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## About the project

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This technical appendix is a supplement to the ISC research paper “Universities and Colleges and the Industrial Strategy: Exploring data on knowledge exchange, research and skills,” and to the accompanying data visualisations.

The main report focuses on the following areas:

**Knowledge exchange.** Knowledge exchange is the action of sharing knowledge between education institutions and partner organisations and turning this into impact in society and the economy.<sup>1</sup>

**Research and innovation.** Interrelated with knowledge exchange, research and innovation data is used to explore:

- where funding is allocated to industry-focused research at UK higher education providers;
- institutional and regional research strengths and sectorial specialisation;
- how sector research, through business collaborations, helps to address the Grand Challenges.

**Skills development.** This project explores the education sector in the context of the UK’s ambitions to support business performance. Data for this project is used to consider:

- regional graduate retention;
- the skills required by industries and UK regions, and how far graduates address these skills shortages.

The report and accompanying visualisations were developed prior to the COVID-19 outbreak. Therefore, this project does not look to answer questions regarding the contributions to short-term management or longer-term recovery from this virus, or discuss evidence of how universities and colleges have already engaged in activities responding to the issues arising. Further, the report does not discuss the potential impact of Brexit

This appendix will provide further details about data sources, methodology, and important background to the areas discussed in the main report. This will contextualise the work and provide additional information for interpreting the findings.

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<sup>1</sup> GuildHE,



level, while some visualisations show the ten higher education providers with the highest selected value.

Table 1: Nomenclature of Territorial Units for Statistics (NUTS) (source: ONS)<sup>4</sup>

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<b>NUTS Level</b>	<b>1</b>	<b>2</b>	<b>3</b>
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survey gathers data from higher education providers on their activities such as business generation, collaborative research, community engagement and intellectual property. Regional data totals are aggregates of the institutional data. Data is presented in its original form, however assessments such as the Knowledge Exchange Framework normalise data for institution size by income, or factor in academic full-time equivalent staff.

The creation of **Knowledge Transfer Partnerships**, which are three-way partnerships between a university, a business and a graduate.

Data is not presented on all activities that universities undergo. Unless otherwise specified, the exclusion of a knowledge exchange activity should be interpreted as an indication that insufficient data was available, rather than a value judgement about the activity. For example, many university-business interactions are informal





knowledge-



intra-regional partnerships can foster trust and shared vision in a local economy which supports firm development.<sup>31</sup> Local and extra-local partnerships help to support regional firm innovation, reinforcing the contributions of diverse partnerships.

Box 3: Local and extra-local collaboration – Knowledge Transfer Partnerships

**Local and extra-local collaboration: Knowledge Transfer Partnerships**

Using the KTP scheme as an example, we can demonstrate the role of local and extra-local

Findings also support other work which has found that, by the metric of turnover, the graduates of teaching-led universities tend to produce more successful start-ups than those from research-focussed institutions.<sup>34</sup> This holds true despite significantly lower external investment in these start-ups. The OECD also



implications for local engagement. Smaller firms are more likely to engage with less research-intensive universities and more likely to work with specialist institutions.<sup>39</sup> They are also more likely to partner with local universities, and to use more routine services such as consultancy.<sup>40</sup> Small businesses in particular benefit from collaborating with universities: for example, firms which participate in these activities are substantially more likely to introduce new-to-market innovations.<sup>41</sup> Previous literature has identified that University-SME collaborations are “facilitated by the ability of actors to exploit shared connections in terms of networks and languages” and could result in broader benefits for SMEs such as a “means for







data on Knowledge Transfer Partnerships and the ISCF, which has been removed to avoid duplication within the project. This dataset was accessed in March 2020.



Strategy. An industrial focus can be maintained by using funding data directly linked to the Industrial Strategy or similar industrial priorities. This also captures activity in very recent years, reflecting a more up-to-date picture of universities' activities and direct collaborations with businesses than some other approaches allow.

Furthermore, using funding data allows for direct comparison between allocations to universities and businesses from the same funding pot and with the same industrial focus, allowing for analysis of regional tendencies and any correspondences between academic and business funding.

The limitations of using funding data are acknowledged. Funding data shows which organisations choose to engage with the priorities of this funding pot and are successful in submitting competitive bids for funding. This excludes institutions engaging with high-quality research relevant to the Industrial Strategy which have garnered project funding from elsewhere. There is also a degree of path dependency in funding data, meaning that institutions which have previously been successful in securing grant funding are more likely to be successful doing so in the future.<sup>64</sup> This means that funding data can highlight institutions which are particularly successful in securing grants, rather than equitably highlighting the contributions of all institutions. Funding data is also innately input-focussed, rather than capturing the outputs from universities. This means that it cannot directly demonstrate the work being d22 576.1 adis

Industrial Strategy Council:





Skill shortages in certain industries/sectors and regional disparities in skills and education are further key challenges to the Strategy's objectives with regards to people and work in the UK. For this reason, visualisations were developed with the available open data to present the contributions of university graduates entering the labour force, seeking to identify examples of contributions graduates make to meeting regional and industry demand for high-skilled employees. The key questions were as follows:

**To what extent are regions able to retain their graduates?** This section explores the regional movement of graduates in terms of where they study. It also covers regional patterns in retention, in line with attempts to rebalance to local growth and productivity.

**What are the key skills required by industry and local areas and how far do graduates meet these needs?** This section explores the destinations of graduates into employment compared to the UK's skill-shortages vacancies and whether graduates could fill employers' skills needs. It excludes the job-creating role of universities and colleges, who employ highly-skilled people to contribute to teaching and research.

## Data sources

This section of the report utilises two main datasets:

The Higher Education Statistics Agency (HESA) **Destinations of Leavers from Higher Education (DLHE) survey**.<sup>68</sup> This survey asks graduates of higher education providers what they are doing approximately six months after leaving the provider. This report focuses on UK-domiciled, working graduates, as this allows an analysis of whether the graduate studied or worked in their original region of domicile. The target response rate for the DLHE survey is 80% for UK domiciled leavers who previously studied full-time, so graduate outcomes should be considered an approximation.<sup>69</sup> Graduate data is anonymised by rounding to the nearest five.<sup>70</sup> Not all graduates will have identified their own career paths six months after completing their studies.<sup>71</sup> While 2016/17 was the last year for DLHE data collection, this has been replaced by HESA's new Graduate Outcomes

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<sup>68</sup> HESA data is copyright Higher Education Statistics Agency Limited. Neither Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived from data or other information supplied by HESA services.

<sup>69</sup> In 2016/17, the response rate of UK-domiciled leavers was 79%. See [www.hesa.ac.uk/data-and-analysis/sfr250/figure-3](http://www.hesa.ac.uk/data-and-analysis/sfr250/figure-3)

<sup>70</sup> HESA. *Rounding and suppression to anonymise statistics*. Retrieved from:

[www.hesa.ac.uk/about/regulation/data-protection/rounding-and-suppression-TfbG\[ \]TJETQ72.024 152.78 103.44 0.7](http://www.hesa.ac.uk/about/regulation/data-protection/rounding-and-suppression-TfbG[ ]TJETQ72.024 152.78 103.44 0.7)



