

Labour market information and its use to inform career guidance of young people

An overview of the Labour Market Information System for Careers Guidance in England

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Acronyms

API	Application Programming Interface, a set of functions and procedures allowing developers to create applications that access the features or data of a database, an operating system, or other service
ASHE	ONS Annual Survey of Hours and Earnings
BRES	ONS Business Register Employment Survey
CEC	Careers and Enterprise Company
CEG	careers education and guidance
ESS	Employer Skills Survey
HESA	Higher Education Statistics Agency
LA	Local authority
LAD	Local Authority District
LEP	Local Enterprise Partnership
LFS	ONS Labour Force Survey
LMI	labour market information
LMI+	labour market intelligence
LMIS	Labour market information system
MCA	Mayoral Combined Authority
NUTS	Nomenclature of Territorial Units for Statistics, https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat
NUTS 1	Includes English regions, devolved nations (e.g. South East, North East, Scotland, Wales)
NUTS 2	Includes counties/groups of counties (e.g. Suffolk, Devon)
NUTS 3	Includes counties, unitary authorities, districts (e.g. West Oxfordshire, East Devon)
ONS	Office for National Statistics https://www.ons.gov.uk/
SAP	Skills Advisory Panel
SIC	Standard Industrial Classification of Economic Activities https://www.ons.gov.uk/methodology/classificationsandstandards/
SOC	Standard Occupational Classification https://www.ons.gov.uk/methodology/classificationsandstandards/
TTWA	Travel-to-work-area
UCAS	Universities and Colleges Admissions Service
VET	vocational education and training

Glossary

Careers education and guidance and the various other terms that refer to careers guidance, is used to label the services schools and colleges provide to support students (young people) with their education and learning decisions, together with mediation of an accurate understanding of the labour market, with the vocations available to them.

Careers Leaders are responsible and accountable for the careers education, advice and guidance programmes in their school or college.

Career practitioner refers to those in a role working in the field of careers education, information, advice and guidance to young people (as is the focus of this study). They could be a qualified careers guidance counsellor providing one-to-one interviews to students (e.g., supporting Gatsby Benchmark 8). Other names are used in the report, such as careers adviser, guidance counsellor, careers counsellor and school counsellor, denoting similar work to that of a career practitioner in the UK context, but commonly referred to differently in the international context.

Careers Hubs are local partnerships of schools, colleges, local enterprise partnerships (LEPs), local authorities, businesses, and careers providers in England. They are part of the infrastructure to improve CEG and programmes for 11-18 year olds with the aim of helping young people connect to local skills and economic needs. At the time of this report, there were 17 Careers Hubs established or in various stages of development. The CEC manages the network of Careers Hubs.

Mayoral Combined Authority were set up using national legislation that enables a group of two or more councils to collaborate and take collective decisions across council boundaries. There are 10 combined authorities in England.

Educational institutions refers to schools and colleges for those aged 11 to 18 years, which are the focus of this study.

Growth Hub are local public and private sector partnerships in England that are led by each of the Local Enterprise Partnerships.

Labour market information (LMI) refers broadly to information or data on the economy, labour market and labour force that would support an understanding of its operation, as well as labour supply and demand. This is generally raw data (hard LMI); data that has no interpretation context or explanation (see section 3.1 for a detailed definition). It can also include more qualitative information collected, for example, from business insights in a local area (soft LMI).

Labour market intelligence (LMI+) refers to the interpretation of hard and soft labour market information data for different purposes and is what career practitioners and teachers find most useful for the career guidance process (see section 3.1 for a detailed definition).

Labour market information system (LMIS) encompasses the collection and dissemination of information, data and analysis on aspects of the labour market that informs, and is often seen as critical to, education, employment and labour policies.

Local Enterprise Partnership (LEP) are partnerships between local authorities and businesses. They decide what the priorities should be for investment in roads, buildings and facilities in the area. There are 39 LEPs in England.

Skills Advisory Panels are local partnerships between employers and skills providers including colleges, independent training providers and universities. They work to identify and address local skills priorities. There are 36 Skills Advisory Panels across England, established within: Mayoral Combined Authorities, the Greater London Authority and Local Enterprise Partnerships.

1. Introduction

The up-dated guidance from government relating to the provision of career guidance in schools and colleges in England (DfE, 2021a) re-states the critical role of high quality careers support for young people's futures (p.7). This guidance is part of the recent White Paper, entitled Skills for jobs: Lifelong learning for opportunity and growth, which is wide ranging, focusing on compulsory and post-compulsory education and lifelong learning, with particular attention paid to the significant skills gaps at higher technical levels (DfE, 2021b). The White Paper aims: to increase the availability of skills to the economy and the alignment of education with the needs of business; provide a mechanism for 'levelling up' and increasing opportunity for all citizens by improving access to learning; and rebalance the education system away from universities and towards vocational and technical education. These aims are to be achieved through a range of measures, which include: 'Making sure people can access training and learning flexibly throughout their lives and are well-informed about what is on offer through great careers support' (DfE, 2021b, p. 5). Robust, high quality labour market information and data continues to be a pivotal element of efficacious career support and as part of a flexible lifetime skills guarantee, there is a pledge to: 'Provide clear information about career outcomes through occupational maps, wage returns data and ensuring providers give pupils information about all options' (DfE, 2021b, p. 11). Significantly, these data are considered to be essential and that there is a need to improve information and data for those making decisions and considering different pathways. The up-dated guidance (DfE, 2021a) specifically refers to 'the imbalance in careers information', evidenced by 'the neglect of technical choices' (p.7).

In 2014, The Good Career Guidance report identified what constitutes good career guidance developing a set of eight benchmarks (known as the Gatsby Benchmarks)(The Gatsby Charitable Foundation, 2014). The benchmarks were subsequently adopted as part of the Government's careers strategy for schools and colleges (DfE, 2017) and continue to be central to the up-dated guidance (DfE, 2021a). Schools started using this framework for guiding the development and improvement of careers provision for young people and by 2018, the benchmarks were developed further to align with the needs of young people in colleges (Holman, 2018). The eight Benchmarks for world-class career guidance in schools and colleges have been widely adopted. The Careers and Enterprise Company have developed a number of tools for schools, sixth forms, Pupil Referral Units and colleges to evaluate, benchmark, track and report their careers provision (including Compass and Compass+) to manage careers plans.¹ In 2019/20, over 80% of schools and colleges (response rate of 3,296) were reported to be using the Gatsby Benchmarks of Good Career Guidance to develop and improve their careers programmes (The Careers & Enterprise Company, 2020). Of relevance to this study is Gatsby Benchmark 2² (DfE, 2021a, p. 18):

Learning from career and labour market information

Every pupil, and their parents, should have access to good-quality information about future study options and labour market opportunities. They will need the support of an informed adviser to make best use of available information.

In 2019/20, 56% of schools and colleges reported to have achieved Benchmark 2, 42% partially achieved and only 2% had not achieved the Benchmark (The Careers & Enterprise Company, 2020).

¹ For more information on the tool see <https://www.careersandenterprise.co.uk/education/tools>

² For more information on Benchmark 2, support and tools see <https://www.goodcareerguidance.org.uk/case-study/learning-from-career-and-labour-market-information>

The delivery of world-class career guidance is important as young people have been hard hit by COVID-19 with interruptions to their learning, examinations and transitions from education. An estimated 80% of the decline in pay-rolled employees are aged under 35 years (Office for National Statistics [ONS], 2021b). It is evident that the demand for labour market information and data will be high. For instance, international research into the implications for career guidance precipitated by the COVID-19 pandemic highlighted a generalised increase in demand for career guidance activities linked to support for labour market transitions, skilling and reskilling stating: 'A large percentage of respondents agreed or strongly agreed that there has been an increase in demand for labour market information (74%) and job-search assistance (73%)' (Cedefop, European Commission, ETF, ICCDPP, ILO, OECD, & UNESCO, 2020, p. 53). However, in England, 93% of schools and colleges reported that the pandemic had impacted their ability to deliver the same quality of careers provision as prior to COVID-19 (The Careers & Enterprise Company, 2020), with findings from this study being corroborated by further research that specifically highlighted LMI as the third priority concern for school leaders for career guidance in the 2020-21 academic year, as a consequence of the Covid-19 pandemic (Pye Tait Consulting, 2020).

High quality career guidance is informed by high quality LMI (Bimrose, 2020), but in England, the LMI landscape is complex. A recent international review by Alexander, McCabe and De Backer (2019) determined what makes good LMI and what it is needed for its effective use. The study set out the types of labour market data and information available, producers of LMI, gaps in LMI provision and how it is used in career decision making. Whilst a number of producers of LMI were identified, it was beyond its scope to identify all those involved in the production and supply of LMI. Given the current context and the predicted demand for information on the labour market, it is therefore timely to map out the LMI landscape in England for the broad community of careers. To date, the LMI landscape has not been fully mapped.

1.1. Research aims and objectives

The aim of this research study was to explore the supply of LMI and labour market intelligence (LMI+) in England, to understand sources and identify gaps in both underlying data sources and the provision or dissemination of information. The distinction between LMI and LMI+ that has been embedded in this study was derived from a toolkit, developed by the Learning & Skills Council (2004), to support career practitioners in their use of information about the labour market in practice (NB: this distinction is originally attributed to Felstead, Gallie, and Green (2002)). The current study has adopted this distinction between the terms:

- Labour market information (LMI) refers broadly to information or data on the economy, labour market and labour force that would support an understanding of its operation, as well as labour supply and demand. This is generally raw data; data that has no interpretation context or explanation.
- Labour market intelligence (LMI+) refers to the interpretation of hard labour market data for different purposes and is what career practitioners and teachers find most useful for the career guidance process.

These terms are further defined in section 3.1, below. Further, the current study has focused on LMI and LMI+ that is aimed at intermediaries (i.e., career education professionals, educators, parents/carers) and young people at secondary school and in college to support career development.

The research had three objectives:

1. To review how labour market information systems (LMIS) function to identify and define categories of those involved in the LMI landscape in England;
2. To research and assess LMI and LMI+ sources, triangulated with information from stakeholder experts;
3. To analyse data to describe the LMI landscape in England and determine gaps.

The proposed research was designed to broaden knowledge of from where, and how, LMI and LMI+ is produced, supplied and disseminated in the careers landscape. This was achieved through a desk-based review supplemented with expert interviewees as detailed in section 2.

1.2. Report structure

Section 2, which follows this introduction, details the methodology that underpins the study. Section 3 provides a general review of LMIS, highlighting the link between labour market information and intelligence and technology, noting their combined impact on the provision of careers LMI and LMI+. It finally focuses on suppliers, providers and disseminators of labour market information and intelligence, presenting a categorisation of sources in England. The next section (section 4) presents details of the LMIS for careers in England. It discusses the roles of different organisations in this LMIS; the supply and provision of labour market information and intelligence; and maps the landscape. Additionally, it reviews the LMIS in England for young people and intermediaries, finishing with an overall assessment of the landscape. Section 5 presents summaries of three international examples of practice. The conclusion is presented in section six, together with recommendations.

Accompanying this report is the LMIS matrix which lists the 119 sources reviewed between May-July 2021 as part of mapping the LMIS for careers in England. For each source, information was systematically recorded to inform the LMIS review. This list and some of the information recorded are made available in the LMIS matrix³.

³ Please see Barnes, S-A., and Bimrose, J. (2021). *An overview of the Labour Market Information System for careers guidance in England: Sources reviewed*. Coventry: Institute for Employment Research, University of Warwick. Retrieved from: https://warwick.ac.uk/fac/soc/ier/research/lmicareerguidanceofyoungpeople/matrix_2021

2. Methodology

To capture a comprehensive overview of the labour market information system (LMIS) in England and map its components, the study comprised the following phases:

- An inception phase during which research protocols and tools were developed and used to prepare an ethical application. Additionally, an online form was designed to capture details of practice from the field.
- A review of how LMIS functions and its components in order to categorise and map those involved in the careers landscape. This included a review of international LMIS in careers.
- The development of an LMI and LMI+ assessment matrix to record sources.
- A review of LMI and LMI+ sources using a systematic search was undertaken with sources recorded in the matrix. This was extended with eight stakeholder interviews with those engaging with the LMIS and delivering services using LMI.

Detailed descriptions of these phases follow.

The **inception phase** of the research was conducted in consultation with the commissioners. The research protocols and tools (including interview guides, consent forms, and a participant information leaflet) were developed and agreed, with potential interviewees identified. An application to the University of Warwick's research ethics committee was submitted and full approval for this research was granted.

The first phase comprised data collection. This involved the development of an online form, which was prepared to capture additional evidence from practice. The form asked those involved in using LMI in practice (therefore those who: collect and compile LMI and/or LMI+; provide a repository and/or tools to explore LMI and/or LMI+; undertake analysis and/or provide access to that analysis and interpretation; or disseminate LMI and/or LMI+) to provide a description of their activity. A request for help with a link to the form was sent to Skills Advisory Panel leads and promoted via social media channels (including direct messaging and hashtags). Three examples were received with information of LMI and LMI+ work in practice that fed into the review and analysis of the LMIS in England. Two illustrative case studies were developed and permission was sought to include in this report. In addition, LMI and LMI+ examples were provided by other stakeholders, which fed into the review.

The second phase of the research comprised **a review of LMIS** and how they function in order to define the role and provision of labour market data used to inform careers guidance. As part of this review, LMI and LMI+ were specified as comprising the parameters of the search. Informed by this review, five categories of producers, suppliers and interpreters of LMI and LMI+ within the broad LMIS for careers were identified. These are: data suppliers; data repositories; data providers; analytical tool providers; and data interpreters (these are defined in section 3.4). A further distinction was made between those that provide LMI and LMI+ for careers purposes (i.e., disseminators of LMI; and disseminators of LMI+).

To supplement this review international examples of careers LMIS were identified and examined. Desk based research was undertaken to examine a number of examples with three examples selected to illustrate contrasting practices in the provision and supply of LMI and LMI+ for career support (including the Labour Market Information Council (LMiC), Canada; SkillsFuture Singapore; and Stichting Studiekeuze123 in the Netherlands). Evidence for these examples were developed through an examination of the online platforms themselves, publications and reports. Descriptions of these examples are presented in section 5.

Next, a **LMIS assessment matrix** was developed for systematic recording of information on each source of LMI and LMI+ identified in the search. The search focused on those involved in the LMIS in England with each source classified using the categories identified in the review.

A systematic search was used to identify potential sources for inclusion. Data sources were identified using: our knowledge of the field; ongoing work on the LMI for All service; our development and delivery of LMI training for careers professionals (in which sources are reviewed and assessed); and our review of online careers support and assessment of LMI systems undertaken in the UK. The following online sources were reviewed:

- Careers service providers in England (national, regional and local)(including their LMI directory or resource lists);
- Education partnerships (e.g., groups of schools and/or college that collaborate and work together);
- Local Government Association, Chambers of Commerce and Business in Industry;
- Local Enterprise Partnerships, Growth Hubs and Careers Hubs;
- Mayoral Combined Authorities and Skills Advisory Panels;
- Sector Skills Councils, professional bodies and associations;
- Regional intelligence agencies, observatories and data stores; and
- Online searches using keywords (such as careers labour market information, labour market data, open data, careers information, labour market intelligence).

Where interviewees identified sources, these were also included in the review.

Excluded from the search were: research centres; individual school, college and university careers pages (except where an LMI directory or resource list was available, which were reviewed for potential sources to be included in the landscaping work); and job vacancy websites. Whilst it is acknowledged that these sources can, and do, feed into the LMIS in England, they were not considered key stakeholders in producing, supplying and/or interpreting data. A number of sources were identified that included job profiles but were only included if the job profiles were detailed, included data and were embedded alongside other careers materials.

In total, 119 sources of LMI and LMI+ were identified and reviewed between May-July 2021, of which 87 were noted to disseminate LMI or LMI+ for the careers sector. A list of all sources reviewed are provided in Appendix 1. Using a matrix, information from each source was recorded against the criteria specified in Table 1, below. These criteria were based on the authors' specialist knowledge of labour market data and our experience of assessing careers sources and data (see Bimrose, 2020; Barnes et al., 2020; Bimrose et al., 2008; Bimrose et al., 2005). The matrix (as an Excel document) is made available alongside this report.

Information was gathered from several webpages for each source using their directory/menu and search facility. Pages reviewed included: the 'about us' section; careers resources or directory; local area; labour market intelligence/information/insights; sector profiles; and job profiles. Technical and technician careers, job profiles and sectors were a particular focus in the search for this study. Where data were presented in an online tool that was customisable, these were explored in order to populate the matrix in more detail.

Table 1: Overview of LMIS matrix headings for data collection

Heading	Descriptor	Variables	Notes
Organisation	indication of type of organisation	Combined Authority, careers, data hub, LEP, local consortia, local council, Growth Hub, sector, private data provider	
Landscape	indication of placement in LMI landscape	national, regional, local (NUTS 3 and below ⁴)	Based on aim of source and target audience
LMI/LMI+	Information, data and intelligence on labour market that can be used in the careers field	Eclectic LMI ⁵ , hard LMI ⁶ , soft LMI ⁷ , LMI+	
Categorisation of data sources	Categorisation of those involved in the LMIS in England	data suppliers, data repositories, data providers, analytical tool providers, data interpreters	
Careers LMI and LMI+ providers		disseminators of LMI, disseminators of LMI+	
Target audience		young people, higher education students, adults ⁸ , parents/carers, intermediaries, institutions supporting young people, others	Where this was not explicit, this was inferred from the content and presentation of the information
Data source/provenance	Where are data/intelligence sourced?	government sources, research, expert, own data/analysis, purchased, unknown, other	

⁴ Nomenclature of Territorial Units for Statistics (NUTS) areas, for more information see <https://www.ons.gov.uk/methodology/geography/ukgeographies/eurostat>

⁵ Electric LMI is used to categorise those sources that present and/or use a wide range of LMI (hard and soft) and LMI+.

⁶ 'Hard LMI' was used to refer to the quantitative and statistical data gathered directly from the labour market.

⁷ 'Soft LMI' was used to indicate those sources presenting qualitative information collected from a range of sources, including employers, educators, sectoral experts, local fora, professional associations and those who have experiences of working in a particular industry or job role

⁸ It was not the purpose of the review to identify sources aimed at adults, but where sources had content, resources and/or tools aimed at adults this was noted.

Indicators		employment, education, demographic, geographical, skills, business demographics, economy, vacancy, other	focus on indicators relevant to careers field and target audience
Data disaggregation	How are data/intelligence disaggregated?	Industry, geography, occupation	
Geographical scope	by Nomenclature of Territorial Units for Statistics (NUTS) areas	NUTS 1, 2, 3 and local	
Occupational scope	Does source use SOC or another method of classifying occupations?	SOC ⁹ , job group ¹⁰	No sources were found to use SOC2020
Industry scope	Does source use SIC or another method of classifying sectors?	1-digit, 2-digit, sector ¹¹	Use of SIC2007 ¹²
Technical careers	Does source include data/intelligence on technical careers?	Yes – main focus, Yes, No	
Date of data	date of data published	year, unknown	Date of the last data displayed was recorded as this provides an indication that source is maintained
Currency of data	When are data updated?	monthly, quarterly annually, regularly ¹³ , API, date stamped	
Data trends		past, current, future	
Interpretation/qualitative information	Are data complemented with qualitative data and/or interpretation?	yes, some, none	
Visualisation of data	Data/intelligence are presented using charts, images, infographics	yes, no	

⁹ Standard Occupational Classification (SOC), see <https://www.ons.gov.uk/methodology/classificationsandstandards/>

¹⁰ 'Job group' is used to describe those sources where occupational data are presented in a job family or group, rather than presented using SOC.

¹¹ 'Sector'; is used to describe those sources where industries are grouped together and do not match the standard industry classification (SIC).

¹² Standard Industrial Classification of Economic Activities (SIC), see <https://www.ons.gov.uk/methodology/classificationsandstandards/>

¹³ 'Regularly' is used to classify those sources where data were kept up-to-date and current.

Customisation of data	Data/intelligence can be customised by user or it personalised in some way	yes, no	Such as allows users to select variables and/or data to be presented, or the format of data
Access	Can data/intelligence be accessed free of charge or login required?	open access, registration required but no charge, fee	where pricing was available, it was included in the notes section Fee based sites were reviewed used information available and publication materials
Charge frequency	Are charges one-off, monthly or annual?		
Charges - individual or institutional			
Notes on source, and relevance to supporting careers	Brief description of source and what is available		

Data from the matrix is summarised further in section 4, to elucidate the careers landscape in England for young people and a summary of the review is presented in Appendix 2.

To strengthen this online review, eight stakeholder interviews were undertaken to extend and deepen understanding of the careers LMIS offline, in practice. Their purpose was to triangulate perceptions about the current state of the LMIS in England for young people.

A semi-structured pro-forma was used to guide interviews, to ensure comparability of the coverage of data collected. This enabled responses to be compared and analysed for commonality of themes. Interviews comprised questions on interviewee's role, current knowledge of LMI and LMI+, and their (organisation's) top sources of LMI and LMI+. They were also asked to talk about their perceptions of the role their organisation played in the careers landscape. Importantly, they were asked to provide an overall impression and personal assessment of the LMIS in England, identify any gaps and suggest how the landscape could be developed and enhanced. Interviews were undertaken by telephone or using an online video-conferencing platform and recorded where interviewees agreed. They lasted not more than 45 minutes. For all interviewees, purposive sampling was used.

The eight stakeholder interviewees occupy a variety of different occupational roles, but each operates (or operated recently) in some way at the interface of LMI, LMI+ and young people as users of LMI and LMI+. Each holds a position with different levels of responsibility and influence regarding the quality and coverage of LMI and LMI+ for young people. Two interviewees from Careers Wales were interviewed together to provide a comparison with England, as one of the devolved nations of the UK. Of the eight interviewees, three were involved in delivering publicly funded careers services to young people; five were involved in the LMI policy, management and/or delivery of LMI for their

organisations; one was involved in supporting recruitment services (and had also held a senior management position in a further education college); one represented a private service provider and three represented stakeholders involved in various ways at a regional level.

The following sources of labour market data and information were identified by interviewees as major sources being used by their organisations and were therefore included in the review for the study. The list represented sources that supply national data (i.e., ONS), bring data together (i.e., LMI for All), make data available (i.e., EMSI, job vacancy websites, nomis, O*NET Online¹⁴), and those that interpret data (i.e., Burning Glass, Cascaid). In addition, a number of national datasets were identified, such as Labour Force Survey (LFS), Business Register Employment Survey (BRES), and Annual Survey of Hours and Earnings (ASHE). EMSI and LMI for All were most cited by interviewees. The range of sources identified illustrates the complexity of the LMIS and the difficulty in defining and categorising those involved.

Interview summaries were produced, analysed thematically and key findings are summarised in section 4.

¹⁴ For more information on the US O*NET see, <https://www.onetonline.org/>

3. Review of labour market information systems

This section provides a brief overview of LMIS and how they function to provide labour market data that are used to inform careers education and guidance (CEG). It provides contextual information related to how the categories used to define the supply, provision and dissemination of LMI and LMI+ within the broad landscaping activity have been identified.

The difference between labour market information (LMI) and labour market intelligence (LMI+) is often elided, with the two phrases used interchangeably in colloquial usage. This reality was exemplified by the interviews carried out for the study, with the porous and fluid nature of the boundaries of these terms evident. Technically, LMI and LMI+ represent two different forms of data that have distinct aims, purposes and roles within a LMIS (Felstead, Gallie, & Green, 2002; LSC, 2004). LMIS encompass the collection, analysis and dissemination of information and data on all aspects of the economy, labour market and the population. It is often seen as critical to education, employment and labour policies. Of particular relevance here is how an LMIS interacts with other systems of lifelong guidance. However, first it is important to clarify the distinctions between LMI and LMI+.

3.1. Defining labour market information and intelligence

Effective careers support requires robust, current and reliable data and information on the labour market including: employment trends (past, current and projected); the structure of the labour market; the operation of and variations between local, regional, national and international labour markets; industry and occupations; qualifications and skills; demographics; vacancies (number, type and incidence); pay and earnings; hours; learning and training opportunities; and career pathways (Alexander, McCabe, & De Backer, 2019; Barnes, 2018; Bimrose & Barnes, 2010). Definitions of the different, related terms follow:

Labour market information (LMI) at a fundamental level is the underlying data and information on the economy, labour market, and (current and future) labour force. LMI supports an understanding of the operation of the labour market, as well as labour supply and demand. It defines a range of data that can be either hard/quantitative or soft/qualitative. Within the LMIS for careers, LMI can be argued to be aimed at intermediaries rather than young people.

Labour market intelligence (LMI+) refers to the interpretation of labour market data and information for different audiences and purposes. This form of information is what career practitioners and teachers say that they find most useful for career guidance processes (Alexander, McCabe, & De Backer, 2019; Barnes, 2018; Bimrose, Hughes & Barnes, 2011; Hiebert et al., 2012; Milot-Lapointe, Savard, & Paquette, 2018). When LMI is analysed, interpreted and contextualised it is rendered into LMI+, but the interpretation for a specific audience distinguishes it from other types of interpretation that may be undertaken. In this study, the focus was on LMI+ for careers purposes.

Further distinctions (LSC, 2004) include:

Hard LMI typically refers to the quantitative and statistical data gathered directly from the labour market (e.g., ONS Business Register and Employment Survey and the Annual Survey of Hours and Earnings), through labour force (e.g., ONS LFS) or employer surveys (e.g., Department for Education and Skills Employer Skills Survey), as well as econometric or statistical modelling (e.g., Working Futures projections¹⁵). New techniques and big data analysis also enable the collection of data on vacancies

¹⁵ The latest projections are available at: <https://www.gov.uk/government/publications/labour-market-and-skills-projections-2017-to-2027>

that can provide a current (or real time) view of labour demand (see for example Barnes et al., 2021; Cárdenas Rubio, 2020; Garasto et al., 2021; Kanders et al., 2020; ONS, 2021b). Data can cover a range of indicators on the economy, employment, labour supply and labour demand disaggregated by, demography, geography, industry and occupation. These data provide a statistical picture of the past, current and likely future labour market, employment and skills trends.

Soft LMI is more qualitative and refers to information collected from a range of sources, including employers, educators, sectoral experts, local fora, professional associations and those who have experiences of working in a particular industry or job role. Soft LMI can include information on career pathways, job descriptions, role tasks, skills requirements and gaps. Horizon scanning activities can also provide qualitative information on labour market trends to compliment quantitative data.

An additional layer of complexity when trying to make sense of these types of distinctions relate to the issues of impartiality, bias and ethical codes that guide the provision of LMI and LMI+ in career practice. It is common for career practitioners to claim both that the career guidance support provided is both client-centred (i.e., it is designed to support clients realise their full potential) and impartial (demonstrates no bias towards any particular sector or occupation). High quality, reliable LMI and LMI+ does not, however, necessarily guarantee that its use is impartial. This is because facts do not speak for themselves. Indeed, factually correct data can be (often is) used to support different versions of the same events. For example, the same data about the proportion of women in the construction industry workforce can be used both to illustrate the level of their current under-representation in the sector workforce, as well as illustrating that progress that has been made in attracting women to the sector. In other words, LMI data partly determine, and partly constrain, the interpretation that can be placed on them. Furthermore, ethical codes of practice to which career practitioners are bound, require that no harm is done to the client/student. The phenomena of 'protective channelling' (Cross et al., 1990) or 'anticipatory discrimination' (Cross, 1987 in Chatrick, 1997) in career support have been acknowledged as issues. These can occur where the careers guidance practitioner may try to shelter a client from occupational experiences, either in a job or work experience placement, that they anticipate (often on the basis of robust evidence) will be discriminatory and/or negative. Whilst this could be argued justifiably to comprise ethical practice (since practitioners are acting in what they consider to be the best interests of their clients by trying to prevent them coming to harm) it could equally be the case that it may not be impartial. Challenges of this nature relating to the integration of LMI into career practice have also been highlighted regarding gender discrimination and sexual harassment in the workplace (Bimrose, 2019, 2004).

These types of complexities are discussed in more detail, together with illustrative examples and reflections on the implications for career practice, in a recently launched open-access learning unit entitled: 'LMI in career guidance: biased or impartial?', designed to support career practitioners (LMI for All, 2021).

Overall, when making sense of the existing definitions/distinctions that have evolved in this space, a key issue remains. For efficacious career education and guidance support, a level of sophisticated mediation is required, even after 'raw' LMI data have been rendered as LMI+. This need for skilled mediation was highlighted as critical by a number of the stakeholders interviewed for this study.

3.2. Defining labour market information systems (LMIS) for careers

It has long been established that a coordinated LMIS can inform policy formation, contributes to service and education planning, as well as supporting those providing career guidance and counselling (ILO, 2015). The ILO (2021) defines three main functions of an LMIS as:

- facilitating labour market analysis;

- providing the basis for monitoring and reporting on employment and labour policies;
- constituting a mechanism to exchange information or coordinate different actors and institutions that produce and utilise LMI and analysis.

National LMIS, that comprise the collection and dissemination of information, data and analysis on all aspects of the labour market, are also important in the development of careers policy and strategy (Alexander, McCabe, & De Backer, 2019; Barnes et al., 2020).

The UK, in common with other developed countries have a well-developed and established labour market information system. Internationally, it has been noted that the establishment of national online single points of access to LMI has been a continuing trend for a number of years (Moreno da Fonseca, & Chatzichristou, 2019). A recent European study that examined national LMIS and their relationship to lifelong guidance systems found a number of differences in terms of development, legislation and strategy (Barnes et al., 2020). Some countries were found to have weak systems and structures in place, so LMI was limited. In contrast, other countries had systematic and developed processes in place to collect, disseminate and integrate labour market data into national careers databases (e.g., LMI for All in the UK¹⁶, and the public employment service in Germany¹⁷). Nordic countries were more systematic in their use of technology, with the consequence that LMI was both in real-time and mediated.

Overall, technology has a key role in the collection, analysis and delivery of data to support labour market forecasts, skills anticipation and job matching (Barnes, 2018; Cedefop, 2019; Garasto et al., 2021; Moreno da Fonseca, & Chatzichristou, 2019; Orlik, Casasbuenas, & Helkkula, 2018). More recent advancements (such as from web scraping, machine learning and big data analysis) have enabled new forms as data to be classified and integrated with official data not only to provide a comprehensive understanding of the labour market, but also one that is close to real-time. The accessibility of online visualisation and analytical tools, embedded in websites, has also enabled data to become more accessible (see for example Tableau, Power BI, Google Spreadsheets, Datawrapper, etc.) Significantly, for the LMI/LMI+ careers landscape in England, it has improved the availability of data, changed the way it is accessed, and enabled it to be presented alongside online careers support.

3.3. LMIS suppliers, providers and disseminators

Within the complexity of England's LMIS there are numerous LMI and LMI+ providers at the national, regional and local level, all feeding into the LMIS for careers . Consequently, there is much overlap between providers, with collecting, analysing and supplying data at the national, regional and local levels. In order to map the LMIS in England and consider how to categorise these sources, it was important to consider the components of a LMIS, which include:

- collection and compilation of data and information on the economy and labour market from, for example, household-based labour force surveys, population censuses, multi-purpose household surveys, establishment surveys or administrative records, which track a range of indicators (such as employment status, occupation, hours, qualification attainment, vacancies, etc.);
- repository of information from where data can be supplied;

¹⁶ For more information on the service see <https://www.lmiforall.org.uk/>

¹⁷ For more information on the Bundesagentur für Arbeit see <https://www.arbeitsagentur.de/en/welcome>

- analytical capacity and tools that enable access and visualisation of data for different audiences; and
- institutional arrangements and networks to interpret, share and disseminate (ILO, 2021).

In a careers landscape, the final two components are particularly important as these enable data to be made accessible and mediated to accommodate different user needs and life stages.

The LMIS has the following functions which organisations contribute to by: collecting data; supplying and bringing data (and datasets) together; providing access to the data; interpreting data for users; and disseminating data and interpreting for a careers purpose. Taking into account these functions and the components noted earlier, the following categorisation of data and information sources in England has been developed to map the LMIS for careers (see Table 2).

Table 2: Categorisation of data sources in England and their function in the LMIS

Category	Function in LMIS
data suppliers	collect data
data repositories	supply and bring data (and datasets) together in a database and make available for others to use either by enabling data to be downloaded or accessed through an API
data providers	provide access to data (which is often a static presentation) with no interpretation
analytical tool providers	enable data (own or others data) to be explored, customised and/or visualised through an online tool
data interpreters	interpret data converting LMI to LMI+

Sources that disseminate labour market data and information for the careers sector were also distinguished in the matrix:

- disseminators of LMI present and visualise data for careers intermediaries and users with little to no interpretation of data (i.e., RCU Ltd.);
- disseminators of LMI+ present interpretation and visualisation of data for careers intermediaries and users (i.e., icould, Start, National Careers Service).

The LMIS for careers in England is complex and an evolving system. The review of LMI and LMI+ sources found that it is fluid and has artificial boundaries with organisations doing one or more of functions in the LMIS. For instance, Local Enterprise Partnership (LEPs) can collect their own hard and soft LMI, supply and bring data (external and their own) together for local stakeholders, which they can provide access to either through reports or an online analytical tool. Those working alongside LEPs can then interpret that data and transform to LMI+ for careers purposes, and then disseminate. This example illustrates how at a local level the LMIS for careers can (and does in some instances) operate. This is explored further in section 4.

4. The labour market information system for careers in England

This section discusses the sources identified as part of the LMIS for careers in England, each of which was systematically reviewed and assessed. It presents findings from the review of sources in order to help understand the landscape and how information and data are collected, provided, supplied and disseminated for the wider careers field. Findings from the stakeholder interviews are included to provide some context of practice.

4.1. The role of different organisations in the LMIS for careers

Aligned with different types of organisations are disparate agendas around the role of these organisations in the LMIS in England. The following provides a summary of the perceptions of those roles in the landscape, derived from interviewees representing different types of organisation.

Public sector providers

England: The National Careers Service (NCS) provides free, impartial careers advice, information and guidance to anyone aged 13 or older who lives in England. LMI is fundamental to services offered by the NCS and is 'universally available', irrespective of whether customers meet the criteria for a one-to-one intervention or avail themselves of services provided by the NCS through their website. The Career Adviser has knowledge about the customer, so 'can provide impartial LMI during one-to-one interventions': 'LMI gives them the reality factor'. The ultimate aim is to make customers self-reliant in their career transitions, throughout their lifetime, using high quality LMI. LMI for All is specified as the current main source of data (see the NCS Stakeholder Newsletter, Issue 6 - August 2021). A particular challenge for the NCS is to replicate the service delivered through one-to-one interventions to self-service through the website, making LMI personalised, relevant and accessible to all. As different LMI tools are built, the needs of the different target groups are accommodated. Current tools include occupational profiles, careers advice articles, skills assessments, and tools to 'find a course' and 'update your skills' (see <https://nationalcareers.service.gov.uk/about-us>).

Wales: Careers Wales provides career support for young people in Wales through its career centres and website. The website is a national platform that pulls in LMI data from various sources, using desk research into primary/secondary sources and 'blending' this into a variety of different products. The Careers Wales company also collects and compiles primary LMI data, for example, career aspirations of young people and destination statistics. New forms of LMI are constantly coming through in different data sets. For example, 'Job Postings' may currently include redundancy information, furlough data and sector impacts of the COVID pandemic. Whilst this has acknowledged shortcomings, it has been well received by end-users in the Company. Resourcing of the LMI function comes from core funding from the Welsh Government. One other source of funding is through 'Working Wales', a project that aligns with a programme called Jobs Growth, for adults and 16 year old NEETs (with a separate website: 'Working Wales').

Private provider

One private provider is currently working to find a solution for the gaps in LMI, specifically around the regional dimension. While Standard Occupational Classification (SOC) codes existed for broad groups of occupations, it was felt that routes within that are currently absent. There is a need to make LMI tailored and relevant: 'That's what we're trying to contribute'. The aim is to offer LMI and LMI+ that covers all pathways and routes, including promoting T levels. Currently, their approach to LMI is focused on young people, but is getting broader (e.g., adults who have been made redundant). The other strand of activity around LMI is developing sources by collecting soft LMI and data from young

people, for example: how they navigate IT, gender preferences, diversity, etc., so that this can then be used to improve sources of LMI.

Recruitment/employment

An organisation that is primarily concerned with recruitment and employment has developed a role in the careers landscape that reflects their particular organisational focus. Three reports that they commission support the processes of recruitment and employment: Report on Jobs; Jobs Recovery; and an Employer Confidence Survey. Of these, the 'Report on Jobs' publication is the most useful, produced by IHS Markit. All the work carried out around LMI/LMI+ is resourced through membership fees (the organisation is not-for-profit), with publications available to members only, to support and enhance their recruitment services. In this way, these products enhance the career progression services offered by members (e.g., recruitment), that are widely available for use by candidates/customers/clients, including young people.

CEC Careers hub

The priority for this particular hub (managed by the LEP, but co-funded by the CEC) is to be employer-led, with the central belief that it is crucial for young people to hear directly from employers, apprentices and other employees. The LEP has an LMI and intelligence unit, with a remit to inform and disseminate LMI+ to young people, parents/carers and careers intermediaries. Employers are encouraged to check data trends (e.g., local data). So, for example, EMSI data are used for vacancies and repeat adverts (e.g., hospitality), but it is necessary to check employer perceptions of what these data are saying, through a working group comprising about 20 people. These attend monthly meetings, to which commissioned LMI reports are presented. Then there is a further distribution to a group of c60/70 for these reports. Examples of these reports are available online.¹⁸ CEC Careers hubs are at various stages of development, but one of their aims is to disseminate hard and soft LMI and LMI+ to young people and others. Some hubs are doing this through reports and briefings, whilst others are developing online content.

Local Economic Growth

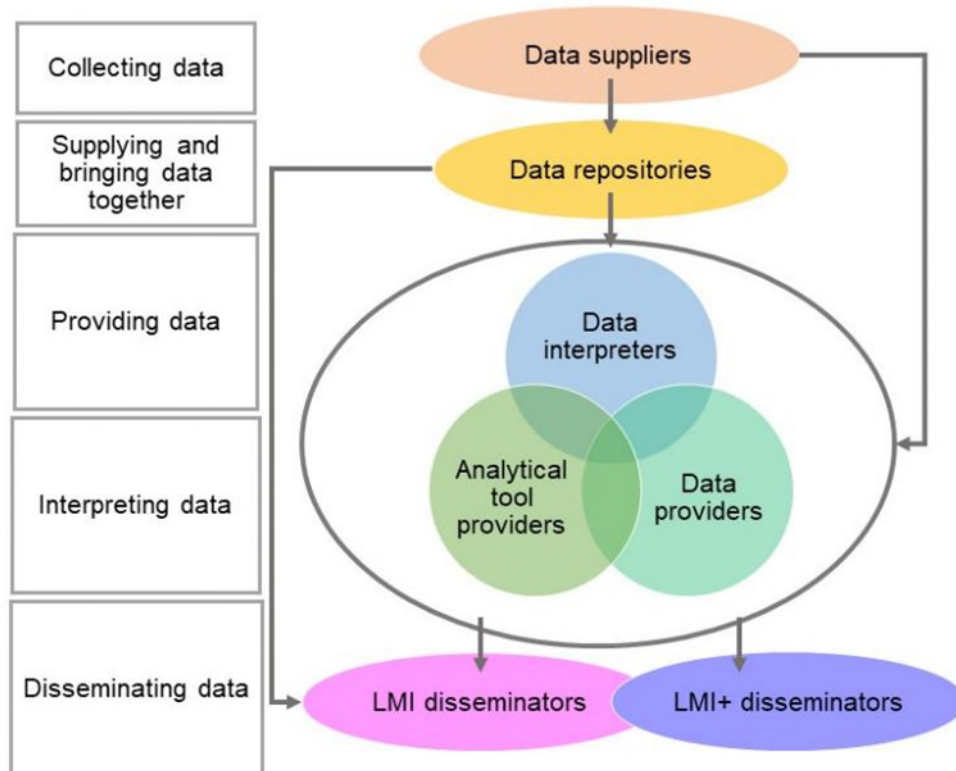
While this organisation has no direct role in the LMI landscape for young people, previous relevant experience, with direct involvement in the LMIS, indicated the crucial importance of helping Careers Leaders in schools to understand their local labour market. Two particular methods of supporting these intermediaries effectively were expressed as aspirations: first, to establish basic principles about the labour market; and second, to tell stories about the labour market. There is a need to support users of LMI to be more nuanced; to understand numbers; put aside biases and assumptions. It is necessary to develop and provide teachers with tools that will help them understand how labour markets work, which is much more challenging than simply providing data. The role of LMI will vary across different organisations but needs to be embedded across the curriculum. However, it was thought that LMI is always likely to be a 'poor relation', in this regard, because it is competing with formally examined curriculum content.

¹⁸ These reports can be retrieved from: <http://www.871candwep.co.uk/data-and-labour-market-information/> and <https://www.candwopportunities.co.uk/>

4.2. The supply and provision of labour market information and intelligence for careers

Organisations and services identified in the landscape mapping were categorised as detailed above, in section 2. A visual representation of those involved in the LMIS for careers in England and how it operates, follows (see Figure 1).

Figure 1: Representation of the operation of the LMIS for careers in England



4.2.1. Data suppliers

Data suppliers are defined as those who collect and supply data in various formats ready for others to analyse, present and/or interpret.

Four main suppliers of official and independent data were identified in the review: the ONS, The Higher Education Statistics Agency (HESA), Universities and Colleges Admissions Service (UCAS) and the Office for Students. In England, the collection and compilation of data is mainly undertaken by the ONS, which is the largest independent producer of official statistics. The ONS collects and publishes statistics related to the economy, population and society at a national, regional and local level. Some examples include: the Census of Population; BRES; Workforce Jobs Series; LFS; and ASHE. Other data suppliers identified included HESA, UCAS and the Office for Students, which supply student data. Government departments also commission data collection, including the Working Futures projections and the Employer Skills Survey (ESS). These official data are made available through the ONS website, nomisweb and the LMI for All service (data repositories).

Data suppliers are national level organisations. Data are supplied to data repositories and data interpreters, but also feed into analytical data and tool providers (see Figure 1).

4.2.2. Data repositories

Data repositories bring data and datasets (hard LMI) together in a database enabling wider distribution. They make these data available for others to use by enabling data to be downloaded or accessed through an Application Programming Interface (API). Some repositories link datasets using a shared framework (such as occupational classification) so tailored queries can be accommodated. So rather than asking '*how much does an engineering technician earn?*', a query can be '*how much does a 25 year old engineering technician earn in the North West?*'.

Repositories were found to supply data to data providers, analytical tool providers, and data interpreters. Repositories enabling data to be queried using an API were found to supply data directly to careers organisations and services disseminating LMI. One example is that of icould that uses data from the LMI for All data repository, visualises the LMI and presents it alongside soft LMI (namely careers videos).

The review identified 21 data repositories. These were managed and operated by national, regional and local level organisations and services. At the regional and local level, repositories were being managed by LEP local intelligence units, data hubs and observatories. These repositories supply LMI (hard and soft) that often needs to be translated into LMI+ for use in careers. The four main suppliers of data (the ONS, HESA, UCAS, Office for Students) also act as repositories enabling users to access data.

4.2.3. Data providers

Data providers are defined as those that provide access to data from data suppliers for presentation (usually online and static) with no interpretation.

A number of data providers were identified; 22 were reviewed operating at national, regional and local level. Data providers were variously found to present data in tables, charts and infographics. Whilst the aim of these data providers is not to supply data to the careers field, intermediaries and those institutions working with young people find these data useful as they provide insights into local and regional labour markets. A number of interviewees spoke about the role these data providers were playing at the local levels in providing local intelligence, as national sources were reported to be out of date and/or not representing an accurate picture of the local labour market.

Some data providers (mainly private) are also collecting data using web scraping and machine learning to classify and compile data. Data mainly being collected are job vacancies, as these are seen to offer a current picture of the labour demand and supply at the national, regional and local level. Data providers are disseminating data through labour market reports and insights that include hard and soft LMI and LMI+ (often customised at a regional or local level for a fee), as well as developing tools to enable analysis and presentation of the data. For example, Burning Glass and EMSI provide LMI from the main data suppliers and data they have collected to create LMI+. These LMI and LMI+ are made available through online tools that enable users to integrate the data.

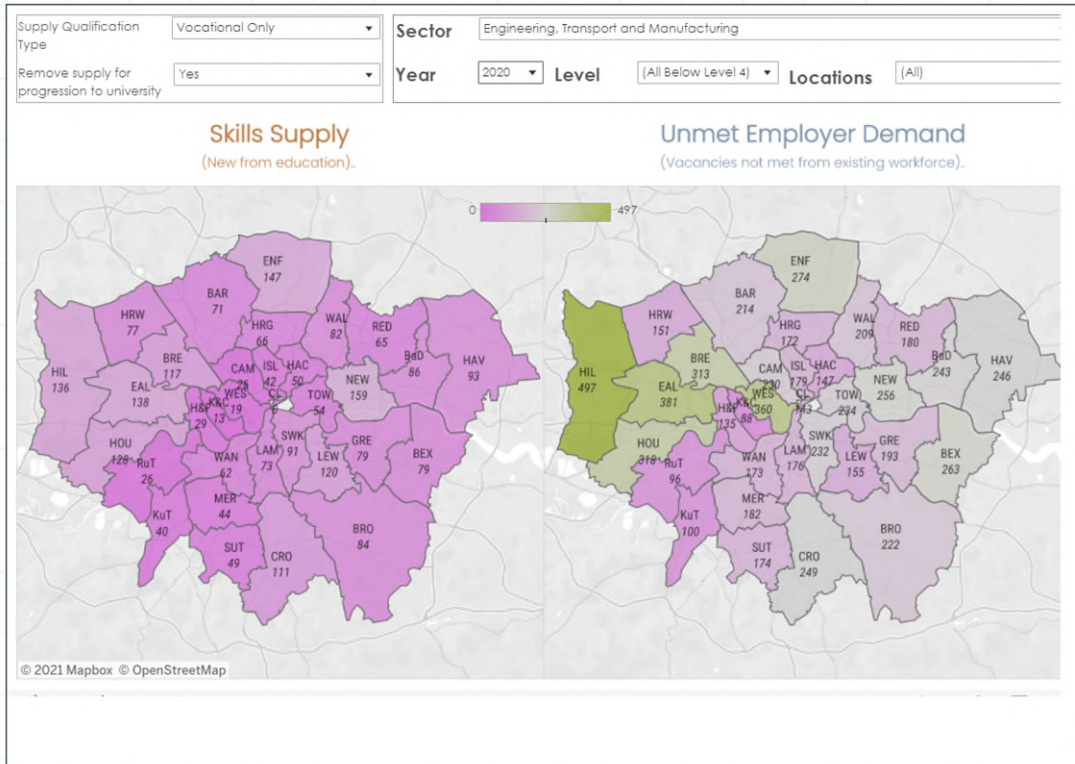
4.2.4. Analytical tool providers

Analytical tool providers (of which 12 were identified) enable hard LMI (others' data or their own) to be explored and/or visualised through an online tool. Using this tool, presented data can be customised and/or manipulated.

The majority of those providing analytical tools for the LMIS also provided data as they were producing their own data and enabling access. One example is that of nomisweb, which presents ONS data at a local level. Online tools enable the user to view presented data and customise changing geographical comparison, view time series data, download the data and query the dataset.

SkillsMatch London developed an interactive LMI tool which allows the visual exploration of the relationship between skills supply and employer demand at local level in London (see Figure 2). The tool combining local level hard LMI data on education labour supply and demand is aimed at careers advisers, school or college training providers, policy makers and employers.

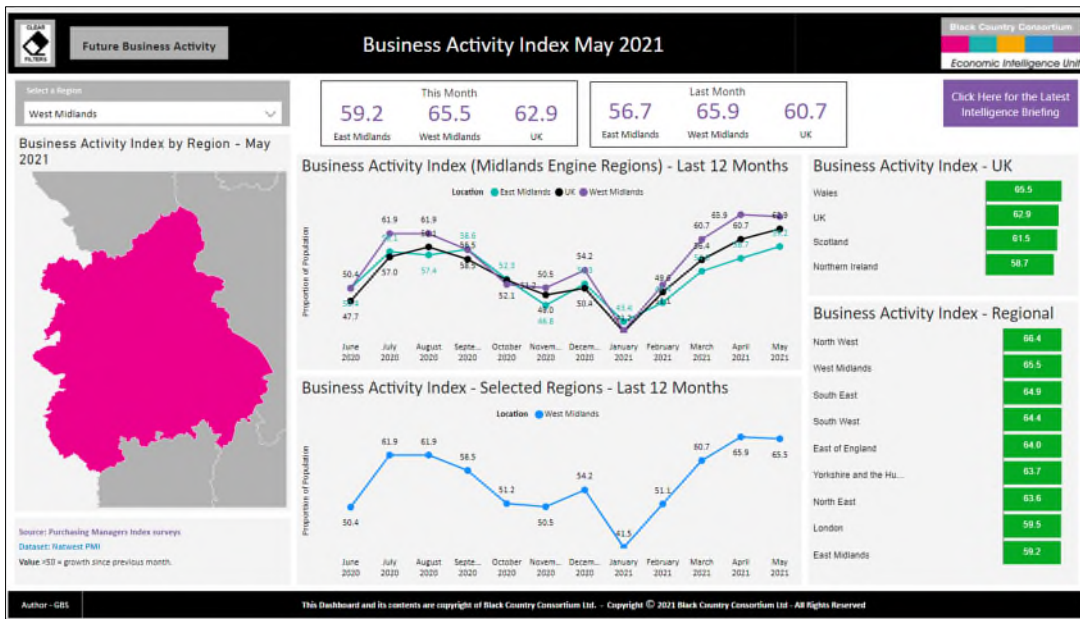
Figure 2: Skillsmatch London skills supply and demand map



Source: http://skillsmatch.intelligentlondon.org.uk/demand_supply_map

A number of examples of local level organisations and services providing analytical tools to access and customise data was also found in the review, such as those developed by LEP intelligence units and data hubs. Hard LMI are often presented with little interpretation. One example of a tool being used is by the Black Country Intelligence Hub, which provides access to local LMI data using Power BI (see for example Figure 3).

Figure 3: Black Country Intelligence Hub Business Index data exploration



Source:

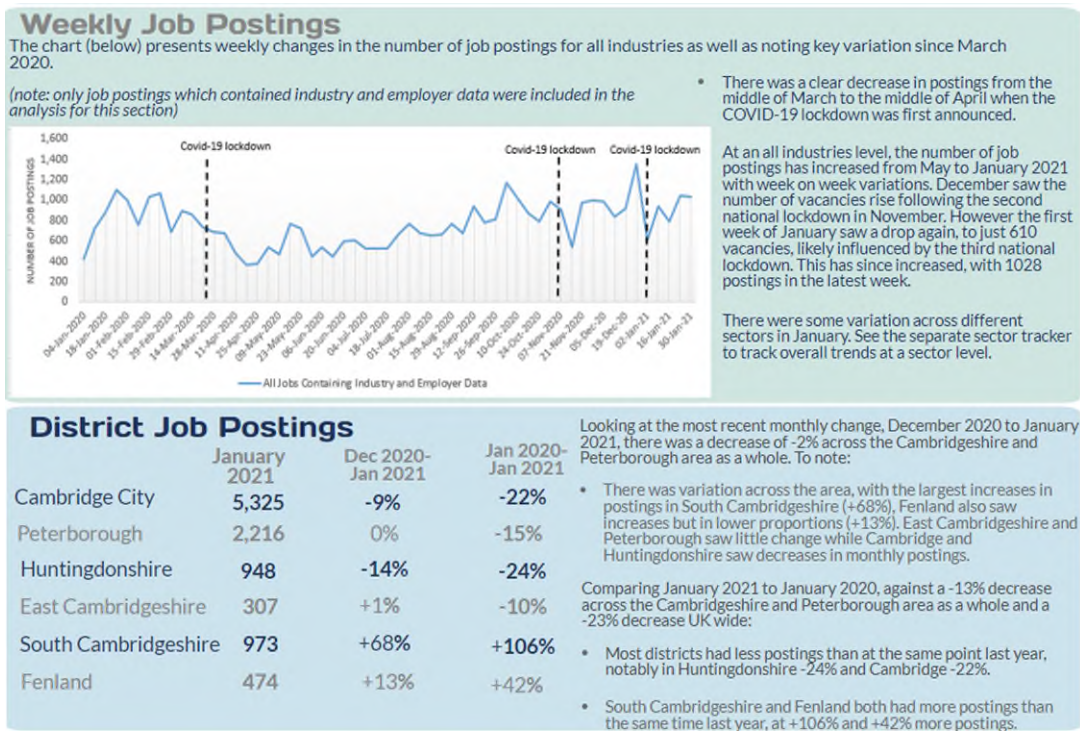
<https://app.powerbi.com/view?r=eyJrIjoiaNWYxZTVmZWltNWJlMjE0ODhiLTkyNmItNmZhZjliZTQ4MTA5IiwidCI6ImNhM2RjZDRiLTRiNDU0tNGUyMi1iODFhLWQ5NjMzZDZhOGM5ZS9j>

As noted earlier, the proliferation of online tools (such as Tableau, Power BI, Google Spreadsheets, Datawrapper, etc.) that can be embedded in webpages to enable hard LMI not only to be visualised but also customised is opening up the provision of LMI. However, to date these have really only been aimed at local stakeholders, employers and policy makers, but with intermediaries and institutions supporting young people as secondary audiences. Reviewed sources using these tools have not been assessed as useful for young people at the current time. However, purpose built and interactive tools for young people, intermediaries and institutions supporting young people to access hard LMI are growing (such as SACU's Labour Market Explorer, Career Pathways by Float, 'Where the work is' by JP Morgan Chase, IPPR and Burning Glass).

4.2.5. Data interpreters

Data interpreters are defined as those organisations and services that interpret data converting hard and soft LMI to LMI+. Whilst these data and intelligence are not directed at the careers field; they can be viewed as useful contributing to the LMIS for careers in England. Of the 35 sources in the review, two thirds of which are provided by organisations and services operating at the regional level (defined here as those at NUTS 3 and above). Some examples include the Midlands Engine at a regional level and at a local level, the Greater Cambridge & Peterborough Combined Authority (see Figure 4).

Figure 4: Greater Cambridge & Peterborough Combined Authority vacancy trends



Source: <https://cambspeterboroughlmi.co.uk/for-leaders/#vacancies>

Several LEPs were found to produce a range of soft LMI and LMI+ for young people and intermediaries delivering careers, acting as data interpreters. The Leicester and Leicestershire Enterprise Partnership Ltd. (LLEP) is one example of an LEP that draws evidence from several sources and transforms it into a format that is accessible and useful for young people.

Case study: Leicester and Leicestershire Enterprise Partnership Ltd. (LLEP)

The LLEP brings together a range of data from a variety of sources including official sources and their own data collected by the business intelligence lead. LMI is included from: BRES on the number of businesses in sectors and numbers employed; ASHE for average earnings; UK Business count for the numbers of large enterprises and SMEs; as well as a range of other data from ONS. LMI+ is drawn from intelligence from the Business Growth Hub, LLEP and partner programmes and local business news stories on who is hiring, plus those growing or closing. This is supplemented with data purchased from EMSI for intelligence on advertised vacancies, such as the top ten advertised roles, skills most requested and who is hiring. When information is available, apprenticeship vacancies are collected; schools are encouraged to embed the live apprenticeship widget onto their websites.

Data are also collated as economic updates, the LLEP Economic Intelligence update, and the Leicester, Leicestershire & Rutland Statistics & Research online portal. Data available from this portal can be downloaded or explored using data dashboards. The Local Skills Report is also an excellent high-level summary of skills across the area.

The intelligence and data collated are transformed for use in careers resources aimed at young people and adults, intermediaries and institutions supporting young people, to create more 'easy read' LMI resources. One example is the World of Work Leicestershire area guide (see Figure 5) and videos*. The Work of Work Leicestershire 36-page guide provides LMI and LMI+ for 18 key sectors and includes the changing world of work, Enterprise Zone information, as well as employability tips and entrepreneurship information. Available online and in print, 23,000 copies are despatched to area schools and colleges each year and it can also be used at events for parents. Activity sheets on using the guide are being created for 2021.

The World of Work videos launched in 2021 include 15 films featuring local employers and young people aim to provide sector snap shots. These were created in partnership with the skills officer and the LLEP Careers and Enterprise team. These have been promoted to all LLEP area schools and colleges and are supported with lesson plans, quizzes and presentations for teachers and CPD resources; all of which embed LMI and LMI+.

Feedback has been very positive and the 'pick and mix' offer of how the films can be used make it easier for schools to utilise as time allows.

* LLEP World of Work videos can be viewed at: <https://llep.org.uk/wow/>

Figure 5: Snapshot of World of Work guide by Leicester and Leicestershire Enterprise Partnership Ltd.

Creative and Digital

The creative sector is about creating original ideas and products and is often split into three distinct parts: arts, culture and creative media. Job areas include design, film and video, social media, advertising, music, crafts, photography, computer games and animation. Digital skills are in demand, as technology is revolutionising how we live and work, and all organisations use IT in some way. The digital sector includes software development, cyber security, computer programming, web development, telecommunication (wireless and wired) and internet provision. The sector employs around 18,000 people locally.



Useful subjects
English, maths, ICT, engineering, art, music, science, psychology, design, chemistry, media

What is happening?

Creative

- The Cultural Quarter in Leicester is home to many creative businesses at the LCB Depot (which provides workspace for creative businesses), Curve, Makers Yard and Phoenix Square. Some creative businesses adapted to online services during the Covid-19 lockdown, but it is more challenging for other areas like TV, film and theatre to continue to operate well with social distancing constraints.
- Creative centres in the county include the Ferrers at Staunton Harold, the Atkins Building in Hinckley, Charnwood Arts and Melton Space. Harborough and Charnwood both have very strong clusters of creative businesses.
- Job competition in the creative sector is high.** You need to be tenacious with strong business and networking skills. Opportunities are often with very small businesses and work experience is useful. Employers value young people with combined sets of skills, such as artistic and scientific skills.
- Many people are self employed or work freelance, which means less job security. Some work is project based, so collaboration skills are useful.
- The Creative Leicestershire service runs WebinArt, a programme to increase business skills for local creatives.

Digital

- The trend to produce videos for business websites is growing and organisations are reviewing how to ramp up their online and digital marketing to increase sales.
- Many businesses across sectors invested in digital systems during the Covid-19 lockdown, using technology to offer an online presence, and to support staff to deliver services while working from home, when physical face-to-face interactions were not possible.
- Programmers and software development professionals make up 12% of the sector locally.
- Software company The Access Group has a new headquarters in Loughborough* (due for completion in 2020), creating up to 500 jobs.
- Digital is a changing industry - as new technologies and software are developed, it's important to keep your skills up to date.
- Creative and Digital entry level roles include** marketing assistant, apprentice light technician, apprentice animator, IT assistant, helpdesk analyst apprentice, business and administration roles.
- Creative and Digital skills shortages** include technician (especially software and digital media), foreign languages, production fundraising, 3D designers, production managers, programmers, broadcast engineers, VR specialists, data scientists, block chain engineers, digital marketers, illustrators, coders, data analysts, cyber security, cloud engineers, machine learning engineers and data management.

Other local employers include:

- ↑ Checkland Kindleysides
- ↑ Jadu
- ↑ Standout Design
- ↑ Champions (UK) Plc
- ↑ Anicca Digital
- ↑ Rock Kitchen Harris
- ↑ Trident
- ↑ Phoenix Arts Centre
- ↑ ESL UK
- ↑ Go Inspire
- ↑ CloudCall
- ↑ Adder Technology
- ↑ Opus Trust Communications
- ↑ Rare Ltd
- ↑ Affixius Films
- ↑ Soar Valley Press
- ↑ Seed Creativity
- ↑ Creative 62
- ↑ Colab Creation
- ↑ Local theatres
- ↑ Galleries
- ↑ Cinemas

All sectors use digital skills so research vacancies across the area.



WHAT YOU COULD EARN

TV, Video and Audio Engineers	£17K-£38K
Digital Marketing Officer	£17K-£34K
Web Designer	£18K-£40K
Print Assistant	£14K-£22K
User Experience (UX) Designer	£22K-£38K
Graphic Designer	£16K-£40K
Photographer	£14K-£30K
IT Support Technician	£17K-£30K

Skills and qualities

ICT, problem solving, attention to detail, team work, communication, planning, creativity, presentation skills, leadership, innovation, business and entrepreneurial

Explore career ideas at...

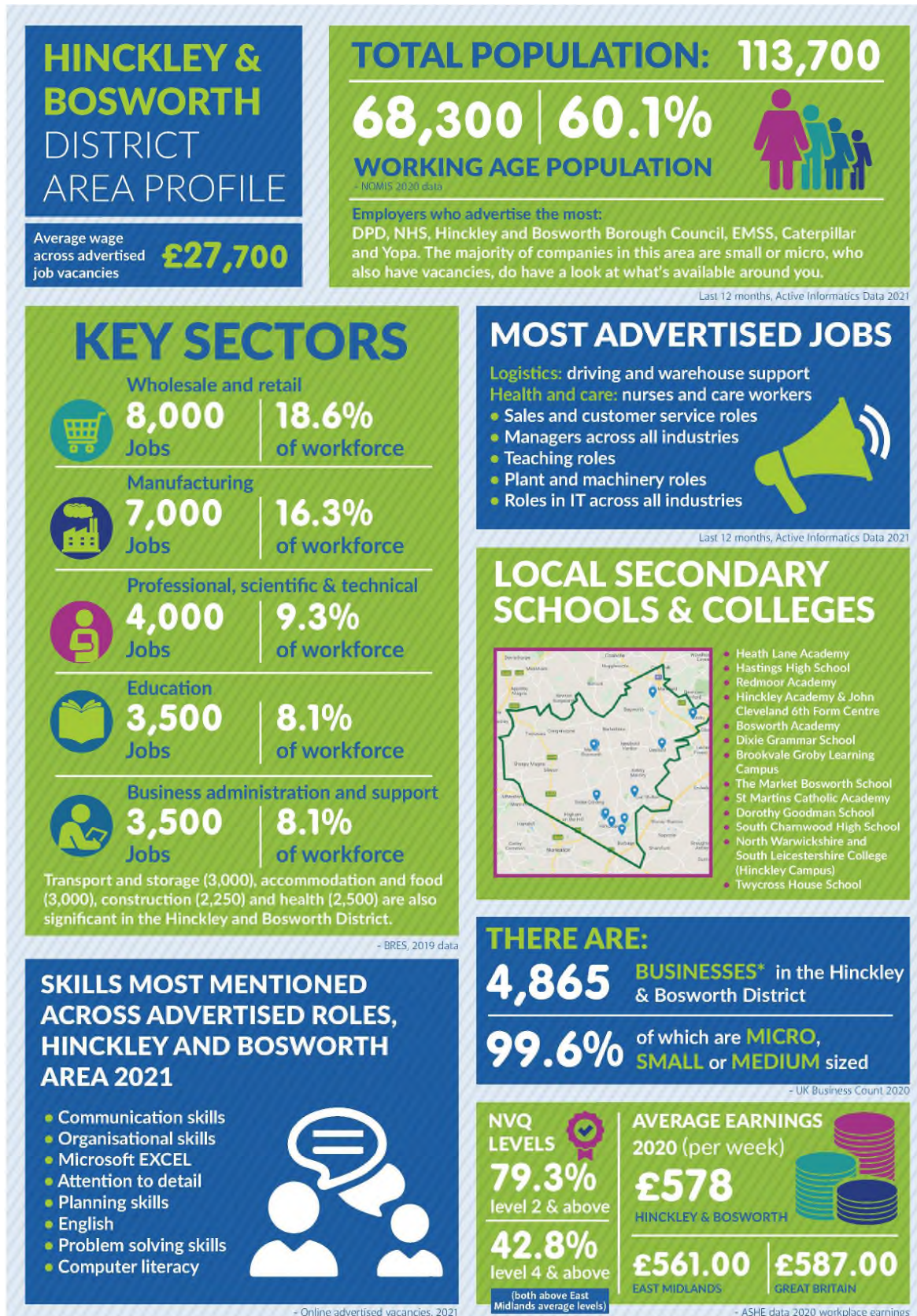
www.screenskills.com www.lcbdepot.co.uk
www.creativeleics.co.uk www.bubble-jobs.co.uk
<https://getintotheatre.org/>
www.techjobs.co.uk www.ccskills.org.uk

* The Access Group HQ will be based at the Loughborough University Science and Enterprise Park.

Source: <https://lep.org.uk/app/uploads/2020/11/Young-People-World-of-Work-Guide-2020.pdf>

Useful insight data are also presented in the LLEP Local Skills Report (created to be easily digested) and district snapshots (summaries of eight districts with LMI; the population, key area business, key sectors and most advertised jobs) (see Figure 6).

Figure 6: District guide by Leicester and Leicestershire Enterprise Partnership Ltd.



Source: <https://lep.org.uk/skills/information-resources-for-education-professionals/district-snapshots/>

The LLEP is planning to create a new LMI newsletter in 2021 to expand on the area offer. Some new LLEP sector analysis (15 sectors) is also due to launch in late summer and again this will be a new resource.

The top sources of LMI and LMI+ include: LMI for All as the widgets are easy to use and embed in webpages and collates data from a range of sources; icould as this uses videos to convey information and the data are easy to read; plus, NOMIS as it is easy to use. Other sources with LMI and LMI+ embedded include Start and Cascaid.

There are several challenges with LMI, meaning that the needs of recipients cannot always be addressed. The pandemic has resulted in sometimes out-of-date data and it has been challenging getting real time data. LMI for students with special educational needs (SEN) and disabilities is missing. Advertised job vacancies are not always representative of all available jobs and sectors. It can be challenging to access local sector specific information across all sectors, some sectors produce more information than others, or it may only be available at a national level. Also challenging is knowing precisely what the 'jobs of tomorrow' will be when they have not yet been invented. Some of the existing SIC and SOC codes used today do not always align to the emerging sectors of the future. A national source of sector information that can be drilled down to city and/or county level and is more 'real-time' would be useful.

One positive is that, with increasing big data and hi-tech systems, new LMI that addresses some of these issues, could now be created.

4.3. Disseminators of labour market information and intelligence for careers

Of the 119 sources reviewed, 87 were identified as disseminating LMI and LMI+ for the careers sector. They represented organisations and services providing careers data and information (hard LMI, soft LMI and LMI+) directed at young people, careers intermediaries, and institutions supporting young people. Organisations operating at a national level dominated these categories; with a majority disseminating LMI and/or LMI+.

Disseminators of LMI present and visualise data for careers intermediaries and users with little to no interpretation of data. Some examples include: Enguinity (See Figure 7), Aspire Higher, Careerpilot, and Careersmart. These sources tend to focus on sectoral and occupational data at the national level.

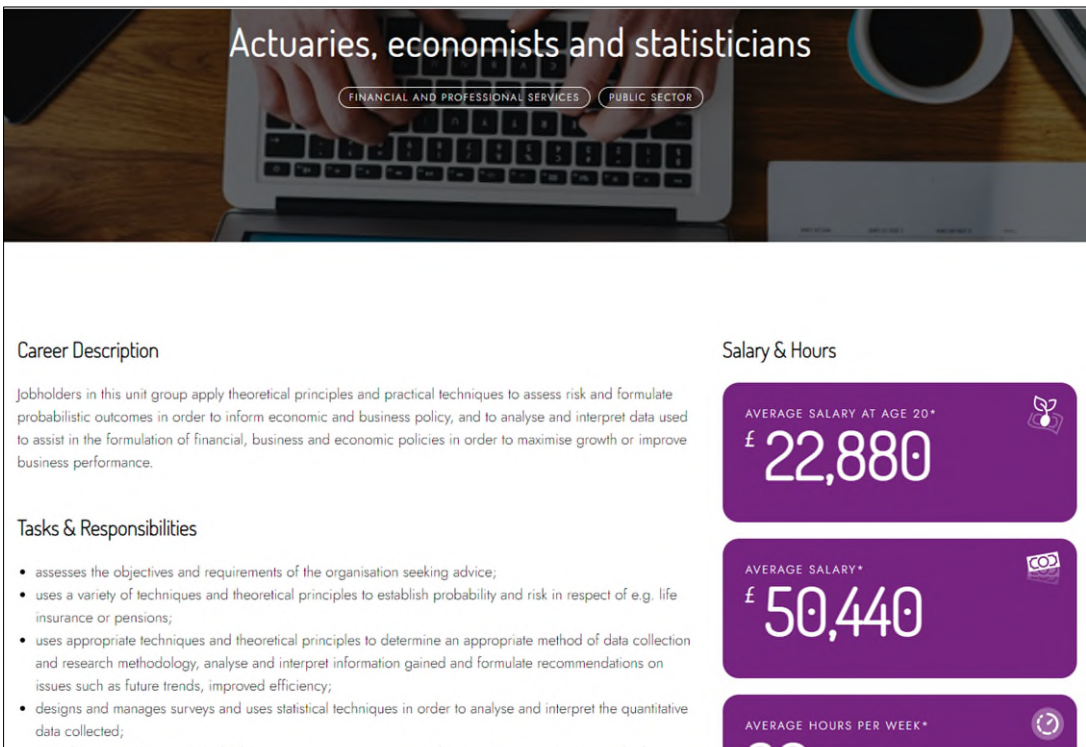
Whereas sources categorised as disseminators of LMI+ (sometimes alongside soft and hard LMI) present interpretation and/or visualisations of data specifically aimed at the careers field. Some examples include: Buckinghamshire Skills Hub (See Figure 8), icould, and Technicians make it happen. In the devolved nations, the CareersWales and Scotland's My World of Work websites are good examples of sources using LMI and LMI+, alongside a range of other careers resources and information (soft LMI) to support young people in their career transitions. In England, Start by U-Explore is a good example of a source using LMI and LMI+ embedded in a number of learning modules designed to support young people with the career decisions.

Figure 7: Enginuity Sector insight – electrical equipment



Source: <https://enginuity.org/insights/sectors/electrical-equipment/>

Figure 8: Buckinghamshire Skills Hub Career profile for Actuaries, economists and statisticians



Source: <https://bucksskillshub.org/career-profiles/actuaries-economists-and-statisticians>

4.4. Mapping the LMIS for careers

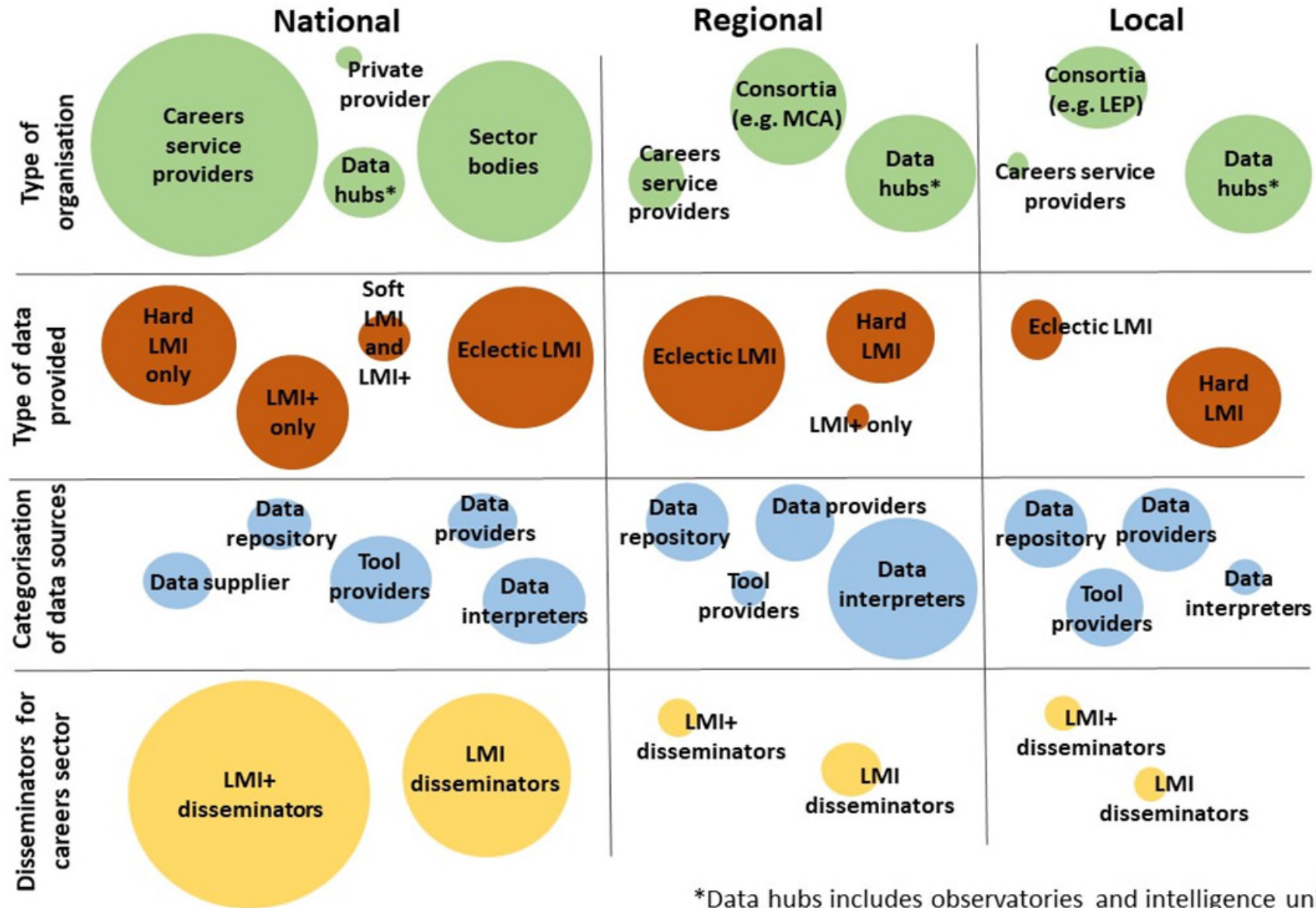
Using the evidence from the review (a summary of which is presented in Appendix 2), a map of the LMIS for careers in England has been constructed, together with a review of its components and functions.

Figure 9, below, provides an illustration of the LMIS for careers in England at a national, regional and local level. The sizes of the bubbles represent the number of each type of source. It does not, however, give any indication of their relative importance. Four different categories are represented;

- Green bubbles: the types of organisations providing data to the LMIS;
- Orange bubble: the type of data provided (i.e., hard LMI, soft LMI, LMI+, Eclectic LMI¹⁹);
- Blue bubbles: the categorisation of data sources; and
- Yellow bubbles: the disseminators for the careers sector (i.e., LMI or LMI+ disseminators).

¹⁹ Eclectic LMI is used to categorise those sources that presents and/or use a wide range of LMI (hard and soft) and LMI+.

Figure 9: An illustration of the LMIS for careers in England



*Data hubs includes observatories and intelligence units

What data are available at national, regional and local level?

Figure 9 indicates that those who supply, provide and disseminate LMI and LMI+ in the careers landscape in England are primarily located at the **national level**. ONS is the main supplier of national, regional and local labour market data to several organisations in the LMIS. The main sources of data supplied by ONS are noted in section 4.1.1. These government data are feeding into, and being used by, a range of regional and local sources; this is the undoubtedly the primary source of data underlying careers sources in England.

In England, official and independent data suppliers exist only at the national level. Others may collect hard LMI, but it is not widely disseminated. There are a few organisations (including Burning Glass and EMSI, now merged) collecting their own data by using new techniques to supply a real-time picture of labour supply and demand using vacancy data. ONS is also piloting the collection and analysis of vacancy data (ONS, 2021b).

Those sources that are more reliant on LMI+ and/or soft LMI were found to use experts or carry out their own research. This was particularly the case for those primarily delivering sector insights and job profiles.

At the national level, careers organisations and services are dominant in the LMIS. There are also a number of sector bodies and professional associations at the national level that provide industry intelligence (soft LMI) and hard LMI.

'Bridging the gap' between national, regional and local data, interviewees noted, is urgently required. This was a recurrent theme that emerged from the interviews. There is plenty of LMI available for young people, but the major problem is connecting the generic LMI and LMI+ (what education and training routes exist) with what this means for the individual (in terms of salary, skill requirements, vacancy, etc.). High quality, generic hard LMI are available at a high level, but there was a consensus amongst interviewees that there is an urgent need to transform and translate those 'high level data to specifics': 'The gap is so big it has become a chasm'.

Figure 9 illustrates a change at **regional and local level** with data hubs and local consortia dominant in the LMIS. Local consortia at this level include: Local Enterprise Partnerships, consortia (combining local stakeholder, education and training providers, employer etc.), Mayoral Combined Authorities (MCA), Growth Hubs, and local councils. Whilst these providers are not always explicit about the relevance of their (often hard) data to the careers field, they nevertheless provide good sources of local intelligence (soft LMI) and data that could be used by intermediaries and institutions supporting young people. Other sources such as the Chambers of Commerce, Business in the Community and Jobcentre Plus that operate at a local level were not identified by interviewees as a source of intelligence and data. Their online resources were reviewed, but no publicly available information was assessed as relevant to the careers landscape.

At the **regional level** there are a few regional organisations supplying their own data by, for example, undertaking business surveys or mapping education and training provision to feed into their own LMIS.

At a **local level**, interviewees reported a heavy reliance on data from the nomisweb and purchasing data from EMSI and Burning Glass in order to have access to local and current intelligence (hard LMI). A number of interviewees reported using these hard LMI to create monthly labour market updates that were distributed to Careers Leaders and institutions supporting young people. This is often supplemented with soft LMI collected from local employers. The Skills Advisory Panel (SAP)

programme of work²⁰ was considered key to the development of local intelligence (which includes some insights and interpretation of data useful to the careers LMIS). With funding from SAP, local skills guides can be seen as a valuable source of hard and soft LMI. For the guides, data from national suppliers (such as LFS, BRES and ASHE) and information from local sources are collated, analysed and interpreted.

At the local level, most intelligence and data were presented and made available through the LEP and local consortium. However, what was available was variable with some presenting no LMI or LMI+, whilst others presented the local industrial strategies, area profiles and local growth sector profiles. Local observatories and intelligence units (often part of their LEP) provided these hard LMI with many using tools to enable access to the data. CEC Career hubs and Growth hubs, that are in the process of being setting up, were least likely to contribute to the LMIS at the time of writing. These organisations and services linked users to other sources of LMI and LMI+.

At the local level, LEPs play a key role in researching the local labour market by collating and analysing data for wide dissemination to key stakeholders in the area. The following example from the Buckinghamshire LEP demonstrates the wide-ranging sources that are drawn upon including from national data as well as their own surveys. Significantly, it demonstrates how a number of local organisations and services are being used to collect data at the local level.

²⁰ For more information on the programme of work and reporting guides, see <https://www.gov.uk/government/publications/skills-advisory-panels>

Case study: Buckinghamshire Local Enterprise Partnership

Labour market information and intelligence is a key element of the LEP work within its dedicated research team. The LEP, the Growth Hub (Buckinghamshire Business First) and the Skills Hub collaborate closely on the collection and dissemination of labour market and skills intelligence.

The intelligence is used for a variety of purposes including the production of their annual local skills plan (which is requirement of the SAP funding). Data are also embedded within the Buckinghamshire Skills Hub website aimed at a broad range of stakeholders in the area. The Buckinghamshire Economic Intelligence Observatory is currently being developed and data will be made available through this portal. The observatory will use a range of data analytical tools and dashboard software, so data are visualised and accessible.

For careers, slide decks are produced for local CEC Enterprise Advisers to maintain their local knowledge and to feed into their own work and presentations to institutions supporting young people and businesses. Slide decks include data on:

- the local economy (e.g., local sectors, sectoral trends, occupational profiles, etc.);
- labour market (e.g., impact of COVID-19, productivity, etc.); and
- skills available for the local economy (e.g., education and training providers, graduates, etc.), skills demanded (e.g., jobs in greatest demand, skills development, etc.) and skills challenges.

LMI and LMI+ are also included in labour market insights for young people and resources for parents/carers. These insights include: data on opportunities and key sectors in the local area; current occupations and skills in demand; plus, the impact of COVID-19 on the local labour market.

To produce the labour market resources, data are collected and analysed from a range of sources. Official sources of national data used include the ESS, Annual Population Survey, BRES, and the Department for Work and Pensions statistics. ESS provides headline data and an indication of direction of travel. To extend this to a local level, business surveys are distributed by the local Growth Hub to provide current intelligence on local business requirements. A locally held database of key employers is also maintained, which is also accessible to schools and colleges who may need help identifying businesses to support careers events and activities. Intelligence is also gathered from national research reports. Past and current data are presented with some projections so trends can be understood.

The LEP also purchases data from: EMSI Analyst for more granular occupational analysis (SOC 4-digit at local level) and data on the local labour market; Burning Glass Technologies Labour Insight for data on the type, incidence and trends in local job postings; Beauhurst for intelligence on high growth firms; and CoStar property database for data on which firms occupy what buildings in the area. Sources considered key to local intelligence are EMSI Analyst and Labour Insight. Together these sources provide granularity of analysis at local level data including SOC 4-digital level and occupations within industries.

Figure 10: Example of intelligence provided by Buckinghamshire Local Enterprise Partnership for careers purposes



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- Space is one of the UK's fastest growing sectors.
- The Westcott Space Cluster is located near Aylesbury. It is home to a small but growing number of space related companies who are developing new technologies in rocket propulsion, 5G communications and autonomous systems.
- Big developments are planned on the Westcott site over next 10 years. These developments are likely to create 2,300 highly skilled jobs in manufacturing and over 1,000 on-site technical apprenticeships.
- There are currently skills shortages for technicians and propulsion test specialists within the space sector.
- Studying STEM subjects at school is the best starting point for a career in the space sector.



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Soft intelligence and data are also gathered through Skills Advisory Panel meetings, and sector group meetings which include representatives from employers, education and training providers, and intermediaries in the area.

The work of LEPs is considered key to building up local knowledge particularly 'on-the-ground knowledge of local companies and the types of jobs they offer'.

What data are being provided?

The review identified a range of data being provided in the LMIS in England. Whilst the focus was on data relevant to careers support for young people, particularly relating to technical career pathways, other data included were noted. At national, regional and local levels, the following is variously supplied:

- Employment data, including employment and unemployment rates, employment status, economic activity and inactivity, working hours, salary, forecasts and trends, etc.
- Education data, including qualifications and pathways, attainment levels, courses, number of learners, etc.
- Demographic data, including gender, sex, age, and ethnicity.
- Skills and tasks data linked to occupations, employer and sector demands.
- Business demographics, including size, activity, start-ups and deaths, recruitment and redundancy numbers.
- Economic data, including Gross value added, productivity.
- Vacancy data, including job and apprenticeship vacancies, incidence and trends.

These data are disaggregated by industry (SIC 2007, 1-digit), geography (national, regional [NUTS 1] and local [NUTS 2 and 3]), and occupation. Careers organisations and services were found to present LMI and LMI+ using sectors and job groups that they created to help their users understand rather than using official classifications and structures, such as SOC and SIC. Those using the LMI for All service API were presenting data at SOC 2010 4-digit level. No sources were found to be using SOC2020, which is the updated standard occupational classification.

At a regional and local level, these data were presented alongside other indicators important at this level. These indicators included: health and well-being, housing and planning, deprivation, crime, transport and Travel to Work Areas, environment and places. The drive to deliver these data are in response to the Government open data policy for transparent and accessible data.

One interviewee suggested that LMI is probably better than previously, but there was 'still some patchiness'. Overlaps and duplication exists, with multiple products in the market. It is difficult for users to know what they should be looking for. Tensions exist between quality criteria like robustness of data, timeliness and the geographical dimension. People think they need local data, but data needs to be produced to standards and at national level and disaggregated at the regional and local level. Big data is promising, but for young people and other intermediaries, it is still confusing.

Of the 119 sources reviewed, 105 were open access, five were open but required a registration in order to create a profile and tailored experience, and nine required an annual fee (these fees were mainly aimed at an institutional level).

What is the currency of data in the LMIS in England?

The majority of the sources reviewed were updating data and content on a regular basis. Those using data providers APIs (such as those from the LMI for All service and nomisweb) had the most current data based on when data are publicly supplied. Those using vacancy data and intelligence from ONS, EMSI and Burning Glass also had the most up-to-date data. Vacancy data at the right geographical level is missing from the landscape with one interviewee stating that 'Niche geographical data are simply not available'. However, interviewees generally noted a wariness in using vacancy data particularly in terms of how it is interpreted with a need for standardised language.

The majority of sources were noted to have current data and data on past trends. Only a few sources presented occupational projections. Some interviewees reflected how LMI (particularly hard LMI) is currently not helpful for most young people, who typically focus on the 'here and now' (e.g., vacancy data) and/or the future. Most LMI and LMI+ is backward-looking ('what's happened in the past').

COVID-19 has highlighted the weaknesses in the current LMIS with a lag in publication date resulting in a dated picture of the labour market. A few local sources were found to have produced COVID-19 labour market insights using ONS data and vacancy data from EMSI and Burning Glass.

What are the gaps in the LMIS for careers in England?

Interviewees were asked to identify the gaps in the LMIS in England. The following gaps were highlighted:

- Interpretation and mediation of LMI data and intelligence remains challenging with two interviewees advocating a role for career advisers and Careers Leaders in England for disseminating and mediating LMI. Alongside this there was a recognised need for ICT support to help young people navigate what LMI is available, with careers advisers' support to help young people interpret and make sense of it. The value of a hybrid approach (a mix of career adviser support and access to data through high quality websites) was considered necessary, going forward. 'Definitely not numbers' was stressed by one interviewee. This highlights the need for high quality LMI+ and soft LMI.
- Career pathway data is largely missing, incomplete or dated. This was regarded as particularly regrettable by a number of interviewees. It was noted that people really struggle with pathways: 'I would like to be an engineer and I like trains. What are the different ways of getting into that?'
- Meaningful employer information (such as vacancies, skill gaps, etc.) is missing with many local consortia gathering the data themselves or purchasing data (from, for example, EMSI and Burning Glass) to address the gap.
- Consistent salary data is problematic and difficult to find as different sources display different data which is confusing. One interviewee wanted more relevant salary data in terms of timeliness and geography.
- Greater data granularity is missing and needed – 'going as low as possible' – as it is thought to provide greater understanding. This means having national level data that can be disaggregated to a regional and a local level. Graduality at the local level is missing.
- The number of sectoral sources with qualitative information is problematic as it is leading to inconsistency in the use of LMI+. Few sectoral sources were found to include hard LMI and data were missing on sectoral trends, occupations growing and declining, opportunities and skills demanded. Data at a national and regional level are available, but rarely being used.

Who is the LMIS in England serving?

The review was focused on identifying sources for young people in secondary school and college. Sources were also reviewed to determine whether information and data were also being targeted at other groups. It was notable that very few sources had information specific to parents/carers. Sources at the regional and local level were targeted at researchers, policy makers, regional/local stakeholders, employers and business professionals, and key stakeholders in higher education.

Where is intelligence and data about technicians and technical careers?

Each source was specifically reviewed in terms of intelligence and data about technicians and technical careers. Sources supplying industry and sectoral data were also reviewed. Only one source aimed at young people was identified as specifically providing LMI and LMI+ relating to these careers: Technicians Make It Happen. Around half of sources identified in the review had intelligence and data on technicians and technical careers as part of their job profiles or industry insights. Much of the information presented was soft LMI, focusing on job descriptions, tasks, and types of qualifications. Sectoral bodies (such as Cogent and Screenskills) included occupational pathways for these roles, though currency was unclear. Data about technicians and technical careers is complex to unpick particularly as they are part of a number of industries and roles can have a technical element. Hard LMI, whilst readily available at occupational and sectoral level, would need a clear definition of a 'technician' and technical careers in order for data to be analysed and interpreted. Soft LMI relevant to technical and technical careers could be developed using expert knowledge but would need significant resourcing. If data are collected using SOC2020 extension classification²¹, which further breaks down occupation groups and enables the identification of some technician roles, then more LMI could be made available for analysis and interpretation. New techniques, as noted earlier, to supply a real-time picture of labour supply and demand could be used to collect data on technical careers.

How can the LMIS for careers in England be enhanced and developed further?

Interviewees identified the following as priorities for the enhancements of the current LMI and LMI+ provision including: ensuring high quality data are freely available; policy stability with central responsibility; mashing of data; a career brokerage model; a national website with a regional focus where data are consistent; more data on technical and vocational education and training qualifications and soft skills; support for intermediaries, including parents/carers. Suggestions for development from interviewees included:

- 'Permanent central agency required, which is central to government policy, not subject to change.'
- 'Role models – other young people – seeing how they undertook different career paths and what the outcomes were. Broader than just job title and pay – something that is relatable for Young People.'
- 'Combination of data sources to tell you what you need to know. It's about joining the dots. We need to be able to go from the automated level to tailor-made LMI at regional level. We need a national platform that is regional in focus.'
- 'What is more important [than data] is the process of researching LMI accurately. Not the data identified at the end of the search. We need to be able to assess whether a young people know how to understand/research their local labour market.'

²¹ The SOC Extension Project has enabled further breakdown within occupational groups leading to the creation of 1,565 Sub Unit Groups. For further information see: <https://gss.civilservice.gov.uk/user-facing-pages/standard-occupational-classifications-soc/#:~:text=The%20extended%20SOC%202020%20framework%20builds%20on%20the,Sub%20Unit%20Groups%20each%20comprised%20of%20six%20digits>

- ‘If intermediaries are unable to put LMI into context for young people, it doesn’t matter how much good quality data exists. They need the skills to understand LMI. Don’t know how you get to that. Are we better at LMI for jobs that come through academic routes?’
- ‘Job postings – need more detailed information, for example, about qualifications.’

4.5. The LMIS in England for young people and intermediaries

There was consensus amongst stakeholder interviewees that the landscape for both young people and parents/carers continues to be confusing, with the fall-out from the COVID-19 pandemic making the situation considerably worse. Even in normal economic conditions, the amount of LMI now available was thought to be confusing and particularly difficult for young people ‘to digest’. With little LMI+, the relevance of data are often not understood at an individual level. The economic shock precipitated by the pandemic has exacerbated these problems. Stakeholders and intermediaries were now having to grapple with the challenge of just how young people can be helped to make sense of this new ‘economic shock’ and evolving scenario.

One interviewee, who had spent a number of years employed within the further education sector, felt that while LMI was generally inaccessible, this was a particular problem in ‘further education and vocational award sectors’. Another reported that whilst there is much information on graduate opportunities, much of it is inaccessible with young people and intermediaries having to search each university website for the information.

In the further education sector, awareness of LMI amongst students was thought to be ‘very low’, with employment and further education ‘far apart’. This was echoed by one interviewee who had surveyed young people and found that they know where to get LMI/LMI+ but were unsure what to do with it.

Reliable, local vacancy data emerged as most problematic, with local solutions being sought. Insights to the types of problems experienced are captured in the following quotes from interviewees:

- ‘Really not good! Problem is that there are lots of actors in the system, which causes confusion. We need more LMI on short-term trends, rather than longer term.’
- ‘Timing of data around trends is difficult. The time-lag between collecting raw data and making it available is obscure. Often appears outdated once published, but it may be the best.’
- ‘No bridge to local LMI (vacancies) – no data at a sufficiently granular level. Geographical dimension often missing. Need more regional data that are meaningful.’
- ‘Always try to be informed by data. The more local you go, the more difficult it is to get the data. Employers want to recruit (and retain) local employees and are more interested in soft skills than qualifications. Avoid focusing too much on numbers/statistics.’
- ‘Qualitative data is valuable but is resource intensive and harder to maintain. Cost-effectiveness is the guiding principle. Mediating LMI data is crucial, so presentation, language, visualisation, etc. is important.’

4.6. Assessment of LMIS for careers in England

In total, 119 sources were found to be part of the LMIS for careers in England, of which 87 were noted to disseminate LMI or LMI+ for the careers sector broadly defined. The majority of these careers related sources were targeted at young people, careers advisers and those working in educational institutions. Very few sources had LMI and/or LMI+ specifically aimed at parents and carers.

Of the 87 careers related sources few were considered a good source of careers related LMI and/or LMI+. These sources variously provided: a comprehensive repository of data that was disaggregated at occupational and/or geographical level; a range of visuals as a method of presenting the data (such as in infographics, interactive maps, figures, etc.); data were downloadable; hard LMI was embedded alongside careers information and support; soft LMI in terms of career pathways data; and LMI+. A small number of sources were noted to have options to customise and manipulate data, as well as offer innovative approaches to presenting LMI and embedding LMI+ in a range of tools, support and resources. Two open access source that were found to be innovative or unique in there LMI and LMI+ offer, included the Black Country Intelligence Hub and icould. The Black Country Intelligence Hub provided a wide range of current, high quality data on a number of topics focused on the region. Data can be explored, visualised and downloaded using analytical tools and spatial maps. The icould service, specifically designed for young people, provides data and intelligence enhanced by careers videos, careers support and tools. A user's experience is enhanced by the personality type quiz that directs them to possible sectors and occupations based on their interests and preferences.

Overall, the majority of sources identified in the LMIS were found to have high quality data (i.e., from an official source, up-to-date, comprehensive in terms of coverage and indicators), but these were not always targeted at the careers field. Those, therefore, aimed at intermediaries required resources to translate LMI into LMI+, as well as localise the intelligence.

4.7. Summary

Overall, the evidence from interviewees and the review of the LMIS in England for careers provides a deeper understanding of how the current landscape for careers is functioning in terms of how data are supplied, provided and disseminated. It is evident that, at the national level, there is much activity, while at a regional and local level, this activity is less evident. Where there is local activity, these provide examples of what is possible in terms of developing an LMI and LMI+ offer. Regional and local organisations and services are working hard to disseminate the information with many purchasing data from private sector organisations to provide missing local insights and data, as well as provide a 'real time' picture of the local labour market which can be served by current data suppliers.

The assessment of sources identified at the regional and local levels of the LMIS is rich with a range of data and intelligence presented and made accessible to wide ranging audiences through, for example, data hubs, recruitment agencies and observatories. However, the majority of these online sources are not directed at young people, schools and colleges, or intermediaries, but their data are relevant. Evidence from local practice has identified the range of work being undertaken to transform data and make it available for young people and intermediaries.

In a number of instances, it was clear that local organisations and services (including LEPs, Career Hubs, Growth Hubs and SAPs) are working well together to supply, provide, transform and disseminate local data and intelligence. The work required to transform LMI to LMI+ is not inconsequential, but online analytical tools could be used to make some of these data available for intermediaries to use in practice.

5. International examples of careers labour market information systems

Evidence on international practice in relation to the collection and dissemination of LMI for the purpose of supporting individuals to navigate various career pathways was captured from three websites representing contrasting approaches. The descriptive summaries of three international examples of careers LMIS are presented in this to illustrate contrasting models of the use of LMI and LMI+.

These are:

- Labour Market Information Council (LMiC), Canada (<https://lmic-cimt.ca>);
- SkillsFuture, Singapore (<https://www.skillsfuture.gov.sg>);
- ROA labour market forecasts and studiekeuze123, the Netherlands.

5.1. Labour Market Information Council (LMiC), Canada

This Council was established approximately three years ago (2018) by the Forum of Labour Market Ministers to improve and address gaps in Canada's labour market information ecosystem. Its mission is: improving the timeliness, reliability and accessibility of Canadian labour market information to empower Canadians to make informed decisions by enabling access to quality, relevant and comprehensive data and insights across the pan-Canadian LMI ecosystem.

It works with provincial and territorial governments across the country to 'add value to existing labour market information endeavours'. LMiC is governed by a Board of Directors and three subcommittees: including Executive, Audit and Strategy and Evaluation. In addition, the National Stakeholder Advisory Panel (NSAP) guides LMiC's activities, including the identification of annual priorities. The Board, in consultation with stakeholders, is responsible for determining the direction and priorities of LMiC.

Of particular relevance to this research is the Career Guidance Stakeholder Committee, recently established to ensure that the particular needs of career service delivery systems and their clients are accommodated. Part of its remit is to ensure duplication of data activities taking place elsewhere is avoided. The Committee has responsibility to ensure that all activities, (from the production of new skills and related LMI to decisions on format and channels of delivery) are 'evidence-based and impactful'. The Career Guidance Stakeholder Committee is participating in the development of the data hub and subsequent planned pilot (prototyping) initiatives, intended to identify and create sustainable data usage frameworks and access standards.

This resource is under development (ongoing), with the following categories of LMI currently available: job vacancies; non-standard employment; occupations; occupational outlook; skills; wages and salaries. Each of these categories has a live link on the website, providing detailed information on data sources and usage.

Overall, the intention of LMiC is 'to improve the understanding of LMI for all Canadians. We will develop definitions of key labour market terms and concepts to bring clarity to complex labour market subjects. We will develop tools and resources to help users better navigate labour market information.' Although comparatively in its infancy, this website demonstrates many potential features of good practice, with comprehensive, reliable data from robust sources provided in a transparent and accessible manner. Its funding sources, national, provincial and territorial, are apparently stable. The website targets end-users who have a reasonably high level of competence in searching and manipulating LMI, rather than for those who are in labour market transition directly, so mediation of data available is required. The Career Guidance Stakeholder Committee holds much promise in

addressing the challenging issues of providing LMI directly to those making labour market transitions into and through the labour market. By involving key stakeholders who manage and deliver career support services at the core of the decision-making processes for the website, the potential has been built in to improve careers LMI. However, there is currently no indication that support for intermediaries of the career development process is being provided for the interpretation of data provided.

5.2. SkillsFuture, Singapore

This initiative was launched in 2014 and has a particular emphasis on vocational and technical education, with a remit that goes beyond young people in education to include the whole adult population. Target audiences for the website are specified as: 'Polytechnic, ITE and university students; Fresh grads and post grads; Job-seekers; Early-career and mid-career switchers; Employees; Employers; and SMEs'.

Its aim is to encourage the development of autonomous learners by providing ongoing education and training opportunities to help them 'stay current with the ever-changing marketplace'. It has, therefore, a particular remit that focuses on technical and vocational education: 'helping individuals make well-informed choices in education, training and careers'.

A key feature of the website is to act as a gateway for the provision of SkillsFuture credits to all residents aged 25 and above that can be used to pay for pre-approved learning and skills development courses. SkillsFuture is a statutory body operating under the Ministry of Education, which works closely with Workforce Singapore (also a government organisation) to create a nation of agile workers and 'embrace the spirit of lifelong learning'. There are plans to expand the course list continually (currently about 400 courses) by up to three-fold, in consultation with employers, industry partners and the labour movement.

Regarding the LMI underpinning the website, a Training Management System²² lists resources available (APIs) to retrieve information on sector, career pathways, occupations/job roles, related training, and skills. But login permission is required to access the detail of what this contains. One section of the website is entitled: Education, Career and Personal Development. Here, you can find: Inspiring Stories; How-to Guides; Jobs-Skills Insights; Featured Courses; Audio and Videos; Pathways Programmes.

Eight priority and emerging skills areas are identified on SkillsFuture²³, referring to Industry Transformation Maps and feedback from industry partners. Whilst not focusing specifically on young people in school and college, this website illustrates one apparently successful method of both promoting and supporting technical and vocational training that has core relevance to the economy of Singapore.

5.3. ROA labour market forecasts and studiekeuze123, the Netherlands

As part of the Education and Labour Market Project (POA), the Research Centre for Education and the Labour Market (ROA) has developed a number of research activities aimed at a better understanding of the medium-term developments in supply and demand in the Dutch labour market. These activities include analyses of the match between skills supply and demand, the development of labour market indicators for the current equilibrium between supply and demand, and labour market forecasts of supply and demand by industry, occupation, education, and region. The indicators for the

²² For the training management system see <https://developer.ssg-wsg.sg/webapp/home>

²³ For eight priority areas, see http://www.skillsfuture.sg/-/media/Files/Newsroom/SF-Series_Annex-A.pdf

current state of the labour market, as well as the medium-term forecasts, are gathered in an online database: the labour market information system (AIS). This database is updated on a yearly basis. The POA project was initiated by ROA in 1986 to increase the transparency of the labour market, specifically for young people, to help them to make better informed decisions on their education. The most recent forecasts, with an outlook until 2024, were published in December 2019. Although mid-term forecasts are less sensitive to short term variations in the economy, it is possible that the 2020 COVID-19 crisis will affect findings.

A number of websites and information guides help to provide access of the LMI to their target group²⁴. Various independent organisations also involve themselves with dissemination, like the Cooperation Organisation for Vocational Education, Training and the Labour Market (SBB) (www.kansopwerk.nl), which uses data generated within POA in their dissemination of information.

Study choice database²⁵

LMI from various sources that relates to higher professional education and university programmes has been collected in the Study Choice Database. For example, labour market figures, accreditation data, admission requirements, intake numbers and student opinions. These data are used to support prospective students in their study choice via Studiekeuze123.nl. Additionally, the database is available to other external users.

As indicated above, the underlying research is conducted within the framework of the Education and Labour Market Project (POA). Funding comes from Nationaal Regieorgaan Onderwijsonderzoek (NRO; file number 405-17-900), the UWV Werkbedrijf, the Cooperation Organisation for Vocational Education, Training and the Labour Market (SBB), and employment agency Randstad Netherlands. Four Dutch ministries contribute: the Ministry of Education, Culture and Science (OCW), the Ministry of Interior and Kingdom Relations (BZK), the Ministry of Social Affairs and Employment (SZW), and the Ministry of Agriculture, Nature and Food Quality (LNV).

Additional information in the Study Choice database comes from various sources such as 1 Grade HO from DUO, the HBO monitor, the National Alumni Survey and the National Student Survey. Educational institutions also supply information themselves.

Labour market forecasts are regularly updated under a government funded research contract. Government departments or agencies also produce data themselves or fund the surveys, with LMI available on usage and destinations.

These three international examples not only illustrate models of careers LMIS, but also start to identify the range of stakeholders involved in the supply, management and resourcing of labour market data and information for careers.

²⁴ See for example <http://www.studiekeuze123.nl> and <http://www.keuzegids.org>

²⁵ See <https://www.studiekeuze123.nl/voor-instellingen>

6. Conclusion

Government careers statutory guidance for schools, further education colleges and sixth form colleges (DfE, 2021) for careers is organised around the Gatsby Benchmark framework, and Benchmark 2: Learning from career and labour market information, has significant implications on the use of careers LMI and LMI+. The remit of this study was to produce evidence-based recommendations on how to fill gaps in the LMI landscape. Preparation necessary to fulfil this remit involved a thorough review of the LMIS for careers in England. This review has led to the following evidence-based conclusions:

- The LMIS in England is well-developed and a range of organisations at national, regional and local level are playing a role in supplying, interpreting and/or disseminating data and information on the economy and labour market. The LMIS was found to be taking advantage of technical developments such as data linking, big data analysis, and web scraping. This system provides a good foundation for a LMIS for careers.
- In England, the LMIS for careers has the potential to improve in the short term if resources can be harnessed more effectively. For instance, the Department for Education LMI for All service (a data repository) is one example of how technical advancements are being harnessed to provide data to the careers sector. More expertise and resources are needed at the regional level to take advantage of the data available through the service and present it alongside soft LMI and LMI+ in order to create a comprehensive resource.
- The current LMIS for young people in England, especially those in technical education, is currently inadequate. Generally, there is a lack of hard LMI disaggregated at a sectoral level being presented, which if addressed would start to open up possibilities for data and intelligence for technical education and careers.
- Career practitioners' perceptions of the LMIS for careers guidance for young people were uniformly critical, with only a single interviewee stating that it had 'probably improved' over recent years. The growing numbers of players in this LMIS in England seem to have resulted in some confusion and frustration amongst intermediaries who utilise this information. Sources of LMI used by stakeholder organisations vary, with only EMSI and the LMI for All service being mentioned multiple times (i.e., three times each).
- Approaches to collecting, analysing and disseminating LMI for young people vary, with priorities reflecting the missions of different organisations in the LMIS. For example, there is variation in the importance of: vacancy trend data; employer validation of data used with young people; the need for primary data collection from young people (about pathways, preferences, etc.) for structuring data presentation; and soft LMI relating to the narratives illustrating career pathways.
- The impact of the COVID-19 pandemic was highlighted as a common inhibitor of reliable LMI and LMI+ data, given the uncertainties existing around economic shock and recovery.
- The need for local data was recurrently highlighted with an emphasis on vacancy data, despite attendant difficulties. Harnessing local expert LMI and LMI+ knowledge also represents a major challenge, but some local level organisations are addressing this need through the development of targeted online resources. The CEC Careers Hubs could play a greater role here.

- The lack of expertise amongst intermediaries (e.g., career practitioners, careers teachers, Careers Leaders) in mediating LMI and LMI+ for young people has the potential to severely compromise even the highest quality LMI data.
- There is a need for policy stability and identifiable central responsibility for management (including funding) of the LMIS. The Labour Market Information Council (LMiC) in Canada and Careers Wales provide models worth exploring where LMI provision for young people is clearly governed.

6.1. Recommendations

- The careers LMIS for young people in England is overly complex, hard to navigate and in urgent need of improvement. LMI relating to technical education needs to be improved.

A focus on LMI for technical education should be made a priority. SkillsFuture Singapore, a government funded initiative, is an interesting model, which has the twin objectives of boosting the status and profile of the technical sector and upskilling the workforce in this area, through a system of vouchers to support targeted training courses.

- Local vacancy information and soft LMI is lacking and is often identified as the most wanted and needed LMI by intermediaries working with young people, but resourcing is needed to transform these data into LMI+.

Whilst progress is being made in this area through developing data scraping techniques, other strategies could be considered in parallel. For example, harnessing the local LMI+ knowledge of career practitioners by supporting and encouraging them to share local vacancy information (not available online) directly onto a website that is then accessible to other career practitioners. LEPs and Skills Advisory Panels who can pool intelligence on skills needs directly from businesses in the local area, also provide a possible route to introducing soft LMI into the LMIS.

- The geographical dimension of hard LMI provision has improved recently but requires further enhancements.

Data suppliers should consider how to address the need for greater granularity of data at the local level for sectors and occupations.

- Hard LMI that relates to the present context (in real time), rather than the future or the past, has particular relevance for young people.

Creative use of different data sources (e.g., data relating to redundancies, repeat vacancies, job postings) could be considered, especially post-COVID, to help young people and intermediaries make sense of a dramatically changed and changing landscape.

- Strong governance and policy stability for LMI and LMI+ provision is lacking, which has a detrimental impact on the consistent provision of high quality, reliable LMI for careers.

A permanent central government agency could be established to support and monitor the ecosystem about careers LMI. The Canadian Labour Market Information Council is a model that combines expertise in LMI with stakeholder interests.

- Effective continuing professional development (CPD) for intermediaries (i.e., teachers, career practitioners) working with young people to support their career transitions is essential.

A fundamental understanding of how the labour market operates is necessary for intermediaries and young people. For example, soft LMI relating to career pathways would enable narratives about the navigation of the labour market by individuals to be developed, embedded in tools developed for this purpose.

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Appendix 1: Sources reviewed

Source	URL
A Future in Chemistry	https://edu.rsc.org/
ACCA	https://yourfuture.accaglobal.com/
Active Informatics	https://www.activeinformatics.com/
All About Careers	https://www.allaboutcareers.com/
Aspire Higher	https://aspire-higher.co.uk/
BBC Bitesize Careers	https://www.bbc.co.uk/bitesize/careers
Black Country Consortium	https://www.the-blackcountry.com/
Black Country Intelligence Hub	https://www.blackcountryintelligencehub.co.uk/
Bright Knowledge	https://www.brightknowledge.org/
Buckinghamshire Local Enterprise Partnership	https://www.buckstvllep.co.uk/
Buckinghamshire Skills Hub	https://bucksskillshub.org/
Burning Glass	https://www.burning-glass.com/uk/
Cambridge Insight Data	https://data.cambridgeshireinsight.org.uk/
Career Causeways by NESTA	https://data-viz.nesta.org.uk/career-causeways/index.html
Career Pathways by Float	https://www.career-pathways.co.uk/
Careerpilot	https://www.careerpilot.org.uk/
Careersmart	https://careersmart.org.uk/
CareersWales	https://www.careerswales.com/en/
Careerwave	https://www.careerwave.co.uk/
Cheshire & Warrington Local Enterprise Partnership	https://cheshireandwarrington.com
CIPD	https://www.cipd.co.uk/
Coast to Capital Growth Hub	https://www.c2cbusiness.org.uk/
Cogentskills	https://www.cogentskills.com/careers/
Creative Industries Council	https://www.thecreativeindustries.co.uk/
Croydon Observatory	https://www.croydonobservatory.org/
Cumbria Intelligence Agency	https://www.cumbriaobservatory.org.uk/
Cumbria Local Enterprise Partnership	https://www.thecumbrialep.co.uk/
Derby, Derbyshire, Nottingham & Nottinghamshire Local Enterprise Partnership	https://d2n2lep.org/
Derbyshire Observatory	https://observatory.derbyshire.gov.uk/
Devonomics by Devon County Council	https://www.devonomics.info/
Dorset Local Enterprise Partnership	https://www.dorsetlep.co.uk/
eCLIPS by Adviza	https://www.adviza.org.uk/
Eluceo Education	https://www.eluceoeducation.org/
EMSI	https://www.economicmodelling.co.uk/
Engineering Construction Training Board - Engineering your Future	http://careers.ecitb.org.uk/
Engineering UK	https://www.engineeringuk.com/
Enginuity	https://enginuity.org/
Essex Open Data	https://data.essex.gov.uk/
Find your Future	https://www.findyourfuture.org.uk/
Get my first job	https://www.getmyfirstjob.co.uk/
Getting into Theatre	https://getintotheatre.org
GoConstruct	https://www.goconstruct.org/

Greater Cambridge & Peterborough Combined Authority	https://cambspeterboroughlmi.co.uk/
Hampshire Careers Partnership	https://hants.emsicc.com/
Hampshire County Council	https://www.hants.gov.uk/
Health Careers	https://www.healthcareers.nhs.uk/explore-roles
Heart of the South West Local Enterprise Partnership	https://heartofswlep.co.uk/
Hertfordshire Local Enterprise Partnership	https://www.hertfordshirelep.com/
Higher Education Statistics Agency (HESA)	https://www.hesa.ac.uk/
House Building Careers	https://housebuildingcareers.org.uk/
Humber Local Enterprise Partnership	https://www.humberlep.org/
icould	https://icould.com/
Institute and Faculty of Actuaries	https://www.actuaries.org.uk/
Institute for Motor Industry	https://www.autocity.org.uk/
Institute of Chartered Accountants of England and Wales	https://careers.icaew.com/
Institute of Physics	https://www.iop.org/
Kingston Data	https://data.kingston.gov.uk/
Kudos, Kudos AD by CASCAID	https://www.cascaid.co.uk/
Lancashire County Council	https://www.lancashire.gov.uk/
Lancashire Skills and Employment Hub	https://www.lancashireskillshub.co.uk/
Leeds Observatory	https://observatory.leeds.gov.uk/
Leicester and Leicestershire Local Enterprise Partnership	https://llep.org.uk/
Lewisham Observatory	https://www.observatory.lewisham.gov.uk/
Lincolnshire Research Observatory	https://www.research-lincs.org.uk/
LMI for All	https://www.lmiforall.org.uk/
LMI Humber	https://lmihumber.co.uk/lmi/
London Data Store	https://data.london.gov.uk/
Luton Information Observatory	https://m.luton.gov.uk/
Midlands Engine	https://www.midlandsendengine.org/
Morrisby Careers	https://www.morrisby.com/morrisby-careers
My World of Work (SDS)	https://www.myworldofwork.co.uk/
National Careers Service	https://nationalcareers.service.gov.uk/
nomisweb	https://www.nomisweb.co.uk/
Norfolk Insight	https://www.norfolkinsight.org.uk/
North East Data Hub	https://www.northeastdatahub.co.uk/
North East Local Enterprise Partnership	https://www.northeastlep.co.uk/
Not Going to Uni	https://www.notgoingtouni.co.uk/
Office for National Statistics (ONS)	https://www.ons.gov.uk/
Office for Students	https://www.officeforstudents.org.uk/data-and-analysis/
Omnifolio	https://omnifolio.org/
Online Labour Observatory	http://onlinelabourobservatory.org/
Oxfordshire Insight	https://insight.oxfordshire.gov.uk/cms/
Prospects	https://www.prospects.ac.uk/
RCU Ltd.	https://datahub.rcultd.co.uk/blocks/labour-market-information
SACU	http://sacu-student.com/?page_id=728
Science Career Pathways by Cogent	http://www.sciencecareerpathways.com/
Screenskills	https://www.screenskills.com/

SEMLEP (South East Midlands Local Enterprise Partnership)	https://www.semlep.com/
Shropshire Council	https://shropshire.gov.uk/information-intelligence-and-insight
SkillsMatch London	http://skillsmatch.intelligentlondon.org.uk/
Skillsometer and Careerometer by LMI for All	https://www.lmiforall.org.uk/widget/
SkillsPlanner	http://www.skillsplanner.net/
Solent Growth Hub	https://www.solentgrowthhub.co.uk/
Somerset Trends by Somerset County Council	https://www.somersetrends.org.uk/
South East Local Enterprise Partnership	https://www.semlep.com/
Southampton Data Observatory	https://data.southampton.gov.uk/
Start by U-Explore	https://login.startprofile.com/
Step into the NHS	https://www.stepintothens.nhs.uk/
Student Ladder	https://www.studentladder.co.uk/
Success at School	https://successatschool.org/
Suffolk Observatory	https://www.suffolkobservatory.info/
Swindon & Wiltshire Local Enterprise Partnership	https://swlep.co.uk/
Target Careers	https://targetcareers.co.uk/
Tasty Careers	https://tastycareers.org.uk/
Technicians make it happen	https://www.technicians.org.uk/
Tees Valley Careers	https://www.teesvalleycareers.com/
Tees Valley Combined Authority	https://teesvalley-ca.gov.uk/
The Edge Foundation	https://www.edge.co.uk/
The London Institute of Banking and Finance	https://www.libf.ac.uk/
UK Music	https://www.ukmusic.org/
Unifrog	https://www.unifrog.org/
Unionlearn from TUC	https://www.unionlearn.org.uk/
Universities and Colleges Admissions Service (UCAS)	https://www.ucas.com/
Where the work is	http://wheretheworkis.org/
Work Wiltshire	https://workwiltshire.co.uk/
World Skills UK	https://www.worldskillsuk.org/
Xello by CASCAID	https://www.cascaid.co.uk/
Youth Employment UK	https://www.youthemployment.org.uk/careers-hub/

Appendix 2: Summary of sources identified in the LMI for careers in England

Variable	Number	Notes
Organisation		Indication of type of organisation
Careers	39	Organisation delivering careers services
Combined authority	2	Combined Authority - A combined authority (CA) is a legal body set up using national legislation that enables a group of two or more councils to collaborate and take collective decisions across council boundaries.
Data hub	33	Service provides access to data (e.g. national service, local observatory)
Growth Hub	1	Local public/private sector partnerships led by the Local Enterprise Partnerships
LEP	13	Local Enterprise Partnership
Local consortia	3	A group of organisations that provide LMI
Local council	3	
Private data provider	2	Private organisation providing data and analysis use be careers community
Sector	23	Organisation providing careers data for their sector
Landscape		Indication of placement in LMI landscape
local	22	NUTS 2 and below
regional	32	NUTS 1
national	65	
LMI/LMI+		Information, data and intelligence on labour market that can be used in the careers field
Hard LMI only	45	sources that present and/or use labour market information, more commonly underlying data and information on the labour market
LMI+ only	15	sources that present and/or use labour market intelligence, data and information that has been analysed and interpreted for an audience
Eclectic LMI	51	sources that present and/or use a wide range of LMI (hard and soft) and LMI+
Soft LMI and LMI+	8	sources that present an interpretation of hard LMI alongside qualitative information collected from a range of sources, including employers, educators, sectoral experts, local fora, professional associations and those who have experiences of working in a particular industry or job role
Categorisation of data sources		Categorisation of those involved in LMI and LMI+ landscape n.b. some can be identified in one or more categories
data suppliers	4	collect data
data repositories	22	bring data together in a database and make available for others to use either by enabling

		data to be downloaded or accessed through an API
data providers	22	analyse data for presentation with no interpretation
analytical tool providers	13	enable data (own or others data) to be explored and/or visualised through an online tool
data interpreters	36	interpret data converting LMI to LMI+
Disseminate for careers sector		
LMI disseminators	40	present and visualise data for careers intermediaries and users with little to no interpretation of data
LMI+ disseminators	47	present interpretation and visualisation of data for careers intermediaries and users
Target audience		
Young people	57	e.g. those in secondary school, further education
Higher education students	29	e.g. those in higher education
Adult	14	e.g. jobseeker, career changers, etc. who are seeking labour market information and intelligence
Parents/carers	10	
Intermediaries	64	e.g. careers education professionals, career practitioners, educators
Institutions supporting young people	46	e.g. secondary schools, further education
Others	54	e.g. developers, researchers
Others - please specify		researchers, policy makers, regional/local stakeholders, employers, developers, key stakeholders in Higher Education, HR community
Data source/provenance		
Where are data/intelligence sourced? n.b. data can be used from a number of sources		
Government sources	89	
Expert	26	e.g. sector expert
Based on research	14	e.g. commissioned research, research undertaken by others
Provide own data and/or analysis	31	e.g. own survey
Purchased	18	e.g. data have been purchased
Unknown	12	source of data not known
Other	4	mostly qualitative data
Indicators		
n.b. focus on indicators relevant to careers field and target audience (young people at secondary school and in further education)		
Employment	111	including un/employment rate, status, in/activity, hours, salary, forecasts
Education	93	including qualifications, attainment level, courses, number of learners
Demographic	63	including gender, sex, age, ethnicity
Geographical	71	including national, regional, local, other defined area
Skills	69	
Business demographics	33	
Economic	35	

Vacancy	18	including job and apprenticeship vacancies
Other	35	
Other - specify		health and wellbeing, housing, planning, deprivation, crime, transport, environment, local government data, COVID-19, places, Travel to Work Areas, COVID-19, course/education pathways, recruitment and redundancy
Data disaggregation		How are data/intelligence disaggregated?
Industry	81	
<i>sector</i>	29	industries are grouped together that do not match industry classification
<i>SIC 2007 1-digit</i>	42	
<i>SIC 2007 1-digit</i>	3	
<i>Unknown</i>	7	
<i>Data not disaggregated by industry</i>	37	
Geography	92	by Nomenclature of Territorial Units for Statistics (NUTS) areas
<i>National</i>	2	
<i>NUTS 1</i>	25	English regions, devolved nations (e.g. South East, North East, Scotland, Wales)
<i>NUTS 2</i>	2	counties/groups of counties (e.g. Suffolk, Devon)
<i>NUTS 3</i>	2	counties, unitary authorities, districts (e.g. West Oxfordshire, East Devon), and in this instance includes where data are available by town/city
<i>NUTS 1-2</i>	9	
<i>NUTS 1-3</i>	26	
<i>NUTS 2-3, Local</i>	2	
<i>NUTS 1-3, Local</i>	19	
<i>Local</i>	1	e.g., Local Authority Districts, Wards, Towns
<i>Unknown</i>	4	
<i>Data not disaggregated by geography</i>	26	
Occupation	98	
<i>SOC 1-digit</i>	27	
<i>SOC 2-digit</i>	3	
<i>SOC 4-digit</i>	12	
<i>Job group</i>	47	occupations are presented in job family or group, occupational classification not overtly used
<i>Unknown</i>	8	
<i>Data not disaggregated by occupation</i>	21	
Technical careers		Does source include data/intelligence on technical careers?
Yes, main focus	1	
Yes	60	
No	57	
Unknown	1	
Date of data		date of data published (latest data)
YYYY	74	Sources were data from 2014-2021
unknown	45	
Currency of data		When are data updated?

Monthly	1	
Quarterly	7	
Annual	11	
Regularly	26	Evidence to suggest that data are regularly updated
API	17	Data drawn from an API which is updated regularly
Date stamped	6	Content is date stamped which suggests it is regularly reviewed
Unknown	50	
Data trends		
Past, current	41	
Current	56	Data or information is for current context
Current, future	5	
Past, current, future	12	
Unknown	5	
Interpretation/qualitative information		Are data complemented with qualitative data and/or interpretation?
Yes	62	Extensive interpretation
Some	3	Some interpretation
None	54	None
Visualisation of data		Data/intelligence are presented using charts, images, infographics
Yes	72	
No	44	
Unknown	2	
not applicable as data repository only	1	
Customisation of data		Data/intelligence can be customised by user or it personalised in some way
Yes	26	
No	88	
Unknown	4	
not applicable as data repository only	1	
Access and charges		Can data/intelligence be accessed free of charge or login required?
Open access	105	
Registration required, no charge	5	
Fee	9	n.b. pricing (where available) included in notes
Charged to		
<i>institutional charge</i>	7	
<i>individual or institutional charge</i>	1	
<i>unknown</i>	1	
Charge frequency		
<i>annual</i>	6	
<i>unknown</i>	3	

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