of motor vehicles, trailers and semi-trailers	
Manufacture of other transport equipment	

Industries included in original UK Input-Output table	High-level industry group [and UK SIC Codes]
Manufacture of furniture; other manufacturing	
Repair and installation of machinery and equipment	
Electricity, gas, steam, and air conditioning supply	
Water collection, treatment and supply	
Sewerage; waste collection, treatment, and disposal activities; materials recovery; remediation activities and other waste management services	
Construction	Construction [41-43]
Wholesale and retail trade and repair of motor vehicles and motorcycles	Distribution, transport, hotels, and restaurants [45-56]
Wholesale trade, except of motor vehicles and motorcycles	
Retail trade, except of motor vehicles and motorcycles	
Land transport and transport via pipelines	
Water transport	
Air transport	
Warehousing and support activities for transportation	
Postal and courier activities	
Accommodation and food service activities	
Publishing activities	Information and communication [58-63]
Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	
Telecommunications	
Computer programming, consultancy and related activities; information service activities	
Financial service activities, except insurance and pension funding	Financial and insurance [64-66]
Insurance, reinsurance and pension funding, except compulsory social security	
Activities auxiliary to financial services and insurance activities	
Real estate activities excluding imputed rents	Real estate [68.1-2-68.3]
Imputed rents of owner-occupied dwellings	
Legal and accounting activities; activities of head offices; management consultancy activities	Professional and support activities [69.1-82]
Architectural and engineering activities; technical testing and analysis	
Scientific research and development	
Advertising and market research	
Other professional, scientific, and technical activities; veterinary activities	
Rental and leasing activities	
Employment activities	
Travel agency, tour operator reservation service and related activities	
Security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities	
Public administration and defence; compulsory social security	Government, health & education [84-88]
Education	
Human health activities	
Social work activities	
Creative, arts and entertainment activities; libraries, archives, museums, and other cultural activities; gambling and betting activities	Other services [90-97]
Sports activities and amusement and recreation activities	
Activities of membership organisations	
Repair of computers and personal and household goods	
Other personal service activities	
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	

Note: 'n.e.c.' = not elsewhere classified

Source: London Economics' analysis, based on Office for National Statistics (2023d) and UK SIC Codes (see Office for National Statistics, 2022e)

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