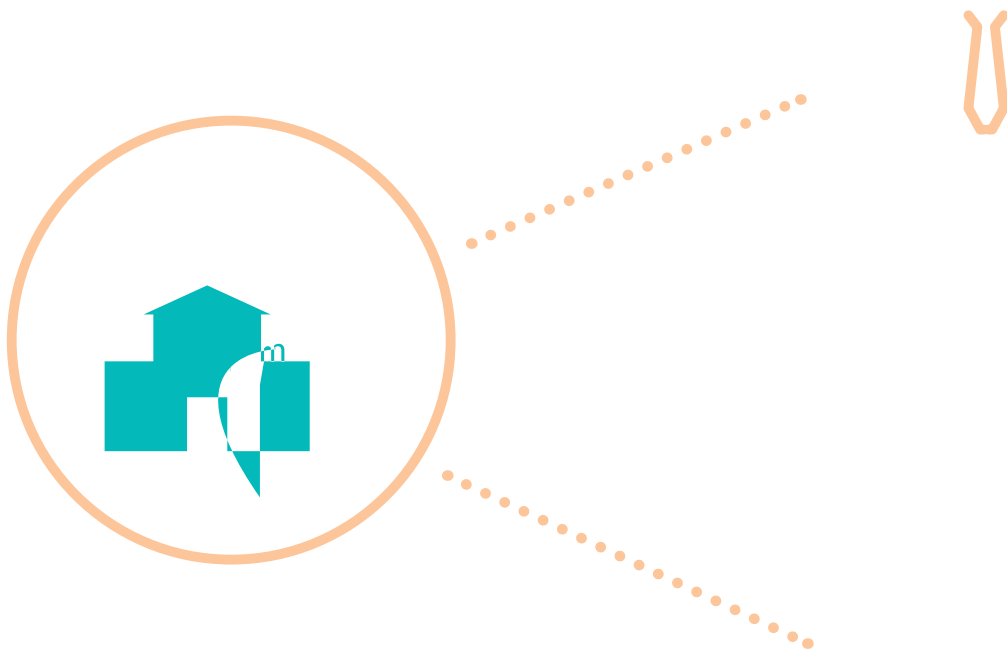


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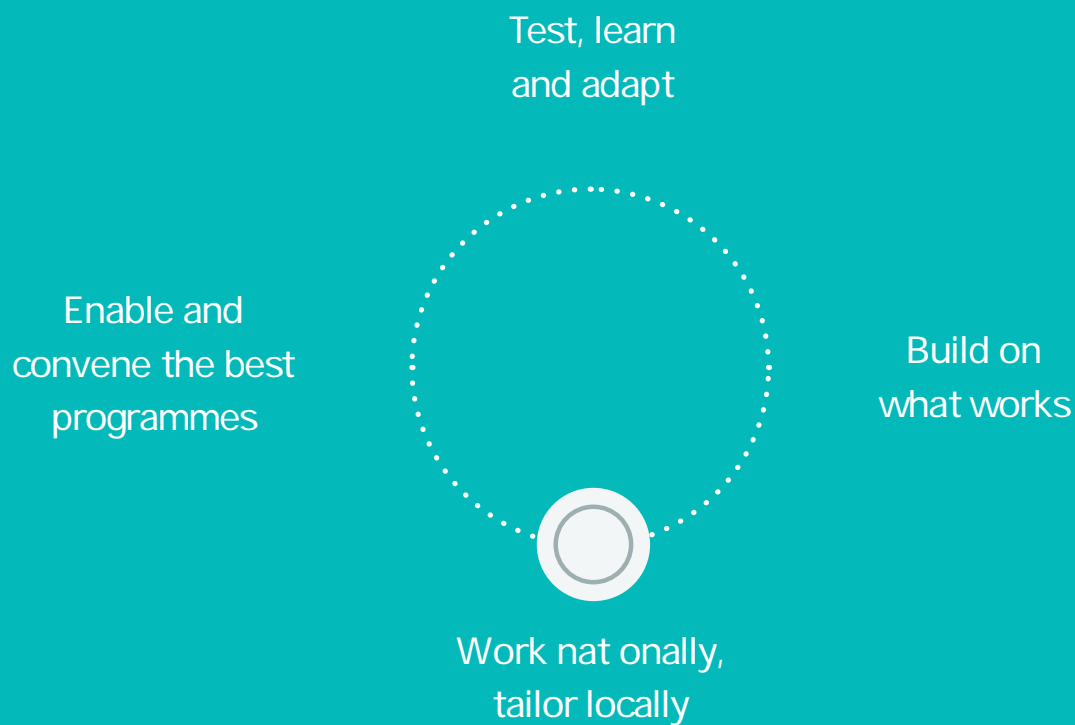
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About The Careers & Enterprise Company



Longitudinal education outcomes (LEO) data is information about the relationship between people's education and their subsequent employment and earnings.

It can be used to assess the degree to which different qualifications, educational institutions, or educational routes are associated with higher earnings or higher rates of employment. The Department for Education (DfE) and the Department for Business, Innovation and Skills (BIS) asked The Careers & Enterprise Company to explore how such data might be used to develop better outcomes data about



In brief

Most young people are **not engaged** in thinking about different career options because the task appears too difficult. They are confronted with lots of information and little way to make sense of it, which leads to **choice overload**.



Young people want **experiences** that help them understand what it would be like to do different jobs and which inspire them with ideas about their future. They would like **more** information and guidance that helps them find the best options for someone in their circumstances.

choices of jobs, careers, qualifications

Creating information about educational routes is in line with the needs of young people and is the area of most interest to providers. One reason for this is that it could support the more effective targeting of information to young people and personalisation of information. This is an area where organisations would like to find ways to be able to work collaboratively with government on the underlying data.

There is now a small but growing industry of data-driven careers advice services. This industry, along with the online employment search industry, has an interest in working collaboratively with government to improve the overall data infrastructure that supports informed choice. Some of the issues raised by this industry were: access to consistent directories of courses and institutions; better ontologies for jobs, skills, employers and industries; and data standards for certain types of information about jobs and qualifications. Such work might help to improve the value of LEO data by addressing a weakness in the data – the absence of data about the jobs people do.

Young people and career choices

1. What influences career choice?

Research into young people's career decisions has identified a wide range of influences. Parents, peers, teachers and careers guidance professionals as well as social factors such as gender and personality all have an impact – as does the relative popularity of different TV shows.

The end result is that young people often have a world view that may not lead them to make the best decisions about their future. For example:

Young people refer disproportionately to jobs that were common during their parents' youth rather than those that are available today.

Parents are prone to believe that their own education is the most appropriate for their own children. So while parents who went to university felt that apprenticeships were a good option, very few felt it was right for their own children.

Young people were likely to view university as their preferred choice, even when this was unachievable or unnecessary for their chosen career.

This suggests that young people might make better career choices if they were better able to assess different education and career options.

For the purposes of this report, we assume that this is true. We define worse choices as those which an individual would have preferred to make with fuller information than was available to them at the time and where it is possible for uninformed choices to lead to worse outcomes. On this basis, it is also likely that the number of people who would benefit from more informed choice will increase as the rate of change in the job market increases and information from parents and home becomes less reliable as a guide to the future.

2. Engagement in

In discussing how they think about careers, they expressed a desire to get answers to the logical questions such as:

- What are the possible careers open to me?
- What will it be like to do a particular job?
- What would I need to do to get there?

However, their efforts to investigate careers rarely yield intelligible answers to these questions. The information about careers young people identified looking for most commonly is qualification requirements, followed by salary information and information about the day-to-day duties of particular roles. Although salary is often looked for, young people say it is not the main influence on their decisions and they are more concerned to understand what life would be like. The key to opting for a career path was the degree to which they could imagine themselves in a particular role. Information about salary and entry requirements were then used to confirm whether an option was viable. The implication of this is that widening the range of careers that young people consider as career options is best achieved by providing ways for young people to picture themselves in different roles.

3. Styles of decision making

We characterise the different approaches that young people bring to career decisions using two dimensions – the extent to which they are open to different options and the extent to which they are seeking information. These allow us to identify five typical behaviour patterns.

Disengaged: no decisions made about the future; no desire to make decisions; no desire to seek information.

Fixed: decided on a single option (whether appropriate or not); no desire to seek further information.

Satisficing: considering multiple options; seeking information until the first acceptable answer is reached at which point it is accepted as a decision.

Validation: decided on a single option and seeking information in order to validate that decision.

Gathering: open to different options and seeking information in order to choose between them.

‘Gathering’ – the behaviour that is consistent with informed choice – was rare. It was also the least enjoyable approach. Those engaged in gathering were the least positive in interviews as measured by the ratio of negative comments to positive comments.

A common pathway was to move from satisficing when considering what option to take to validation once this option was chosen. The problem with these behaviours is that potentially better options are discarded without good reason.

The next page plots the 35 young people interviewed on the two axes of the number of options being considered and the use of information to investigate them. The young people interviewed fall into four of the five groups, but in discussion with teachers and career professionals there was feedback that this failed to capture the number of young people who would be better characterised as disengaged.

- 1 student
- 2 students
- 3 students

Validating

Actively searching for information, focused on validating a decision already made. Searching sector-specific websites, or on gaining information on specific qualifications (i.e. comparing institutions or occupational qualifications).

Satisficing

Information search behaviour is passive: searching is extrinsically motivated (e.g. in careers classes) or incidental (e.g. seen job portrayed on television, parents mentioned it). Not looking beyond the specific decision they are currently facing, or have a general sense of uncertainty beyond that point.

Gathering

Actively searching for information about current decision, future decisions and links between them; seeking comparisons of options (either within or across information sources).

4. Choice architecture and rational behaviour

'Choice overload' is a barrier to informed choice. Choice overload occurs when people face a choice between a large number of options with no consistent yardstick to compare them. Young people are presented with a wide range of future careers and a large amount of information about these options in incompatible or non-comparable formats.

Choice overload prompts anxiety and makes decision making taxing. Young people are being asked to evaluate options on several different axes at once ("what is important to me in a career?", "what is achievable for me?", "what type of study do I want to do?"). A common response to choice overload is to use heuristics, or rough rules of thumb, to narrow the decision-space as quickly as possible – for example by discarding options about which little is known. Another response is decision paralysis where young people avoid making any decisions because they are aware that they cannot successfully balance all the considerations.

The behaviours of young people faced with career choices are typical responses to choice overload. Some close down their choice space by fixing on a single career and looking no further. Others deal with the problem by avoiding it: avoiding big decisions and dealing with smaller ones as they arise.

In other words, young people are presented with a choice environment in which attempting to act rationally looks like an irrational choice. It is simply too difficult.

5. Increasing engagement – moments of choice, moments of inspiration

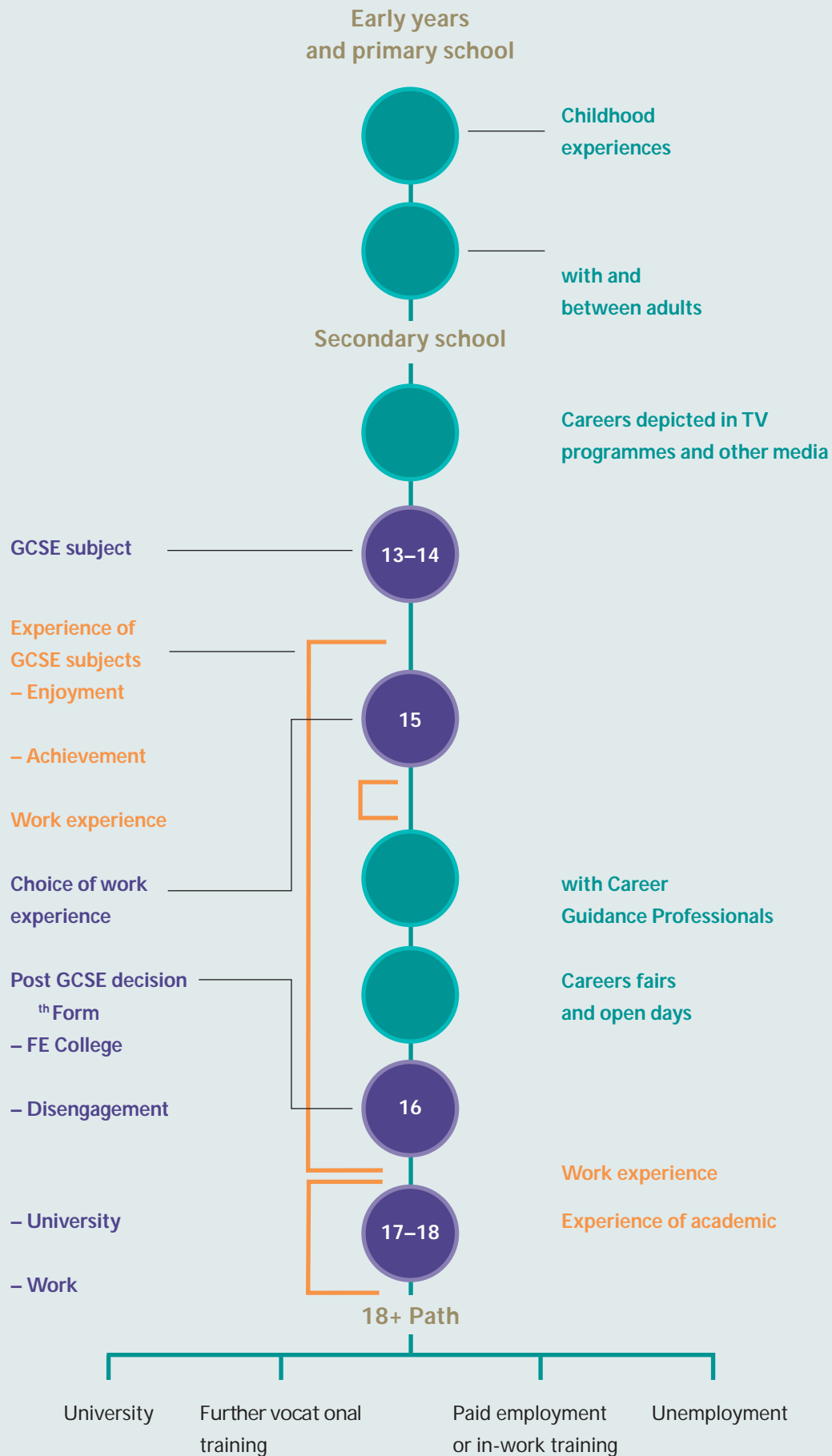
Efforts to increase engagement in decision making should aim both to reduce the cognitive burden of careers choices and to increase the enthusiasm of young people and their confidence in the value of the process. Young people often reported seeking what we might class as 'inspiration' rather than information.

While data and digital information resources can play some role in this (social media was cited as an influence) young people are inspired by anything that gives them an idea of what it would be like to have a particular job. This includes, for example, the TV programmes they see and what they read about in media. It also includes encounters with employers or people in employment; their interactions with teachers, social workers and medical staff; the influence of parents, uncles, aunts and family friends; as well as structured encounters such as careers fairs and work experience. The positive impact of encounters with employers has been well evidenced, supporting the views expressed by young people about the need for a more

3. Percy, C and Mann, A. 2014. "School-mediated employer engagement and labour market outcomes for young adults: wage premia, NEET outcomes and career confidence" in Mann, A., Stanley, J. and Archer, L eds. *Understanding Employer Engagement in Education: Theories and Evidence*. London: Routledge. URL: <http://www.educationandemployers.org/research/school-mediated-employer-engagement-and-labour-market-outcomes-for-young-adults-wage-premia-neet-outcomes-and-career-confidence-2/>

people – prompted by a wide range of events from TV shows and social encounters to career guidance events – and moments where decisions are required – when they have to select subjects to study or put in an application for a job. Information seeking is associated with moments where decisions are required –

Moments of choice



Employers were interested in trying to bring information to young people that might engage and inspire them – the information that young people said they were seeking.

There was a strong sense of the inadequacy of personalisation of information. Information about average salaries for job roles or typical jobs for people with particular qualifications is hard to assess if you do not know whether you are typical or average.

In situations where decision making can become more reflective and information-based the in Q Q

From a review of the literature on effective information to support choices, eight design principles have been identified which characterise the most effective resources:

make informed choices

The research with young people identified a number of steps that could help young people make more informed choices:

Bringing different career possibilities to life for young people will help them to imagine themselves in different jobs and to make better choices. This can be achieved through well-designed encounters with employers and the

1. How well does information provision meet young

There is a wide range of information services available to young people. We identified over forty-nine different online information sources designed to help people choose a job, a career or an educational opportunity⁴. In addition, young people receive advice and information from teachers, career guidance professionals and their family.

There are numerous innovative approaches that have been developed over the last decade using digital technology to support career choice and a wide range of data sources about jobs, industries and education providers. The range of information available to young people is extensive and includes:

Qualifications and salaries for different types of jobs.

Which jobs can be done with different types of qualifications and skills.

Which jobs go with different personality types.

Average earnings and employment rates for different 18+

and training providers for
value required
with
information available

Provider	Number of choices supported	Career choice	Job choice	choice	Place of learning choice
All about group	3				
BestCourse4me	3				
Nat onal Careers Service	3				
Not going to university	3				
Plotr	3				
Prospects	3				
Rise to	3				
The Student Room	3				
UCAS	3				
Unifrog	3				
Bridge U	2				
Direct ons	2				
Fast omato	2				
GCG Changeworks	2				
Horsemouth	2				
LinkedIn	2				
NCFE	2				
Push	2				
Sacu-student	2				
Skills Route	2				
Success at school	2				
The Access Project	2				
The Complete University Guide	2				
The Guardian	2				
Total Jobs	2				
U-Explore	2				
Unistats	2				
What Uni	2				
Which University?	2				
Adzuna	1				
Apprent ceships	1				
Founders for Schools	1				
Future First	1				
Future Morph	1				
Get my frst job	1				
Go Think Big	1				
Icould	1				
Iggy	1				
Inspiring the future	1				
Jobs.co.uk	1				
Milkround	1				
Monster.co.uk	1				
Mykinda Future	1				
Qube Learning	1				
Talent no Careers	1				
TES Global	1				
Think Alumni	1				
We connect students	1				
Google	0*				
		29	13	30	15
		59%	27%	61%	31%

*Whilst Google does not support a specif c 'choice topic' for young people, it is of en their frst port of call for explorat on of educat onal and careers opportunt es (as ident fed in BIT f eldwork) and has therefore been included in the provider landscape.

ii) Few services meet the design principles

Forty-nine information providers were rated against the nine design principles by PwC. Services were found to be better at pull type activities – providing information when needed, breaking decisions down into manageable chunks and signposting actions. They were less effective at recognising the cognitive context, personalising information and giving young people agency.

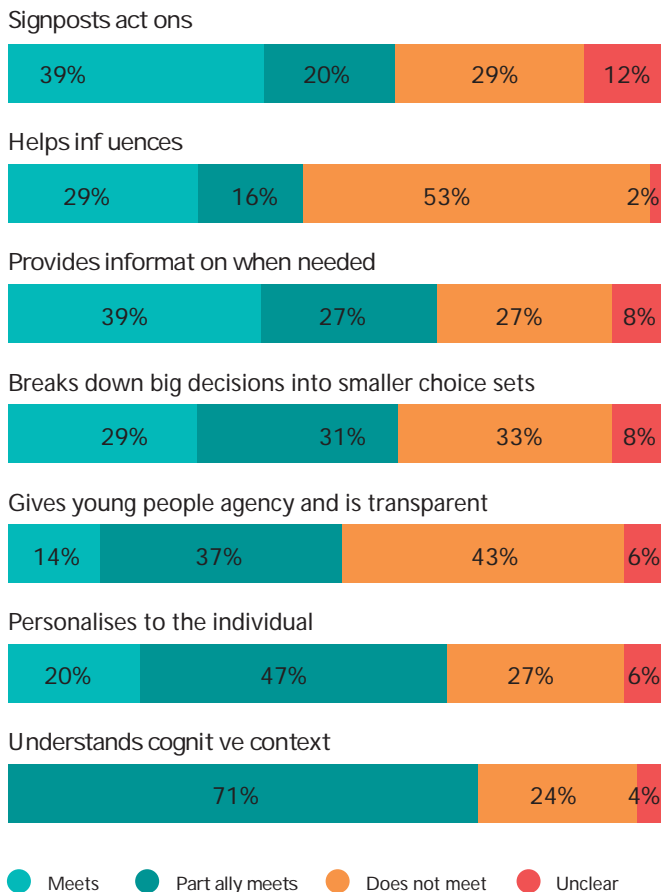
It was also notable that few information products were explicitly designed to support influencers. While many are used in this way, it is not obvious from the way in which they are presented that they have been designed with this in mind.

Some of the newer careers advice services are starting to develop systems to offer more personalised advice by, for example, collecting information from young people about their interests and personality (e.g. iCould, Plotr, Prospects). Other systems attempt to personalise information around data about the young person's qualifications and subjects studied – for example *A-level explorer* from Which? tells you what university courses are associated with different A-level choices.

But none of these systems provides a fully personalised approach which considers a young person's interests, personality and qualifications. The outputs at times can appear banal or obvious rather than inspiring. Careers advisers suggest that young people were put off if information was so generic and broad that it could not be taken seriously.

Personalisation in online careers advice tools tends to rely on 'matching' algorithms that can at times appear crude (*'if you like working outdoors and enjoy science why not become an environmental protection officer?'*). The degree to which such technologies are helping young people identify reduced choice sets in a way that feels authentic is open to question. The test of effective personalisation is the degree to which it can first, remove options that are irrelevant and second, present limited choice sets that feel relevant and actionable without being unduly restricted or oddly specific. It should help people identify the choices they should focus on and which make a difference – for example, deciding to continue studying biology at 16 without necessarily deciding to be an environmental protection officer.

products across the provider landscape*



*Percentages may not sum to 100 because of rounding error Source: PwC

data help?

Below we set out our assessment of the most useful outputs from LEO data.

The response of information providers to the possible availability of additional outcomes data was mixed. A majority of organisations interviewed expressed the view that other steps to improve data flows were more pressing than the provision of outputs from LEO data. For example, a large contingent were more concerned at improving the experience of information seeking by a) better integrating different official information services; and b) improving the underlying data infrastructure such as consistent universal course directories.

Among those organisations with an interest in using LEO data there were concerns about the potential for outputs from LEO to be misleading. The value of LEO data depends on the degree to which paths into careers are consistent and stable over time and the extent to which employability and financial reward figure prominently in career choices. If paths are not stable, information about the past could be misleading. For this reason, there was interest in the use of LEO data to produce earnings trends and predictive analyses.

The main areas where LEO data was seen to be able to add value were:

Longer term earnings data. Publishers of institutional ratings and rankings or guidance about educational institutions saw the greatest short-term opportunities in LEO data and recognised that, in particular, it had the potential to greatly improve the quality of earnings data,

particularly if it is able to demonstrate earnings over the longer term – e.g. 3.5 or 7 years. Also, it was believed that LEO data would allow more accurate earnings information than is available from surveys.

Some organisations were most enthusiastic about the possibility of calculating consistent measures of earning and employment across different educational options. A subset of these were particularly interested in the possibility of providing comparative value added data for different routes – e.g. going to university vs doing an apprenticeship or going straight into work. There was no consistency about the level of information sought, some seeking it at course level, others at subject and institutional level and others just at institutional level. This area was of particular interest to those organisations interested in newer 'self-driven' educational opportunities.

more personalised outcomes data.

Some organisations expressed significant enthusiasm for the longer term potential to develop more personalised forms of outcomes data. The types of output that they were most interested in were: 1) analysis of the range of possible outcomes associated with different

combinations of qualifications (routes through education); 2) analysis of the different educational routes associated with particular types of outcome.

The information that these organisations are requesting are consistent with the questions identified by young people – what sorts of careers could I have? What would I need to do to achieve this?

Of these three types of information, the last was the area that prompted the greatest enthusiasm among providers. It is also

All the organisations spoken to recognised that making the most of LEO data was going to be a medium-term process over the next 2-5 years. There was a strong desire to see government put forward an information strategy addressing the data barriers to more informed choice that would encompass how LEO data would be deployed over coming years. This strategy should indicate the priorities for development of information from LEO data and how these data would be developed.

It should be shared with information providers and identify how they can be involved in this work. It could address a number of information issues that limit the ability to support informed choice, including:

- Lack of consistent course directories.

- Lack of access to course directories.

- The need to improve upon SIC/SOC classifications.

- The benefits of data standards for information used in CVs and job ads (e.g. qualifications).

- The benefits of gaining empirical evidence of the relationship between qualifications and skills.

Suggested next steps

Below we outline some useful next steps.

- 1. Useful outputs from LEO data to support**

Information to support choice of HE institutions is relatively well served by a number of providers. There are fewer services looking at FE and apprenticeships or which allow comparison across all options.

Measures of the additional value offered by different educational routes could be handled in the same way, although there would be greater interest in information providers engaging in the creation of these data. A HESA style service to allow organisations to commission (and pay for) such analyses would be one option here.

Those organisations interested in more complex analyses of how different routes through education lead to different outcomes were more likely to express a desire to be closely engaged in the design of data outputs with many expressing a desire to work directly with the data. Direct access to raw data – as sought by some providers – may encounter legal barriers. However, collaborative working between government and information providers on these analyses has a number of potential benefits. Information providers may be able to bring expertise and resource. Also, they bring the ability to test how users react to the information, messages and guidance that result from such analysis. Within the need to protect privacy, there are mechanisms that could be used to allow a degree of involvement in analysis by information providers. These include:

Encouraging collaboration between academic researchers and information providers. Providers could be encouraged to sponsor academic work; or government could offer partial or full grant funding for research in this area to be conducted under joint supervision with information providers.

Datalabs are arrangements whereby in a controlled environment or through a controlled online interface specific queries can be run against underlying data. This approach is used in Germany to allow research on healthcare data sets. In the UK, the Ministry of Justice has a Datalab that allows external organisations to test the impact of interventions by running analyses on government datasets without accessing confidential data. This approach however, is of less use in iterative processes to develop information outputs and of more use when the aim is to allow particular

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3. A data strategy to support informed choice

There is considerable interest within the careers advice industry in the development of a medium-term data strategy to support informed choice. This should signal what government plans to do in terms of publication of LEO data and other data sets. It could also signal plans for investment in underlying data systems. Lastly it could identify opportunities for government and information providers to work collaboratively on improving the value of information.

A programme of work to investigate the impact of choices on outcomes should

Annex: Overview of

Below we describe a selection of online careers information services and give an overview of the market.

PwC reviewed forty-nine organisations and products that currently provide information services designed to help inform choices about careers, qualifications and jobs. Each was characterised on a number of dimensions including the different types of choice supported – choice of qualification, choice of institution (e.g. university), choice of career (i.e. type of job) and choice of job (specific jobs). Eighteen organisations were then selected for more in-depth interviews.

The overview below is designed to give a view of the broad distinctions we can draw between different types of provider organisations, and within each of these, to give a sense of the variety of different services and organisations. This does not include all forty-nine identified. Comments that relate to the use of LEO data are based on the subset of organisations that were interviewed. Organisations were interviewed from all the groups identified below.

We have grouped organisations under three headings that relate to different areas of decision making. These groupings allow us to draw some broad outlines of the market by looking at how different services address the question of:

- Helping people find a job.
- Helping people find a qualification or educational institution.
- Helping people choose a career.

In the tables on page 28 and onwards, we have provided descriptions of those organisations which we considered to be of particular interest in each area. It should be noted that the majority provide services that address more than one decision point and almost all have ambitions to expand their services across a wider range of decision points.

1. Choice of job

The jobs search market has increasingly moved on-line. Within that space we can identify traditional media, in particular trade media, with a strong brand in particular job markets and newer online organisations. Below we list some of the more prominent organisations in this area. These are profit-making companies and earn revenues from employers by providing leads and applications. Some organisations that are focussed on other areas are making some efforts to move into this area – e.g. UCAS is starting to offer a graduate jobs service. One area of overlap between traditional job search sites and education search sites is the apprentice market which is of interest to organisations in both sectors. Some services allow stored searches and generate push alerts that inform users of jobs that are available. More innovative services are those that automatically put a market value on your CV. An area of particular innovation is the automated processing of CV information to identify an individual's skills in a consistent fashion.

Their primary interest in analysis of LEO data is being able to:

Provide better information to users about future job prospects.

Interpret the value of a CV more accurately, (i.e. for which jobs is this person best suited). That includes interpretation of qualifications information.

LEO data could support both of these functions. However, its value is limited because it does not code for jobs, only for industries. Consequently, it is unclear the degree to which it would enhance existing information sources for predicting future jobs, or estimating salaries or other characteristics of jobs.

This issue also reduces the value of LEO data in estimating the value of formal qualifications on a CV. While it is possible to see associations between qualifications and earnings, without information about the role that the individual is performing it is hard for the job market engines to interpret the information with sufficient accuracy. There is a view that more accurate estimates of the value of qualifications could be achieved by using information drawn from CVs (qualifications, jobs achieved and income as stated on CVs) and job ads (salaries offered for jobs, skills required for jobs).

The key information interests of this sector are:

Greater standardisation of information on CVs and job ads to improve the efficiency of search.

Getting beyond qualification data to skills information.

Economic information about the future job market.

Some organisations expressed an interest in working with government
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2. Choice of careers and qualifications

This part of the market is less well developed than the job search market with a wider range of more diverse services. We have listed here a range of organisations with a significant focus on careers and/or qualifications but many have as much interest in helping people find jobs or institutions. The organisations listed here are, in the main, smaller than those focussed on job search. The job search sites listed in the last section typically have 3-10 million monthly visitors whereas the careers focussed sites will typically have 50-200 thousand visits per month. There are exceptions, however, such as the NCS which has over 2m visitors per month and Prospects, which is as much a job search site as a careers site. There is a mix of profit and non-profit making organisations. Most are focussed on people in education or

Provider	Status	Primary revenue-		Primary user channel
All about group	Prof t-making	Student-directed campaigns	<p>Based on the premise that young people need to start thinking about careers earlier and employers need to engage talent earlier. Relevant services are:</p> <p>AllAboutCareers.com – career explorer tool with qualitative information and video content on sectors, career test and specific job postings.</p> <p>AllAboutSchoolLeavers.co.uk – advice for post-GCSE and post-A-level apprenticeships, FE study and jobs and specific job postings.</p>	

Skills Route	Prof t-making	Subsidised by other commercial activities	Intended to help young people explore all the options that are open to them post-GCSEs. Users can see how their choices and results will affect their future options. Presents dimensions of future careers such as suitability to chosen subject and FE/HE courses, starting salary, salary at 35, job satisfaction.	Parents
Success at school	Prof t-making	Advertising and recruitment for employers or institutions	Careers advice and job/course/other opportunity search engine. 'Career zones' provide information on different industries and what you need to get there including GCSEs, A-levels, degrees, apprenticeships.	Directly to young people
BestCourse4me	Non-prof t-making	Funded by partners	Help students to explore what A-levels or university courses are right for them based on selecting a career and finding out what's needed or on exploring study options.	Directly to young people

Source: PwC

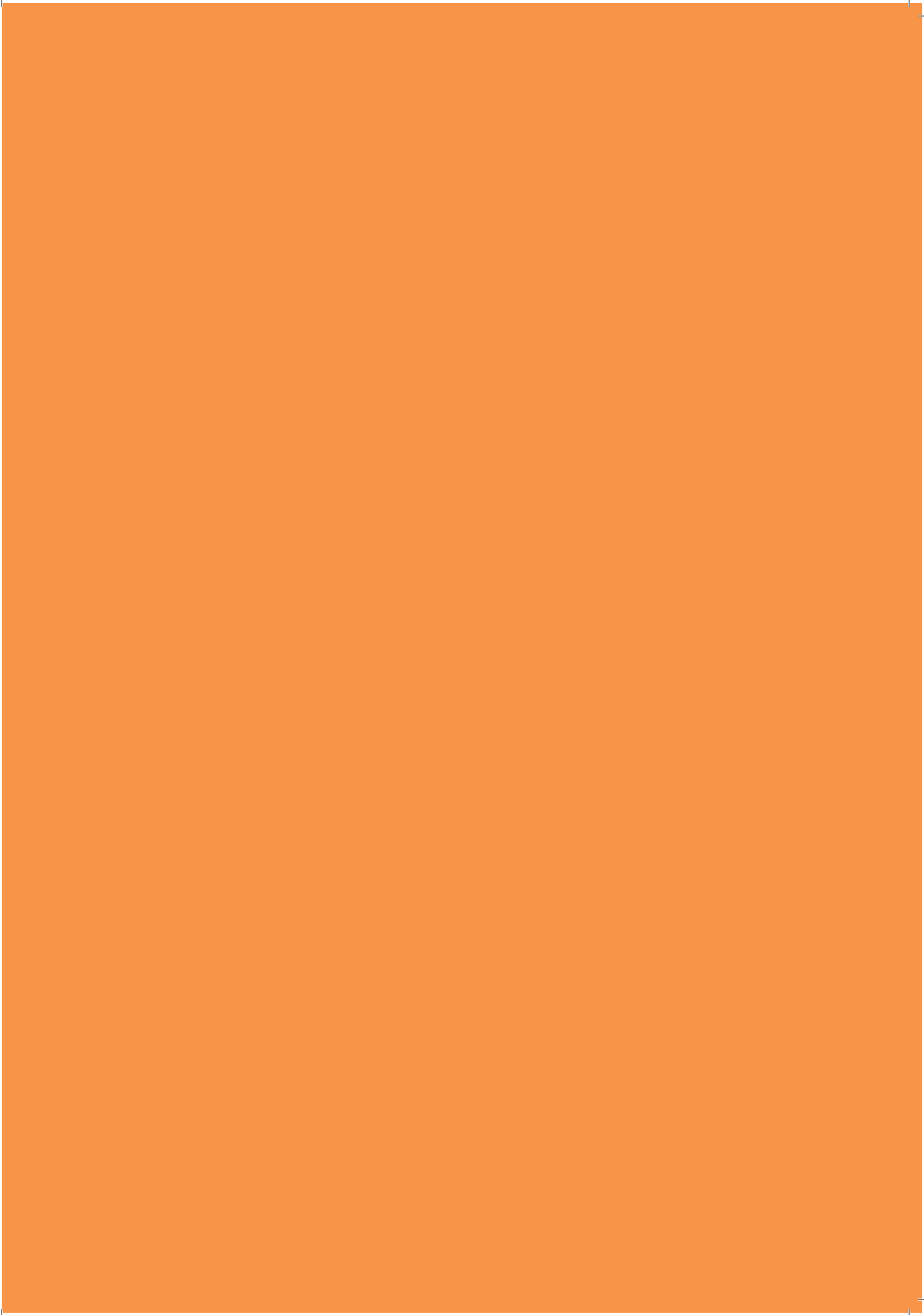
3. Choice of institution

A number of organisations provide information resources that are aimed at supporting choice of institution for 18+ education.

These providers are mainly focussed on choice of university. A subset is primarily interested in helping widen access to university. Most are focussed on supporting more informed choice of university either by creating university rankings or by creating search tools that allow institutions to be filtered according to user determined criteria and then ranked.

About half the organisations identified in this area are profit making. UCAS plays a particularly important role in this space as it administers the application process.

Among those interviewed, there was significant interest in LEO data's potential to provide data about longer term earnings outcomes, as well as analysis of 'value add' and return on investment for different qualifications or institutions.



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