London Labour Demand
Understanding the demand for skills in London’s labour market

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1 Executive Summary

1.1 Introduction

This report presents the results of work commissioned by the London Enterprise Panel to investigate the data required to inform the future planning of skills provision to meet London’s economic demands. The report identifies data that is already available and highlights gaps in the evidence base with recommendations on how those gaps can be filled. The identified sources provide a picture of current skills and jobs and the likely skills and jobs composition in the future.

The sources were identified from user suggestions, literature reviews/online searches and Inclusions work in this field including the current development of a web based tool to help colleges develop their curriculums: in order to satisfy local skill demand by employers. This involved bringing together many of the sources described in this report.

User views were collected via email to known London borough data users and a workshop with senior decision and policy makers in London. We also present the results of a literature review to identify examples of national and international good practice where data is used to inform skills demand.

Finally, we suggest the possible structure of a webpage for the London Datastore to enable data users in London to download the data from the recommended sources.

1.2 Main findings

The recommended data sources to measure recent demand

- **Business Register and Employment Survey** (ONS) to measure job stocks. It is the official source of employee and employment estimates by detailed geography and industry.

- **Workforce Jobs series** (ONS) to measure job and self-employment trends by sector.

- **Employer Skills Survey** (UKCES) for estimates of skills gaps and hard-to-fill and skill-shortage vacancies, as reported by local employers.
• **The Labour Force Survey** (ONS) to measure qualification levels of those in work and new job starts by occupation.

• **Annual Survey of Hours and Earnings** (ONS) to produce an earnings and jobs matrix showing number of jobs (by occupation) growing and falling by growing or falling earning levels.

**GAPS**

Users have asked for more timely and granular data for vacancies. We believe this should accompany the BRES, WFJ, Employer Survey and ONS survey data. This is because as the UKCES have said “an understanding of these broad trends is an important counterpoint to the rather noisy picture provided by real-time analysis of the labour market”. A number of other gaps came out from the user discussions and the case studies. These will need further investigation but we have tried to identify potential sources within the report that may help to fill these gaps.

There is the possibility of producing ‘real time vacancy data’ by scraping information on online job postings from which vacancies can be inferred, following de-duplication of multiple postings. The resulting data has issues but it can show real time demand and unmet demand (unfilled vacancies) for small geographies including London boroughs in a much timelier manner.

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**We recommend that the GLA explores the possibility of providing real time vacancy statistics so that it can accurately inform users of the current demand for jobs by occupation. A good example of how to present this data is offered by both case studies.**

**Where possible, this should be complemented by information on the skills and qualifications needed to enter these jobs. Unfilled vacancies should be highlighted as an indicator of unmet demand.**

**We recommend using GLA Economics as the main source for employment projections.**
Our recommendations for the structure of the **current** demand page can be summarised as follows:

**The recommended data sources to measure future demand**

**GLA Economics** produce employment projections for London by sector to 2036. They also provide trend-based employment projections for London boroughs as well as shorter term forecasts for London by broad sector.

**Sector Skill Council Reports**: Some Councils commission additional forecasts to those commissioned by the UKCES. The Councils are particularly good at identifying generic skill needs within each sector.

**GAPS**

A database of future developments at the local level and provided by borough planning departments would allow judgements to be made regarding the types of jobs and the associated skill needs needed in the short term and in specific areas.
For longer term needs, the future demand section of the website should also signpost findings from the London Infrastructure Plan 2050.

We recommend that the GLA explores the possibility of enhancing the LDD database so that it can accurately inform users of likely number of jobs and where the jobs for these developments will be based (in the short term). It will never cover all potential new jobs but could become a good source for particular sectors such as construction and retail. The borough submission form will need to be expanded and this will require buy in from the boroughs.

Our recommendations for the structure of the future demand page can be summarised as follows:
2 Who are the end-users and what do they want?

We have consulted with stakeholders to investigate the current use of data that informs delivery/provision and the data requirements that can inform efficient, demand-led skills provision and careers guidance services in London.

2.1 Define data users

There is a wide range of potential consumers and active users of the data. They will all have different needs ranging from simple presentation of a small number of figures through to access to complex datasets to conduct detailed analysis. In the Table below we give a simplified classification of the type of people that will use skills and employment data in one way or another.

We distinguish between data ‘consumers’ and data ‘users’. The latter is used when there is active and often detailed and non-standard interaction with datasets to generate analyses required by decision-makers. Data consumers want simple, clear presentation of key facts but generating these may involve detailed computation by analysts.

In each respect the purpose of data is to inform better decisions – be that young people deciding on their career and course, adult learners seeking to re-train, and decision-makers on future provision and skills investment. The skills market, and therefore the labour market, is likely to be more efficient if the level and flows of information are improved. This can work by improving the sorting in the skills and labour market by enabling people and employers to make more informed decisions, which should lead to an improved match between employer demand and the supply of qualified people.

However, there are some basic principles for ‘consumers’ and ‘users’ that need to be observed for both groups. Consumers want data that they trust, comes from a reputable intermediary, and is presented simply and unequivocally. Users want the same level of trust but this is usually mediated by a detailed knowledge of data sources and their limitations. Users place more value on the level of access and the ease of analysis and download.
The Table also gives some examples of the sort of data requirements each person might need. This is simplified to show the range of requirements but future detailed work could lead to a detailed specification for each ‘person’.

**Headline data consumers**

This group is made up of users such as young people, parents and adult learners. They will need headline figures to tell them what chance they have of getting a job and the pay prospects from doing a particular course (and the cost of learning) and an overview of qualification requirements and job prospects by occupation and/or sector.

**Detailed headline data users**

For career guidance, planners, senior decision makers and employers the distinction between labour market information and labour market intelligence is important. Labour market information refers to hard data from original sources like the ONS, whereas labour market intelligence is the interpretation and contextualisation of these data. It is labour market intelligence with which these users are mostly dealing.

The ability, and confidence, to work effectively with labour market information (LMI) should be central to career practitioners’ skills and competencies. There is no doubt that this is expected by clients. A key finding from a five year longitudinal case study that evaluated the effectiveness of career guidance for adults in England highlighted the value placed on LMI by clients\(^1\).

For this group detailed data is needed but presented in an accessible way and includes qualification requirements, vacancies, pay by occupation and sector, course/qualification provision matching and the long-term view of likely employer demand.

**Detailed data users**

This group will need greater detail in terms of geography, sector and occupational classifications. Sub group data will be useful for instance from a European Social Fund (ESF) commissioner’s point of view, “data about potential customer groups would be useful” (so more supply side) e.g. those out of work or those stuck in low pay, how many get a basic skills, level 2 or level 3 qualification.

For Local Authorities it is important to ensure that: “...they are all using the same measures so it can become easier for us to compare performance and share good practise across boundaries, as different councils will all be collating in their own separate ways etc.” (Hounslow Council).

<table>
<thead>
<tr>
<th>Type of person</th>
<th>Examples of data needs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headline data consumers</strong></td>
<td></td>
</tr>
<tr>
<td>Young person</td>
<td>For each career and course: headline figures for chance of getting a job and pay prospects</td>
</tr>
<tr>
<td>Parents</td>
<td>Overview of qualification requirements and job prospects by occupation/sector. For each course: headline figures for chance of getting a job and pay prospects</td>
</tr>
<tr>
<td>Adult learner</td>
<td>Headline figures for chance of getting a job and pay prospects. Costs of learning and likely return.</td>
</tr>
<tr>
<td><strong>Detailed headline data users</strong></td>
<td></td>
</tr>
<tr>
<td>Careers advisor</td>
<td>Detailed but simplified presentation of qualification requirements, vacancies and pay by occupation and sector.</td>
</tr>
<tr>
<td>Curriculum Planner or provider</td>
<td>Course/qualification provision matching with demand data to inform provision for next year – over- and under-supply</td>
</tr>
<tr>
<td>Senior decision makers in providers</td>
<td>Long-term view of likely employer demand and identifying over- and under-supply</td>
</tr>
<tr>
<td>Employers</td>
<td>Qualifications and pay in sectors and occupations; level of demand and competition for skilled labour</td>
</tr>
<tr>
<td><strong>Detailed data users</strong></td>
<td></td>
</tr>
<tr>
<td>Local authority analysts</td>
<td>Detailed analysis on skills profile of population, employer demand in area, provider performance, identifying skill mismatches and other analyses. Presentation of simplified indicators for elected Members.</td>
</tr>
<tr>
<td>London-wide analysts</td>
<td>Strategic level detailed analysis of all relevant supply and demand-side data. Presentation of simplified indicators for elected Members.</td>
</tr>
<tr>
<td>Evaluators and academics</td>
<td>Very detailed analysis at the strategic level and for small sub-sets of data (people and areas). Primary research adding to improved modelling.</td>
</tr>
</tbody>
</table>
2.2 Depth and geography of data

Different consumers/users will need different levels of depth in terms of sectors and occupation classifications and different levels of spatial analysis. It is important not to confuse the user with too much data, as Hounslow Council said "... the problem we all have at the moment is that there are a variety of different datasets available to councils and partners involved in employment and skills – and sometimes there is too much information. I think the reason for this is because there are so many partners and organisations with their own agendas in relation to employment and skills, and also there are a number of organisations providing the data that we all use".

Geography wise there are various reasons why some of the above users would want data at least to the borough level, for example:

- Job seekers will need to know if their desired occupation is available locally before expanding their search more widely (geography and occupation wise).

- Local authorities will need to know the skills profile of their residents to target resources and target particular groups for locally commissioned employment and training programmes (i.e. local ESF funded projects).

- Colleges will need to know the performance of their local rivals and the skill levels within their catchment area.

However, it could be said that restricting skill concerns to the local level is unhealthy for the London economy. Local Authorities especially should be working to get their residents into the best jobs they can get, not restricting them to local low-wage jobs even if that's what local low-wage employers want.

Jobs seekers (if claiming) need to remember that the job seeking requirement for claiming Jobseekers Allowance is to not refuse any offers in areas that can be reached within 90 minutes\(^2\): a work search requirement and a work availability requirement must be limited to work that is in a location which would normally take the claimant:

- A maximum of one hour and 30 minutes to travel from home to the location; and

- A maximum of one hour and 30 minutes to travel from the location to home.

This travel limit would include most of London and for most parts it would include large chunks of the South East as well.

Colleges do not only face competition from local rivals but also from other colleges in London as a whole (and the South East if on the border) because of cheap and extensive transport links. Additionally they would want to attract students from a wider pool and not restrict themselves to local residents.

For local skills assessments, there have been issues around the local geographical units that are used, particularly whether they are administrative units or represent the functional economic geography of local areas. Therefore, local labour market assessments have been produced for a range of geographical units: deprived areas within boroughs, boroughs, groups of boroughs and the London region.

Local labour markets are defined conventionally as geographical areas in which interactions between the demand for and supply of labour occur on a regular basis and which are relatively self-contained in terms of commuting flows. Therefore they are crucially influenced by the geographical distribution of work opportunities, the location of people available to work and the commuting patterns of workers. Government statisticians have used data from each Census of Population since 1971 to define ‘travel to work areas’ (TTWAs) which represent local labour market areas. These are defined as areas in which, generally, more than 75 per cent of the population work and in which over 75 per cent of jobs are filled by people who live in the TTWA. Hence they may be thought of as functional economic areas. For the London TTWA the percentages are 95 per cent and 85 per cent respectively and the London TTWA covers the whole of London and slightly beyond.

This suggests that all consumers and users, even local authorities, should be basing their searches/analysis/policies at the London region level. However for specific uses, as listed above, local level data is still needed.

In terms of whether to present sectors and occupation data in broad terms or for detailed classifications - this will again depend on the users and their specific needs:

- Generic skills such as literacy, numeracy and being IT literate are needed for most sectors and occupations and something that schools and colleges are expected to deliver.

- Some specific skill needs e.g. data analytics, are also required by most sectors but can only be delivered by specialists in certain occupations: again this is something that colleges and training providers need to know so they can satisfy that need but also employers need to know if that need can be met by colleges or if they can satisfy that need via in work training, and
Some skills are only required within certain sectors such as construction skills. Both stocks and flows are important. For instance, in terms of job numbers, a job seeker or school leaver will see that flows/trend data indicates that jobs growth is likely to continue in the Finance and Business sector and so it may be beneficial to gain a qualification relevant for this sector. Even if trends showed a decline, there is a large stock of jobs in the Business sector and therefore this sector could still offer good job prospects taking into account replacement demand.

**What all of the above shows is that all levels and details are needed for all or some user types and what they really need to know is: what sources should they be using, how robust they are and how to get them.**

For the Skills Demand data webpage and the recommended indicators that will be signposted within the webpage there is a danger (by restricting availability at certain geographic levels or restricting sector and occupation detail) that the user will seek the detail from other sources and organisations. There will always be a user who invariably needs this level of detail.

### 2.3 Communicating the data

As mentioned above it is important to ensure that the evidence is accessible to different audiences, at different levels of detail, in order to influence change. For the Skills Data webpage this involves:

- Succinctly articulating an assessment of the current position, future trends and priorities, showing how these flow from a sound evidence base;

- Publishing and disseminating data and outputs, making them available to users via appropriate media;

- Giving key local partners and other stakeholders an opportunity to discuss and provide feedback regarding the webpage;

- Avoiding presenting misleading information;

- Transparency in terms of the dating and referencing of sources of information and the methods used in any original primary research, so that users can easily make judgements on the quality of the work;

- Being clear in the balance of information used and the weight applied to different sources.
Even by restricting the webpage to the recommended sources (listed in the next section) there is still a lot of data and presenting something simple to consumers can be a complex exercise as shown by the case studies in section 4. But what the case studies also show is that if you get it right then a large amount of complex data can be made accessible to a range of different users.
3  Demand-side data

The following is based on views of data users and invited attendees to a Workshop (see Annex 2) and an audit of existing data. Where there are gaps in the available data we have proposed methodological and technical solutions for filling those gaps. The identified data proxies for filling the gaps are accompanied by commentary on the strengths/limitations associated with their use.

We have restricted the audit to quantitative sources available at London regional level and/or lower geographies that are regularly updated. It builds on existing research to exploit data sources and official statistics and considers the appropriateness of their use for this purpose.

Demand for skills is derived from economic activity in the economy with the type of skills needed driven by the types of job and the nature of work. Key drivers of changing skill requirements at the local level are similar to those at national level. These include:

- technological change - especially information and communications technology (ICT), which is affecting both the products and services produced as well as the way they are produced, resulting in increased demands for IT skills across a range of sectors and occupations;

- competition and changing patterns of consumer demand - which have increased the emphasis on customer handling skills;

- structural changes - including globalisation, sub-contracting and extension of supply chains, emphasising the need for high quality managerial skills (across a greater range than previously and at a greater depth) at various levels;

- working practices - such as the introduction of team or cell-based production in engineering, and call centres in financial services, resulting in increased demand for communication and team working skills; while more generally there has been an increase in labour market flexibility; and

- regulatory changes which have made important skill demands upon staff for some key sectors, including construction and finance.

The production of labour market information should not be seen as the end of the process. Rather it is best regarded as part of an ongoing process of improving understanding about what is going on in London. This understanding can then help
students, education and training providers, employers, commissioners and co-financing organisations to make better informed decisions.

3.1 Recent demand

Business Register and Employment Survey (BRES), ONS

It is important to look at the advantages and limitations of the Business Register and Employment Survey as it provides information on the type of employment (or labour) demanded in London. As such, it is a major component of the projections produced by GLA Economics and the UK Commission for Employment and Skills UKCES.

The Business Register and Employment Survey (BRES) is the official source of employee and employment estimates by detailed geography and industry. It is also used to update the Inter-Departmental Business Register (IDBR), the main sampling frame for business surveys conducted by the Office for National Statistics (ONS), with information on the structure of businesses in the UK.

The survey collects employment information from businesses across the whole of the UK economy for each site that they operate. This allows the ONS to produce employee and employment estimates by detailed geography and industry split by full-time/part-time workers and whether the business is public/private.

The ONS produces a number of different measures of employment including Workforce Jobs and the Annual Population Survey/Labour Force Survey. However, BRES is the recommended source of information on employment by detailed geography and industry.

One of the strengths of BRES is that estimates are provided at detailed geographical and industrial levels (down to a lower super output geography at a five-digit Standard Industrial Classification (SIC)). No other ONS employment survey output provides such information at these low levels and this enables a detailed analysis of employment at low level geographies and industries.

However, it has limitations. It should be noted that BRES is a sample survey and produces estimated employment figures. These estimates are of a good quality at higher levels of geography (for example for the London region). The quality of the estimates deteriorates as the geographies get smaller. Considering the discussion in section 2 on the mobility of labour in London (as one travel to work area) lower geography levels are not so much of a concern in terms of meeting skill demands. Presenting data at the regional level will also allow more publishable data
on sectors. BRES has data for very detailed 5 digit industries and for purposes of identifying likely skill needs and to aid in course selection it is more important to have detailed sector levels than detailed geographies.

BRES is a point-in-time snapshot of the GB/UK economy and is not designed to be used as a time series, although it is recognised that users do use them in this manner. BRES is subject to discontinuities caused by Standard Industrial Classification change, reference date change and source data change, potentially making any time series analysis difficult.

BRES publishes GB based estimates on NOMIS. Estimates that can be obtained through NOMIS are potentially disclosive aggregate estimates down to a Lower Super Output Area (LSOA) geography at a five-digit UK Standard Industrial Classification 2007 (SIC 2007). Access to these BRES estimates is only possible via the acquisition of a Chancellor of the Exchequer’s Notice which contains an associated Data Access Agreement (DAA). The acquisition of a Notice requires users to abide by the terms of the DAA. This is another barrier for its use for small geographies.

In addition, BRES publishes a higher level open access dataset on NOMIS. This dataset provides public/private based employee/employment estimates at a country, region, LA County, LA district and Local Enterprise Partnership (LEP) geography. This open access public/private dataset does not require the acquisition of a Chancellor of the Exchequer’s Notice.

There is a time lag between publication and the reference period to which the data refer, with the release date 24 months after the reference period.

The time lag is greater when you consider the release dates of projections based on BRES, which is discussed further later in this report. This would be less of a concern if BRES was in line with long term trends but as mentioned above BRES has many discontinuities.

Additionally, BRES data is for employees only and doesn’t account for self-employed.

**Workforce Jobs series, ONS**

As mentioned above there are three major limitations with the BRES dataset: the time lag between publication and the reference period, discontinuities in the time series and excluding the self-employed. The Workforce Jobs (WFJ) series fills these gaps as the time lag between publication and the reference period is 11-12 weeks, it is designed to be comparable over its whole duration and it includes the self-employed.
WFJ is a quarterly measure of the number of jobs in the UK. It is a compound source that draws on a range of employer surveys, household surveys and administrative sources. WFJ is the sum of employee jobs measured primarily by employer surveys, self-employment jobs from the Labour Force Survey, and government-supported trainees and Her Majesty's Forces from administrative sources. Data (rounded to the nearest 1000) is available by sector from NOMIS from 1996 for the London region and are seasonally adjusted to compensate for seasonal variations in employment.

The data via NOMIS can be split by ‘employees’ and ‘self-employed’ (which has been a growing share of employment in recent times) for broad sectors and when combined can provide a picture of growth sectors and therefore the current level and profile of labour demand.

Its limitations are that it cannot provide detailed industrial breakdowns which are best sourced from BRES. Additionally, since WFJ is reliant on inputs from multiple sources, issues such as discontinuities in source data can impact on the quality of final outputs.

**Employer Skills Survey, UKCES**

The National Employer Skills Survey presents estimates of skills gaps and hard-to-fill and skill-shortage vacancies, as reported by local employers. Its main purpose is to provide a measure of skills barriers to growth for existing businesses.

The UK Employer Skills Survey sits alongside the Employer Perspectives study to produce a pair of surveys that complement each other and are run in alternate years. The focus of the Employer Perspectives survey is primarily outward-looking, covering provision of and engagement with the wider skills system, whereas the Employer Skills Survey is inward-looking and takes a measure of the current skills position and skills needs of the employer.

The Employer Skills Survey main strength is that it provides robust data at the LEP/LEA level. The UKCES publish Local slide packs which provide a quick overview including top and bottom 5 LEPs on key measures and excel tables with data on key survey measures useful to career advisors, curriculum designers, and learners including for broad sectors and occupations:

- **Vacancies** (including: the incidence of vacancies, hard-to-fill vacancies and skill-shortage vacancies; the number of vacancies [also presented as a percentage of all employment]; and the number of skill-shortage vacancies [also presented as a proportion of all vacancies])
Skills gaps (including: the incidence of establishments with skills gaps; the number of staff with skills gaps; and the number of staff with skills gaps as a proportion of all employment)

Statistically significant differences (at the 95% confidence level) have been presented on all the various data table outputs.

Limitations

Over 10,000 employers are interviewed in London, far more than any other region, and not surprising due to the number of employers based in London.

Sampling errors for London are low. Figures have been based on a survey result of 50 per cent (the 'worst' case in terms of statistical reliability), and have used a 95 per cent confidence level. For London (in 2013) the sampling error was ± 0.96 per cent, this should be interpreted as follows: ‘for a question asked of all respondents where the survey result is 50 per cent, we are 95 per cent confident that the true figure lies within the range 49.04 per cent to 50.96 per cent’.

There is also a time lag of 6-9 months between the survey date and the date of publication. This may not be so much of a problem for the broad sectors and occupations presented in the survey, which will see little change in that time.

ONS surveys: Labour Force Survey

Inclusion’s previous analysis of job starts by qualification level suggests there are often significant disparities between minimum occupational qualification levels and those that employers actually demand (which are often higher). As a case in point, many vacancies in retail are filled by either students or parents seeking part-time work. For both groups, the qualification level is frequently higher than the minimum (“no minimum academic qualifications are required although some employers may require GCSEs”). The same applies to a range of other job roles. To just use minimum qualification requirements therefore risks underestimating the skills that residents will require to successfully compete for future jobs.

One possibility is to use the Labour Force Survey (LFS) for data on new job starts and jobs in the economy by occupation. The LFS also tells us the qualification levels of those in work and new job starts, disaggregated by occupation. This allows the presentation of an appropriate proxy for the qualification level needed to enter an occupation: i.e. the actual qualification levels of those

4 Standard Occupation Classification 2010, Office for National Statistics
entering a certain occupation rather than the qualification needed for that occupation

However, **the LFS is restricted regarding spatial analysis.** Combining quarters can provide a robust base at the regional level but sub regional figures are not possible. The Annual Population Survey (which is based on the LFS but with an additional sample boost) can provide figures at the Local Authority level (with wide confidence intervals), however, the mix of variables described above (qualifications by occupations entered in the last three months) are not available.

Additionally, the LFS is a survey of individuals and sector details are self-reported therefore ‘sector’ figures may differ when compared with BRES and WFJ.

**ONS surveys: Annual Survey of Hours and Earnings (ASHE)**

**Earnings/jobs: growth and decline matrix:** Analysis of pay levels and jobs growth against pay growth by occupation offers additional evidence for career choice.

Our suggested method uses data by occupation from the Annual Survey of Hours and Earnings (ASHE), which are the only ONS employer-sourced occupation data. The ASHE data for London by occupation includes employee numbers, average, median and key points of the earnings distribution, for occupations up to 4-digit occupation, by weekly, hourly and annual pay, including and excluding overtime and bonus pay, amongst other breakdowns.

We prefer to use annual gross pay, as this best reflects the labour employers are buying in the marketplace. For a single figure estimate we recommend using the median (as does ONS) as this is not subject to distortion by small numbers of high earners in each category.

For reasons of the robustness of estimates, and also presentational reasons, we use 3-digit SOC numbers in the charts below. The 4-digit SOC numbers are available but are less robust (and ONS suppress smaller occupation estimates for this reason).
Figure 1: London median annual pay by occupation, with qualification level of job starters

Figure 1 is drawn from an interactive chart we have used before\(^5\). It shows the median ASHE annual pay of occupations in London, ordered from lowest paid to highest paid. The colour scheme uses Labour Force Survey estimates of the qualifications of job starters in each 3-digit occupation in London over the period that SOC 2010 estimates are available. In the interactive this is linked to other charts (one shown in Figure 2 below) showing employment numbers and changes in pay and earnings.

ONS publish the employment numbers with the caveat that they are 'for indicative purposes only and should not be considered an accurate estimate of employee job counts'. However, the 2 and 3 digit SOC estimates for London generally have low coefficients of variation, which indicate reasonably reliable data, which help illustrate general trends at that level of occupational detail.

The matrix (see Figure 2) would show the number and type of occupations falling into the following categories:

- increasing numbers of jobs, with low earnings growth
- increasing jobs and high earnings growth
- declining jobs and high earnings growth
- declining jobs and low earnings growth.

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In Figure 2 there are two horizontal lines, one representing the growth in median pay 2011-2014, and a higher one representing the growth in prices over the same period. All those occupations below the higher line have seen falling real pay since 2011. Occupations above the lower horizontal line are rising relatively to the overall pattern, while those below the line are declining in relative pay. In market terms, this would be seen as employers not needing (or not permitted, as in the public sector) to make a pay response to recruitment needs. The vertical line represents whether the occupation is growing or declining in numbers in London.

**Figure 2: Occupations by employment change and earnings change 2011-14**

The top right quadrant has increasing numbers in occupations and earnings increases above the overall increase in median earnings. At first sight, these occupations could be looked at as ones where the growth in demand is greater than the growth in supply, resulting in an employer response to raise earnings levels. The caveat to the growth story is that a proportion of the occupations have earnings in lower deciles and quintiles which are close to the National Minimum Wage. These include sales assistants and retail cashiers, on the one hand, and other elementary services occupations, on the other. For these, it can be said that the increases to the National Minimum Wage have not prevented employment growth. The top left quadrant shows declining numbers with increasing pay. These are occupations suffering declines over the period, where employers may have responded to their situation by increasing pay levels. The vacancies arising are coming from needs for replacement for workers leaving rather than employment growth. The classifications of leisure and travel services, and elementary administration occupations fit in this quadrant, as do other drivers and transport operatives - in London, largely Underground and other train drivers and
related workers (whose pay may have risen in real terms for other reasons) fit within this quadrant. The earnings growth may partly be compositional – weaker firms exit the market leaving stronger firms that had higher pay levels. In addition, firms moving towards a higher proportion of full-time workers would have a rising pay profile as we are using annual pay. However, from a careers point of view, it is difficult to see how a lifetime career in declining occupations could be recommended. For those looking towards a shorter time-frame, the rising earnings on offer may, however, prove attractive.

The **bottom right quadrant includes jobs that are increasing in numbers but where earnings increases have been below the median level.** This quadrant includes a range of professional and associate professional occupations, including some that are strongly associated with the public sector where pay has been held down for non-market reasons. These groups include private as well as public sector workers (such as nurses and midwives). From a market point of view, the increase in supply coming into these growing occupations may have been greater than the increase in demand, so that earnings levels have increased less than the overall median. It is possible that one could regard this as symptomatic of over-supply moving into these growing occupations, where the employment growth has been the market signal responded to rather than the pay rises. There could have been earlier high pay increases or levels for the skill requirements that prompted the growth in supply for these occupations.

The **fourth quadrant covers those occupations that are declining in numbers and have pay rises less than the overall median.** In this quadrant we find Process operatives, construction operatives, sales related occupations, Government administrative occupations, administrative occupations-records, legal professionals and health professionals.

Falling numbers in an occupation (as in the left hand side of the matrix), provide an indication of demand for the different types of work due to dynamic changes in the labour market (including technical changes), as well as general economic activity changes. What distinguishes the lower left quadrant is the lack of an employer pay response. This may be seen as employers not being able or willing to respond to any recruitment needs in pay terms. Claims by employers of skill shortages in these occupations (which include construction operatives) should be treated sceptically. In this particular case recent rises in demand may have been later than the April 2014 date for the ASHE data, or the pay response may not yet have outweighed earlier falls.

This analysis has shown the potential of using ASHE to analyse what employers do in the labour market as opposed to what they say. **There are some crossovers into**
employer surveys of skill shortages. The relevant question is whether there is a market failure requiring action. The most difficult group is really the top left quadrant – those with declining numbers where the response has been to raise pay. If the pay rises have not produced a response of people choosing to go into those occupations, how responsible is it for public bodies to encourage people into declining occupations?

However, the limitations of ASHE include timeliness (it is usually at least six months out of date when published annually) and spatial analysis, with data for the London region available but the same level of detail is not available sub regionally.

**Other sources: London specific**

The GLA/LEP [London Business Survey 2014](#) provides information on the change in the number of employees working in London businesses compared to 12 months ago, along with reasons for a rise or fall, and the outlook for the next 12 months. It also provides information on the number and types of businesses (by size and sector) which recruited employees in the previous 12 months. The survey also asked businesses to rate London as a place to do business in terms of the availability of appropriate skills. The innovative survey conducted by the ONS canvassed more than 3,000 businesses, generating a representative picture of the issues facing private sector businesses in London.

**GAPS**

**Measurement of unmet demand**

Until November 2012 monthly local data on vacancies notified to Jobcentre Plus was published on NOMIS. These represented a minority of vacancies in the economy and had a bias towards less skilled occupations. This system was replaced by Universal Jobmatch, which did not yield reliable local data but has since improved.

The UKCES Employer Skills Survey includes headline information at local level (for higher level local authorities, and for LEP areas in England) on vacancies, hard to fill vacancies and skills shortage vacancies (i.e. when a business fails to recruit due to applicants not having the right skills or work) but this as highlighted above is measured only every 2 years, and is published with a 6-9 month lag.

**Users have asked for more timely and granular data for vacancies. We believe this should accompany the BRES, WFJ, Employer Survey and ONS survey data. This is because as the UKCES have said “an understanding of these broad trends is an important counterpoint to the rather noisy picture provided by real-time analysis of the labour market”**.
A number of other gaps came out from the user discussions and the case studies in chapter 4. These will need further investigation but we have tried to identify potential sources that may help to fill these gaps.

**Occupations by skills and qualification needed.** Currently there are some occupations being filled by over qualified workers (see the LFS analysis described above) but as the labour market loosens up the minimum qualifications needed becomes more important. For skills needed it may be possible to scrape the details from job postings as shown in the New York case study in chapter 4. Monster has informed us that they are currently doing this on an experimental basis in the UK.

The ONS publication Standard Occupational Classification 2010\(^6\) includes descriptions of typical entry routes and qualifications for occupations at the 4-digit level. Skill levels are approximated by the length of time deemed necessary for a person to become fully competent in the performance of the tasks associated with a job. This, in turn, is a function of the time taken to gain necessary formal qualifications or the required amount of work-based training. Apart from formal training and qualifications, some tasks require varying types of experience, possibly in other tasks, for competence to be acquired. Within the broad structure of the classification (major groups and sub-major groups) reference can be made to these skill levels.

The AMS Skills Barometer case study contains an example of how skills, competences and qualifications can be presented together for the same occupation.

**Sector by occupation matrix** (SOC by SIC): This indicator would help to identify labour mobility and transferable skills, particularly useful for unemployed adults or those wishing to change sectors. It is possible to achieve this via the Labour Force Survey by cross tabulating variables: occupation of main job with industry section (2 digits) of main job. By combining quarters the sample size can be increased which would make the data at the London level more reliable. A moving average of LFS quarters could allow analysis of movements within the matrix.

**Self-employment / skills for enterprise**: As the UKCES report\(^7\) the evidence on the relationship between educational backgrounds on the one hand and entry to and success in self-employment on the other is complex and mixed. The relationship also varies between occupations and sectors. Thus in some sectors and occupations (e.g. 

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\(^7\) [http://dera.ioe.ac.uk/10135/1/evidence-report-31-skills-for-self-employment.pdf](http://dera.ioe.ac.uk/10135/1/evidence-report-31-skills-for-self-employment.pdf)
skilled trades in construction) self-employment is more of a ‘norm’ than in others. The Labour Force Survey can provide qualification levels of the self-employed but a measure of the actual skills needed to succeed are more difficult.

**Learner destinations:** Chapter 2 highlighted that parents and learners are interested in understanding the demand for their skills in the labour market in terms of salary and job prospects. Information on the employment outcomes or progression rates from colleges can provide another indicator of demand for further education graduates (from different colleges/levels/disciplines) – this would be particularly useful to inform careers advisors.

FE Choices provides information on learner destinations which is available through the dedicated website. Data is collected through the Learner Destinations Survey. Information includes the percentage of learners and trainees who moved into further learning, found a job or experienced employment benefits as a result of completing their course.

However, there are issues with this dataset in terms of its use for career planning:

- It deals with immediate destinations, so doesn’t offer a longer term view on job prospects
- The response rate is very low, skewing the results

Partly in response to weaknesses in the FE Choices data, the Department for Business Innovation and Skills (BIS) have published experimental measures that provide estimates of employment, benefits, and learning activity over time, both before and after study. The data is based on administrative sources and is robust allowing detailed estimates at a provider level. However, the datasets are an evolving source and further developments are planned.

Destination data for Graduates from higher education is available via the Higher Education Statistics Agency (HESA). The data is of high quality when compared to FE Choices data and very comprehensive. The latest data costs £60 but earlier data is free.

**Apprenticeships:** The City of London suggested it might be useful to look at the types of roles (particularly unfilled/under-filled) which might lend themselves to apprenticeships.

Some data sources that may be of use are:

- Apprenticeships starts and completion by local authority: Link
• BIS publish an employer’s evaluation report on apprenticeships: Link

• The ONS has published this data release on higher level qualifications and apprenticeships: Link

• The gov.uk open data portal also has some potentially useful datasets at a regional/local authority level: Link

3.2 Future demand

The purpose of skills projections is to allow analysts and policy makers to quantify future skills demand in terms of how many jobs will be created, what sectors and occupations will demand human capital and to what skill level will those filling future vacancies be required to have. Globalisation has made economies much more interconnected and diverse, as a result economies are no longer typically dominated by just a few sectors as they previously were. With so many different sectors operating within an economy a wide range of skills which differ by sector will be required in order to thrive and compete locally and globally.

GLA Economics Projections

GLA Economics produce employment projections for London by sector to 2036. They also provide trend-based employment projections for London boroughs.

Sources used

The main source for employee estimates come from the ONS Workforce Jobs series: the last year of data is 2014. The historic data that are used to construct the London total and sectoral trend based projections go back to 1984. For borough trend based projections the data used goes back to 1981 but covers employee jobs only. This is constructed using a number of sources and steps including ONS Business Register and Employment Survey (BRES) data at the borough level and constrained to the London total from the ONS Workforce Jobs Series. Estimates of self-employment from the Annual Population Survey are added to employee job estimates.

One of the fundamental assumptions underpinning the projections is regarding the annual rate of output growth in London. Under the ‘central’ scenario GLA Economics assumes a growth rate of 2.5 per cent per annum. This is consistent with what bodies such as the Office for Budget Responsibility assume for the UK’s growth rate. As such, it assumes that London grows at the same rate as the UK in the long run.
Quality and robustness

Data on London’s GVA is used in developing the employment projections. However, there is no official source of real GVA available at the regional level. Instead, nominal GVA data is produced by the Office for National Statistics (ONS) on an annual basis (although with a significant lag - London’s nominal GVA for 2011 was released in December 2012 for example). As a result, a number of assumptions about London’s GVA have to be made in the development of employment projections.

Projections for the London Plan go up to 2036 - almost two and a half decades away. To project employment over this period with a reasonable degree of confidence, a significant historical period of data would be desirable. Instead, official data on London’s employment over time is only available on a consistent basis back to 1996. As a result, using official data only, 16 years of historic data would be used to project employment 24 years into the future.

GLA Economics have therefore developed a consistent employment time series for London jobs back to 1984 using ONS business surveys (in particular Workforce Jobs series) and the Labour Force Survey. Whilst this provides 28 years of historical data, this length of data is far from ideal when projecting forward employment. Similar issues are encountered when producing estimates of employment by industry sector on a consistent basis over time.

The ONS’s Workforce Jobs series – which is the main source of data for the historical series of London jobs by sector – does not contain information on occupations. Such information has to be derived from alternative survey sources: ONS’s Labour Force Survey and the Annual Population Survey. These only provide a time series for occupations on a consistent basis from 2001. In addition, whilst estimates of occupations by sector can be produced from this source, because of its sample size at the London level, some of these estimates are subject to significant sampling variability. As a result, a relatively limited amount of data has been used to project occupations when compared to the employment projections. This means that the occupation projections (and the qualification projections which are derived from these projections) should be treated with even more care than the employment projections because of the additional data limitations and necessary simplifying assumptions.

Data on highest educational qualification is taken from the same sources as the occupation data: the Labour Force Survey and the Annual Population Survey. In 2011, the ONS improved the questions on people’s educational qualifications in order to obtain more information on qualifications obtained abroad, which had previously
been reported as ‘other’. This produced a structural break in the time series between 2010 and 2011. To produce the consistent time series required for its projections, GLA Economics needed to find a way to deal with this structural break. It developed a method of projecting the change backwards for earlier years, making a number of assumptions.

There is a **case for presenting short term forecasts.** The AMS Barometer projects forward by 3 years and this may give users more confidence in their reliability compared to longer term forecasts (see the AMS Barometer case study). GLA Economics need to project to 2036 for the London Plan but they also produce short term forecasts (3 years ahead) via their *London’s Economic Outlook publication*, which is updated biannually.

The publication presents employment forecasts for the London region by broad sectors plus an analysis of risks to short and medium-term growth. There is also a ‘consensus forecast’ which is a review of independent forecasts.

In order to provide an indication of **replacement demand** only, changes in broad occupations have been used. Analysis at more detailed occupation levels may capture more ‘openings’ that are filled internally but more detail on internal openings (as far as careers advisors and education providers are concerned) is not needed.

However, this may well underestimate the actual level of turnover in the labour market. First, this analysis does not pick up any individuals who leave their employment but subsequently take up another job in the same occupation. Second, the data source used for this analysis only looks at changes that occur over the period of a year. It may well be that many individuals change jobs or occupations more than once within the course of a single year.

As a result, the thrust of the labour market turnover analysis is to illustrate the fact that there are likely to be substantial and on-going education and training needs across London’s workforce - although the absolute scale is likely to be underestimated.

As GLA Economics have stated "**All of this suggests that this analysis should be treated with a degree of caution when interpreting the results**”.

GLA Economics projections do make more local adjustments compared to Working Futures so it may be better suited for London.
Overall an analysis of the performance of GLAE projections shows that these perform well (and relatively consistent over time)\(^8\)

Click [here](https://www.london.gov.uk/priorities/business-economy/publications/gla-economics/performance-of-gla-economics-employment-projections) to download the latest GLA Economics projections.

**UKCES Working Futures**

Working Futures is the main source of projected skills demand in the UK and at regional level (outside London).

Working Futures provides analysis of employment prospects by industry, occupation, qualification level, gender and employment status for London, up to 2022. The results are meant to be seen as indicative of likely trends given a continuation of past patterns of behaviour and performance, rather than precise forecasts of the future.

Importantly, Working Futures also projects job openings created by those who leave the labour market (so called replacement demands) which is usually much higher than the creation of new jobs. Replacement demands results in job openings in all industries and occupations, including those in which the net level of employment is expected to decline significantly. This has important implications for individuals who may be considering their future career and education and training options, since even those occupations where employment is projected to decline may still offer good career prospects.

The projections in Working Futures focus on anticipating changing skill needs in the context of changes in general economic conditions. The quantitative occupational projections are based on the results from a detailed multi-sectoral macroeconomic model and are driven by an underlying view of sectoral prospects (both output and productivity) in London. The model of the UK economy was developed by Cambridge Econometrics and detailed occupational and qualification forecasting modules developed by the Warwick Institute for Employment Research.

**Sources used**

Working Futures uses similar sources to those used for GLA Economics projections. The Office for National Statistics (ONS) is responsible for most of the economic and labour market statistics upon which Working Futures is based. Many of the data are made available via the National Online Manpower Information System (NOMIS).

ONS is responsible for most of the key economic statistics upon which Cambridge model is based, including the UK National and Regional Accounts and the Input-output Tables.

ONS is also responsible for workforce jobs (including employee jobs and self-employment jobs) data, and the Business Register and Employment Survey (BRES) and Annual Business Inquiry (ABI). BRES has replaced the ABI since December 2010 and provides annual employment figures on the 2007 Standard Industrial Classification (SIC2007) basis only. BRES and ABI are the most important sources of information on detailed industry employment levels at regional level and below.

ONS also undertakes the Labour Force Survey (LFS), as well as the more infrequent Census of Population. These two sources provide information on key aspects of employment structure, such as occupational employment and the various information on flows and age structure required for estimates of replacement demand.

**Rationale for producing local level projections and their limitations**

The local level projections are based solely on secondary data sources. **They do not incorporate any specific local knowledge or insight and are intended as a starting point for further analysis rather than a projection of what is most likely to happen.** They represent one possible future, based on the assumption that employment patterns in the local area continue to maintain the same relationship with the regional level as in the recent past. Sectors which have performed relatively poorly are assumed to continue to do so, and vice versa. This is not inevitable. In particular it **does not take into account any local “surprises”.** These may be welcome (such as a major inward investment), or not (as in the case of a major closure). Moreover, local agencies and organisations may be able to break away from past trends. The results should be seen as providing a starting point for debate rather than the final word.

**Quality and robustness**

The authors of Working Futures emphasise the importance of recognising the limitations of the data, including how the data should be used and reported. The limitations arise from two elements of the procedure which has been used to produce the projections.

- First, the projections are based upon survey data that were not originally designed or developed to produce precise estimates at this level of disaggregation. Additionally some of data is nearly 2 years out of date by the time Working Futures is published.
Second, the survey data have been used to calibrate an econometric forecasting model and a set of disaggregation procedures. Forecasting is as much an art as a science and requires considerable judgement on the part of the researcher especially when the forecast horizon is as much as 10 years ahead. Any errors in the forecaster’s ability to predict the future will result in inaccuracies in the projections. These will be amplified the further into the future that the projections are considered, due to the inter-linkages between the sectors and regions, and the feedback mechanisms, which permeate the model structure. The extent to which the historical base is inaccurate due to the data limitations further exacerbates this problem.

It is important to note that the greater the sectoral and spatial disaggregation the more sensitive the results will be, as some sectors are expected to be very small and at the same time exhibiting large variations.

According to the authors⁹:

“When considering this question a distinction needs to be made between statistical reliability and the provision of useful LMI at a detailed level. If strict rules regarding statistical robustness are applied to decide what level of sectoral and occupational disaggregation can be provided at LEP level, there is a danger of throwing the baby out with the bath water. The official surveys carried out by ONS are (with a few exceptions) not designed to provide statistically robust estimates at this level of detail. Following such rules would restrict what might be reported to very broad aggregates, which are not very helpful to those in LEP areas or to bodies charged with monitoring detailed trends at a sectoral level.

Forecasts of this kind should not be regarded as suitable for detailed manpower planning. Rather they should be considered to be benchmarks for consideration of likely future trends.”

Click [here](#) to download the latest data for London (XSLM 1.96MB).

**Sector Skill Council Reports**

There are 16 Sector Skills Councils and 5 Sector Skills Bodies who work with over 550,000 employers to define skills needs and skills standards in their industry. They are responsible for:

• with employers defining occupational standards and job competencies. These are used in many different ways by employers.

• with employers defining the qualifications which go together to make up an apprenticeship framework. This framework is then used by employers to enable them to select the qualification structure most appropriate for each individual apprentice.

• advising employers about the qualification that are best suited for the apprenticeship and have available a list of training providers that can deliver those qualifications.

• ensuring that the correct evidence for each qualification is verified in order to enable the issue of a valid apprenticeship certificate.

Sector Skill Councils (not all of them) commission additional forecasts to those commissioned by the UKCES. The SSCs are particularly good at identifying generic skill needs within each sector.

For example the Sector Council ‘E-skills’ which is responsible for the business and information technology industry publish forecasts using Experian’s Regional Planning Service (RPS). This creates output and employment forecasts for the 38 (2 digit) industry ‘divisions’ defined by the ONS Standard Industrial Classification coding system. Using Index of Production (IOP) data from the ONS, estimates of consumer demand and intermediate demand and related trend data, a shift-share methodology is then employed to extrapolate results at a more detailed level (4 digit industry ‘class’). The survey reveals:

• current and future job vacancies

• the difficulty of recruitment

• remuneration trends and

• overall future demand.

The analysis is available at regional level and highlights the importance of London to this sector. For example ”six in 10 big data positions (63 per cent) were based in London – a much higher proportion than that recorded within the IT or data warehouse/business intelligence fields”.

10 http://www.e-skills.com/research/research-themes/big-data-analytics/
List of Sector Skills Councils

The following organisations were listed as SSCs as at January 2015 (click on the link to go to each council’s website). Most relevant for London’s labour market:

- **Financial Skills Partnership** - Finance, Accountancy and Financial Services
- **e-skills UK** (Tech Partnership) - Business and Information Technology
- **ConstructionSkills** and Construction Industry Training Board - Construction
- **People 1st** - Hospitality, Leisure, Passenger Transport, Travel and Tourism
- **Creative and Cultural Skills** - Craft, Cultural Heritage, Design, Jewellery, Literature, Music, Performing Arts and Visual Arts.
- **Creative Skillset** - TV, Film, Radio, Interactive Media, Animation, Computer Games, Facilities, Photo Imaging, Publishing, Advertising and Fashion and Textiles

Other SSC’s:

- **Building Futures Group** - Facilities Management, Housing, Property, Cleaning and Parking
- **Covent** - Nuclear, Chemicals, Polymers, Petroleum, Life Sciences and Pharmaceuticals
- **Improve** - Food and Drink Manufacturing and Associated Supply Chains
- **Institute of the Motor Industry** - Retail Motor Industry
- **Lantra** - Land Management and Production, Animal Health and Welfare and Environmental Industries
- **Semta** - Science, Engineering and Manufacturing Technologies
- **Skills for Care and Development** - Social Care, Children, Early Years and Young People’s Workforces in the UK
- **Skills for Health** - UK Health
- **Skills for Justice** - Community Justice, Courts Services, Custodial Care, Fire and Rescue, Forensic Science, Policing and Law Enforcement and Prosecution Services
- **Skills for Logistics** - Freight Logistics and Wholesaling Industry
- **SkillsActive** - Sport, Fitness, Outdoors, Playwork, Caravans and Hair and Beauty
- **SummitSkills** - Building Services Engineering

The UKCES publish sector skills insight reports. Each report looks at an individual sector, the performance challenges they face and the benefits gained from overcoming them.

UKCES also publish sector skills assessments. Each report provides detailed labour market intelligence to inform the development of skills policy across the UK, and is relevant to a particular industry sector.
**Other sources: London specific**

The **CBI/KPMG** quarterly **London Business Survey** provides a barometer of London business sentiment. Based on views from over 100 companies based in London, there is information on broad skill needs plus views on initiatives likely to stimulate economic growth in the next five years.

The **Economic Outlook**, produced for the **City of London** by Oxford Economics, forecasts London’s output growth drawing on labour market, industry sector and property market data. It presents forecasted labour market data at the borough level and by sector. There is also a comparison with other European cities. There is a particular focus on the City of London, Westminster and Tower Hamlets as centres for the financial and business sector.

The **London Chamber of Commerce and Industry** (LCCI) publish the occasional industry specific report. For instance they have used a Construction Skills Index (from KPMG) that fed into their **Skills to Build** report. They engaged with over 150 stakeholders (ranging from training providers, developers, contractors and sub-contractors government and industry bodies) in order to understand the problems experienced across the construction sector and develop solutions. The reports looked at projects planned for construction in 2014-17, and quantified the construction skills gap based on the labour required to meet them.

**GAPS**

There is currently a gap regarding future short term **infrastructure developments**. A database of future developments at the local level and provided by borough planning departments would allow judgements to be made regarding the types of jobs and the associated skill needs needed in the short term and in specific areas.

For longer term needs, the future demand section of the website should signpost findings from the **London Infrastructure Plan 2050** (LIP). This was published on July 2014 and sets out proposals about London’s strategic infrastructure requirements up to 2050 in transport, green, digital, energy, water and waste. In order to understand the skills required to deliver the plan, the LEP will work closely with the London Infrastructure Delivery Board (LIDB) and relevant private and public-sector stakeholders to identify solutions to skills shortages for infrastructure projects and develop a plan of action. A Construction Skills Advisory Group led by the LEP will develop and take forward the action plan, and will consider mapping the skills pipeline against the LIDB’s Programme Plan.
The employment forecasts for the plan to 2050 are based on a combination of projections from GLA Economics and Working Futures.

### 3.3 Recommendations for improving the data

**Employer Skills Survey:**

- As with all surveys there are sample size issues when analysing at certain geographical levels or for various cross tabulations. However, it would be difficult to resolve this without enlarging the survey. The UKCES confidently report a significant amount of its findings at the local authority level and unlike a local level survey the Employer Skills Survey permits comparisons between different local areas as well as with national results. This is useful to determine if some issues of unmet demand are London specific or a much wider national problem.

- Employer bias: employers may be overstating some skill shortages.

- Time lags: according to the UKCES the fieldwork for the 2015 Employer Skills Survey began in March 2015 and will be completed by the end of July 2015. Findings will be published on January 28th 2016. So from very start to finish it takes a minimum of 9 months.

- Lack of detail on the types of job-related and technical skills shortages.

- **The Employers Skills Survey is probably the best source to identify employer skills demand for qualification and generic skills. However, some users have expressed a need for more timely data as well as more granularity.**

**Working Futures:**

- It is confidential below regional level: LEP level and below is available via a state notice but they are confidential due to robustness issues.

- Working Futures is also out of date when published: much of the underlying data used for the projections are ONS datasets, with some such as BRES being two years out of date when Working Futures is published. This base has been used to project skill needs to 2022, with *some users questioning the reality of some of the data on future job openings.*

The UKCES try to produce Working Futures (WF) in as timely manner as possible. However, WF analysis is intended to provide a fairly high level picture of trends in
the labour market over an extended time period. It cannot provide a real-time picture of current vacancies in a given locality; for this, complementary sources are required (see below). The issue of reconciling the picture provided by WF with that generated by real-time analytics is also considered below.

According to the UKCES, trends in occupational employment at the level at which WF operates have proven to be fairly robust over time. The prospects for occupations don’t generally tend to change massively between iterations of WF. An understanding of these broad trends is an important counterpoint to the rather “noisy” picture provided by real-time analysis of the labour market.

**Real time vacancy statistics**

There is the possibility of producing ‘real time vacancy data’ by scraping information on online job postings from which vacancies can be inferred, following de-duplication of multiple postings. The resulting data has issues but it can show real time demand and unmet demand (unfilled vacancies) for small geographies including London boroughs in a much timelier manner.

One such company attempting to do this is Monster, the DWP contractor responsible for Universal Jobmatch (UJM). Based on discussions with Monster, they have said that they can produce aggregate statistics on monthly vacancies by occupation and qualification levels required for boroughs in London. Their product connects job titles (from employer submitted vacancies) to ONS occupation classification codes therefore enabling connections to the other ONS datasets listed in previous sections.

The following figures show examples of possible output. Currently Monsters LMI data comes from UJM. This is the UK’s largest job board. However, later this year Monster will become a "vacancy aggregator" and collect job vacancies from over 80 sources. This may well be a more representative data source than UJM. However, Monster is mindful of the quality of this data and will need to do some rigorous tests first.

**Job vacancies by occupation**

The following charts show the occupations which have the largest groups of job vacancies advertised on Universal Jobmatch. The second chart provides a more detailed analysis of the types of jobs vacancies by 4-digit SOC. The sample is the number of job postings in a month (1.4 million).
Limitations

At the current time vacancy scraping may only give a partial and somewhat skewed picture of recruitment activity, since not all vacancies are posted online and some types of vacancy are more likely to be advertised online than others. However, as more jobs are advertised online this situation is improving and this source will be of increasing value in the future. There are also issues around the ability of the artificial intelligence tools to scrape the vacancy data in an effective and valid way – again this is improving.

With regard to improving access to vacancy analytics, UKCES have raised two points to bear in mind:

- DWP currently offer the Universal Jobmatch (UJM) service which includes a jobs board and analytical facility. There is a debate about the quality of UJM and DWP are currently in the midst of a discovery phase to determine the specification for a replacement. UKCES recommend waiting for the outcome of this review, which will consider the provision of labour market statistics as one of the key parameters.

- There are commercially available self-service analytical tools (such as Labour Insight – see other tools in Annex 1). UKCES have said that it would not be
right for them to undercut these commercial offerings by offering their own tool, even if it were feasible.

UKCES are considering making greater use of vacancy analytics in their future labour market analysis work. However, it is unlikely that this would extend to the level of a London borough wanting to explore the vacancy situation in their area at a highly granular level.

UKCES would also like to offer high level vacancy metric data via LMI for All (e.g. number of vacancies by occupation within sectors and geographic areas) but this depends on them being able to reach an arrangement with a supplier of such data. This is intended to fill a gap in available vacancy statistics but will not undercut commercial providers since UKCES don’t propose to provide the underlying information about individual job postings.

Monster has told us that they have developed a sophisticated method to capture duplicates (i.e. the same job posted by multi agencies) and are confident it works.

There are also some agencies based outside London but advertising jobs in London but the postcode is for the agency address so it is not captured. And vice versa: there could be agencies in London advertising jobs based outside of London (but counted in the figures). Monster say that post codes are a challenge: currently they take the post code that is provided and cannot be sure if this is the location of the vacancy or the location of the employment opportunity. On UJM entering a post code is mandatory but on the Monster job site it is not mandatory - so when Monster post to UJM they have to insert a post code. They deduce this by allocating the post code for the region where the advertiser selected for the advert to be displayed.

We recommend that the GLA explores the possibility of providing real time vacancy statistics with a variant on the charts presented above (to include all vacancies) so that it can accurately inform users of the current demand for jobs by occupation. A good example of how to present this data is offered by both case studies.

Where possible, this should be complemented by information on the skills (or qualifications) needed to enter these jobs. Unfilled vacancies should be highlighted as an indicator of unmet demand.

We recommend using GLA Economics as the main source for employment projections.

UKCES recommend waiting for the outcome of their review of Universal Jobmatch, which will consider the provision of labour market statistics as
one of the key parameters. However, we feel the GLA should press ahead due to the demands for this data, especially as the next round of ESF commissioning is due to start shortly.

Expanding the London Development Database

The London Development Database (LDD) is a collaborative project between the Mayor and the boroughs to track planning activity across London. It is the system used by the Mayor to monitor planning permissions and completions across London. The data is provided by the London Boroughs, while the GLA co-ordinates the project and provides the IT systems that make it possible. It is a valuable source of information on trends in planning and development, and is a vital source of information for the London Plan Annual Monitoring Report.

The LDD contains details of all planning permissions meeting criteria agreed with the London Boroughs. The criteria are:

- any new build residential units or any loss or gain of residential units through change of use or conversion of existing dwellings
- seven or more new bedrooms for hotels, hostels, student housing or residential homes
- 1,000m$^2$ or more of floor space changing from one use class to another or created through new build or extension in all other non-residential categories
- The loss or gain or change of use of open space.

A web map showing the locations of the live and recently completed permissions is provided by the Mayor for use by the public. It also contains maps of approvals and completions of homes by borough and ward. The link is provided below.

http://www.london.gov.uk/webmaps/ldd/

Besides the LDD web map, data from the system is published in the London Plan Annual Monitoring Report and headline statistics appear on the London Dashboard. Reports can be provided for academic research or can be purchased according to the charging schedule upon request to the LDD team, although conditions on the re-use of the data apply.

The planning application form does include a section on jobs, but it is unclear how regularly or accurately this is filled in. Another option would be to use a floor space based estimate of the number of jobs.
The data on the LDD is supplied by the relevant borough planning authority and therefore only covers the built premises element of ‘infrastructure’ projects that are known. It could help users to plan for training and recruitment in specific sectors such as construction but will need a lot more development to cover associated sectors such as utilities.

We recommend that the GLA explores the possibility of enhancing the LDD database so that it can accurately inform users of likely number of jobs and where the jobs for these developments will be based (in the short term). It will never cover all potential new jobs but could become a good source for particular sectors such as construction and retail. The borough submission form will need to be expanded and this will require buy in from the boroughs.
3.4 What should be on the Datastore?

The following are recommended structures to help develop a webpage on the London Datastore that presents the identified data and available (or in development) proxies. The diagrams show overall structures which are followed by more detail on each source.

**Current skills demand:**

- **Current Job entry by qualification** based on LFS
- **Real time vacancies coded to SOC.** Trends for unfilled vacancies to indicate unmet demand. Connect SOC to actual qualifications needed from LFS
- **Jobs and earnings** based on ASHE. Matrix showing:
  - Increasing numbers of jobs, with low earnings growth
  - Increasing jobs & high earnings growth
  - Declining jobs & high earnings growth
  - Declining jobs & low earnings growth
- **Current skills demand** UKCES Employer Survey for employer views on broad skill shortages & generic skills need
- **Sector stock:** employee jobs BRES
- **Sector trends:** Employee and self employment WFJ
- **Page of linked useful tools & other sources** e.g. SkillsMatch
### Current job entry by qualification

<table>
<thead>
<tr>
<th>Source</th>
<th>Labour Force Survey, ONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>LFS variable: those entering employment in the last 3 months to show more current demand by qualification i.e. Actual qualifications entering various occupations as opposed to those actually needed for that occupation. Specific variable names within the SPSS file: EMPLEN: entered employment in last three months SOC10m: Occupation classification at the 4 digit level LEVQUAL11: Highest qualification GOVTOF2: Region of resident GORWKR: Region of place of work</td>
</tr>
<tr>
<td>Smallest geography available</td>
<td>Region</td>
</tr>
<tr>
<td>Current Source File</td>
<td>Data archive (needs registration and project description)</td>
</tr>
<tr>
<td>Source Update Frequency</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Source Format</td>
<td>SPSS</td>
</tr>
<tr>
<td>Quality and robustness</td>
<td>Need to combine four LFS quarters to get robust sample at the London level</td>
</tr>
</tbody>
</table>

### Jobs and earnings

<table>
<thead>
<tr>
<th>Source</th>
<th>Annual Survey of Hours and Earnings, ONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>Jobs and wages: growth/decline matrix by 3 or 4 digit SOC Table 15: Data on levels, distribution and make-up of earnings and hours worked for London employees by sex and full-time/part-time status in all industries and occupations. Use median earnings by occupation and job number column.</td>
</tr>
<tr>
<td>Smallest geography available</td>
<td>Region</td>
</tr>
<tr>
<td>Current Source File</td>
<td>ASHE</td>
</tr>
<tr>
<td>Source Update Frequency</td>
<td>Annual, updated in November</td>
</tr>
<tr>
<td>Source Format</td>
<td>Excel</td>
</tr>
<tr>
<td>Quality and robustness</td>
<td>3-digit SOC is more reliable than 4-digit. Total jobs figure may underestimate count but for the matrix percentages increase/decrease is used so not a major problem</td>
</tr>
</tbody>
</table>

### Sector stock: employee jobs

<table>
<thead>
<tr>
<th>Source</th>
<th>Business Register and Employment Survey (BRES), ONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators by London Borough</td>
<td>Total number of businesses by industry New businesses created in the last year by industry Number of new businesses survive for more than a year by industry Number of businesses that ceased to trade in the last year by industry Size of businesses (in terms of number of employees) by industry</td>
</tr>
<tr>
<td>Smallest geography available</td>
<td>LA</td>
</tr>
<tr>
<td>Current Source File</td>
<td>BRES, NOMIS</td>
</tr>
<tr>
<td>Source Update Frequency</td>
<td>Annual</td>
</tr>
<tr>
<td>Source Format</td>
<td>API: Excel, Json, CSV, xdmx or Excel from normal NOMIS Need state notice first as BRES is confidential</td>
</tr>
<tr>
<td>Quality and robustness</td>
<td>Link (including rules on suppression as certain data cells could be disclosive)</td>
</tr>
</tbody>
</table>
### Sector trends: Employee and self-employment

<table>
<thead>
<tr>
<th>Source Indicator</th>
<th>Workforce Jobs (WFJ), ONS Workforce (employees and self-employed) seasonally adjusted trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallest geography available</td>
<td>Regional</td>
</tr>
<tr>
<td>Data link</td>
<td>Link</td>
</tr>
<tr>
<td>Source Update Frequency</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Source Format (e.g. Excel, SPSS)</td>
<td>Excel</td>
</tr>
<tr>
<td>Quality and robustness</td>
<td>Link</td>
</tr>
</tbody>
</table>

### Current skill demand

<table>
<thead>
<tr>
<th>Source</th>
<th>Employer Skills Survey, UKCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>Competency gaps by occupation, Skill demand by local employers: present and future, Growth industries and occupations, Specific skill shortages cited by employers, Under-filled occupations, Unfilled vacancies, Why are these unfilled vacancies hard to fill?</td>
</tr>
<tr>
<td>Smallest geography available</td>
<td>LA</td>
</tr>
<tr>
<td>Data link</td>
<td>Link</td>
</tr>
<tr>
<td>Notes: quality and robustness</td>
<td>Link</td>
</tr>
<tr>
<td>Source Update Frequency</td>
<td>Bi-annual</td>
</tr>
<tr>
<td>Source Format</td>
<td>Excel, API: Json from LMI for All</td>
</tr>
</tbody>
</table>
Future skills demand:

**Sector Skills Councils:** An industry view of generic and more specific skills within their sector. Webpage should show links to each SSC report page. Maybe useful for users if collated in a single report (updated on an annual basis).

**GLA Economics projections** by sector and figures at the borough level.

**Future Skills Demand**

**London Infrastructure Plan 2050**

**GLA/LEP development database** of upcoming developments.

---

### Employment projections

<table>
<thead>
<tr>
<th>Source</th>
<th>GLA Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>GLA Economics: employment projections</td>
</tr>
<tr>
<td>Smallest geography available</td>
<td>LA</td>
</tr>
<tr>
<td>Data link</td>
<td>Link</td>
</tr>
<tr>
<td>Source Update Frequency</td>
<td>Annual</td>
</tr>
<tr>
<td>Source Format</td>
<td>Excel</td>
</tr>
<tr>
<td>Quality and robustness</td>
<td>Link</td>
</tr>
</tbody>
</table>
4 International lessons

4.1 Overview

The initial aim of the literature review was to identify examples of national and international good practice where data is used to inform commissioning, delivery and/or provision.

On the whole the methods used to identify current demand are very similar in most developed countries i.e. based on surveys such as BRES which show stocks and flows of employment numbers by sectors. The UK has the advantage of having the UKCES Employer Skills Survey which is the largest such survey in Europe, therefore the UK is already ahead of the game compared to other European countries. We have shown below how OECD’s Local Economic and Employment Development Programme (LEED) has built indicators which help to compare the demand for skills within local labour markets in OECD countries but what is rare internationally is using real time data to identify current demand. We have therefore looked at how New York is using real time data and presented this in our first case study.

OECD LEED

Following a methodology developed in a pilot Skills for Competitiveness project (in Canada, the United Kingdom and Italy) the OECD’s Local Economic and Employment Development Programme (LEED) has contributed OECD Skills Strategy by building indicators which help to compare the supply and demand for skills within local labour markets in OECD countries\(^\text{11}\). Data has been collected for a broad cross-section of countries on skills levels within the workforce and proxies for skills demand (including income levels, percentage of employed people in medium-high occupations and labour productivity) at Territorial Level 3 or equivalent. The data has been analysed in order to provide strategic directions for the implementation of labour market policy and vocational training which can contribute to more resilient local economies able to generate quality jobs.

\(^{11}\) OECD LEED ‘Mapping Skills Supply and Demand: The Diagnostic Tool’, 2012
For sub-regions local indicators have been sought for skills supply and demand. The table below lists a number of variables which policy makers may look at in relation to these themes:

<table>
<thead>
<tr>
<th>Skills supply</th>
<th>Skills demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Education levels in the workforce or the population (e.g. ISCED classifications, % of population with post-secondary qualification)</td>
<td>• Occupations within the workforce</td>
</tr>
<tr>
<td>• Graduation rates</td>
<td>• Wage levels</td>
</tr>
<tr>
<td>• Uptake of post-secondary and VET education</td>
<td>• Productivity</td>
</tr>
<tr>
<td>• Percentage of people not completing school education</td>
<td>• Skills shortages and vacancies (in particular unmet vacancies)</td>
</tr>
<tr>
<td>• Percentage people receiving training within last 1-5 years</td>
<td>• Employee jobs in knowledge based industries/high technology firms</td>
</tr>
</tbody>
</table>

For these indicators, the lack of data available at sub-regional level meant that it was necessary to use proxies for measuring skills supply and demand, supplemented where possible by country specific data. In order to approximate the supply for skills at sub-regional level the study has used the percentage of the population having post-secondary education as an indicator. No other variable is consistently available at the sub-regional level at present in the three countries.

In order to approximate the demand for skills the following two variables have been combined into a composite index:

- Percentage of employed in medium-high skilled occupations (all countries).
- Gross Valued-Added (GVA) per worker (UK and Italy), income from employment (Canada);

Medium-high skilled occupations are identified for the purpose of this study as those professions requiring at least a post-compulsory education and managerial positions which require a relevant period of work experience. For the United Kingdom the ONS Standard Occupational Classification for the UK was used.

According to the OECD, GVA per worker is a useful proxy for productivity and it can vary significantly across regions. It complements information on medium-high skilled occupations by directly reflecting the intensity with which higher levels of skills are
used at the workplace, which is normally mirrored by higher output and/or remuneration.

In combining the two demand variables into a composite index a weight equal to 0.75 has been allocated to the first variable and 0.25 to the second. GVA per worker is given a higher weight as it is a workplace-based variable which precisely refers to the area where the person actually works. On the contrary, employment in medium – high skilled occupations is residence-based. The focus was on the NUTS3/TL3 regions in the United Kingdom: which is mostly single borough level, with a few combined boroughs.

For building indices it is necessary to bring the variables in a common unit (scale) of measurement using a standardisation method. It was decided to use the inter-decile range method which is not influenced to a great extent by outliers. See the formula below:

\[
\frac{(X_i - X_{\text{med}})}{(X_{9\text{th}} - X_{1\text{st}})}
\]

Where:  
- \(X_i\) = value for TL3 i
- \(X_{\text{med}}\) = median
- \(X_{9\text{th}}\) = 9\text{th} decile
- \(X_{1\text{st}}\) = 1\text{st} decile

The route to measuring skills demand here offers something different but it is most useful if there is a need to measure skills demand in London compared to other international cities. This could prove useful for the GLA to judge which other cities are performing better and more importantly why.

### 4.2 Good practice: case study in the use of current demand data

**New York City: Labor Market Information Service (NYCLMIS)**

New York City Labor Market Information Service brings a deep knowledge of the city’s labour market to its work through regular interactions with employers and industry experts as well as through its original multi-method research on industries, populations, and emerging workforce issues. It maintains strong ties to workforce, educational policy, and provider communities to ensure that its work is as relevant and actionable as possible, and has become known locally and nationally as an innovator in the use of real-time labour market information as well as in developing useful career-mapping tools for students and other jobseekers.
NYCLMIS produce a range of products including: Real-time labour market information, career maps, jobs reports and in-depth studies.

Their real-time labour market information comes from the daily scraping and analysis of online labour exchanges. It can provide insight into the nature and extent of current employer demand, emerging occupations and skill requirements. According to NYCLMIS internet job ads represent about 70 percent of all vacancies in the New York economy (and nearly 95% of jobs other than the lowest skill, lowest pay, and highest turnover occupations such as in retail, food service, and construction). The analyses were conducted by the NYCLMIS using Wanted Analytics Hiring Demand Dashboard which can be viewed via this link. Wanted Analytics could be viewed as a similar organisation to Monster or EMSI.

Figure 3 presents an example of their Real Time jobs report. The charts and tables present:

- The employers in New York City that posted the most new, unduplicated ads in the last 90 days. The commentary mentions sectors i.e. “The list of top-advertising employers is dominated by firms in finance, higher education, and media and telecommunications”;

- Monthly total volume of online ads. The chart shows the seasonality of online job ad volume, with annual lows in late fall and annual peaks in spring and late summer;

- A pie chart showing New York City job ads by sector with the largest proportion of job listings in professional, scientific, and technical services (25%), with commentary highlighting the detailed sector “... concentrated in computer systems design, accounting, and computer programming services;

- Shown on the other side of the report are the highest volume occupations by group and by detailed occupation.

Alongside this report there are also ‘Monthly Labor Reports for Workforce and Education Providers’. These reports highlight unemployment and job trends from population surveys and movements in jobs for each sector – see Figure 4. NYCLMIS also produce in depth reports for various sectors, similar to Sector Council reports in the UK but concentrating specifically on the City.
Figure 3: Real-time labour market information from the New York Labor Market Information Service

TOP EMPLOYERS
The table to the right lists the employers in New York City that posted the most new, unduplicated ads in the last 90 days and the number of ads they posted. The list of top-advertising employers is dominated by firms in finance, higher education, and media and telecommunications.

MONTHLY AD TRENDS
The line chart below shows the monthly total volume of online ads from October 2006 through October 2013. There were 78,111 online ads for New York City jobs this month, down 16.8 percent from the same month in 2012, which is a sizeable decline. Year-on-year online advertising has been decreasing for seven months in a row. The chart shows the seasonality of online job ad volume, with annual lows in late fall and annual peaks in spring and late summer.

ADS BY SECTOR AND OCCUPATION
The pie chart to the bottom right shows New York City job ads by sector. Between August 10, 2013, and November 7, 2013, the largest proportion of job listings were in professional, scientific, and technical services (25%), concentrated in computer systems design, accounting, and computer programming services; and in the finance and insurance sector (13%), concentrated in commercial banking, securities brokerage, and insurance agencies and brokerages. Shown on the other side of this page are the highest volume occupations by group and by detailed occupation. The most in-demand occupations in the past 90 days were marketing managers, web developers, executive secretaries and administrative assistants, and retail salespersons, continuing a long-term pattern of high demand over the past several years.

* Please note that this report includes only ads from direct employers. Ads posted in bulk or by employment agencies have been excluded.
New York City's Most Advertised Job Openings by Occupation

Online Ads for New York City Jobs by Major Occupation Group
(August 10, 2013, to November 7, 2013)

Management 90-Day Volume
Total Ads 11,030
- Marketing Managers 7,605
- Financial Managers, Branch or Department 4,549
- Sales Managers 2,504
- Managers, All Other 1,386
- General and Operations Managers 1,381

Computer and Mathematical
Total Ads 14,723
- Web Developers 5,417
- Software Developers, Applications 6,040
- Computer Systems Analysts 2,483
- Network and Computer Systems Administrators 2,380
- Computer User Support Specialists 2,252

Sales and Related Services
Total Ads 39,072
- Retail Salespersons 4,947
- First-Line Supervisors of Retail Sales Workers 3,594
- Sales Representatives, Wholesale and Manufacturing 2,190
- Sales Agents, Financial Services 1,691
- Sales Representatives, Services, All Other 1,679

Office and Administrative Support
Total Ads 21,475
- Executive Secretaries and Executive Administrative Assistants 5,062
- First-Line Supervisors of Office & Administrative Support Workers 2,461
- Customer Service Representatives 2,383
- Secretaries and Administrative Assistants 1,499
- Bookkeeping, Accounting, and Auditing Clerks 1,481

Business and Financial Operations
Total Ads 17,888
- Management Analysts 2,994
- Market Research Analysts and Marketing Specialists 2,933
- Accountants 2,467
- Financial Analysts 2,172
- Auditors 1,284

About Real-Time Labor Market Information
Real-time labor market information comes from the daily scraping and analysis of online labor exchanges. It can provide insight into the nature and extent of current employer demand, emerging occupations and skill requirements. Internet job ads represent about 70 percent of all vacancies in the economy (and nearly 95% of jobs other than the lowest skill, lowest pay, and highest turnover occupations such as retail, food service, and construction).

Source: These analyses were conducted by the NYCLMS using Wanted Analytics Hiring Demand Dashboard.
Figure 4: Monthly Labour Report for Workforce and Education Providers from the New York Labor Market Information Service

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>JOBS (in thousands)</th>
<th>CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nov 2013</td>
<td>Oct 2013</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>634.3</td>
<td>628.3</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>306.1</td>
<td>304.9</td>
</tr>
<tr>
<td>Educational Services</td>
<td>214.8</td>
<td>209.1</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>330.7</td>
<td>336.8</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>361.2</td>
<td>361.7</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>81.3</td>
<td>77.0</td>
</tr>
<tr>
<td>Other Services</td>
<td>178.0</td>
<td>176.6</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>145.4</td>
<td>145.7</td>
</tr>
<tr>
<td>Construction and Mining</td>
<td>110.8</td>
<td>110.6</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>321.5</td>
<td>323.0</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>116.1</td>
<td>105.7</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>116.6</td>
<td>118.8</td>
</tr>
<tr>
<td>Information</td>
<td>177.9</td>
<td>177.4</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>76.8</td>
<td>76.8</td>
</tr>
<tr>
<td>Utilities</td>
<td>13.2</td>
<td>15.0</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management</td>
<td>215.7</td>
<td>215.2</td>
</tr>
<tr>
<td>Management of Companies</td>
<td>61.2</td>
<td>61.8</td>
</tr>
<tr>
<td>Government</td>
<td>542.5</td>
<td>541.3</td>
</tr>
<tr>
<td>Goods Producing</td>
<td>126.6</td>
<td>196.4</td>
</tr>
<tr>
<td>Service Providing</td>
<td>3,835.5</td>
<td>3,805.3</td>
</tr>
<tr>
<td>Private Service Providing</td>
<td>3,203.0</td>
<td>3,263.0</td>
</tr>
<tr>
<td>Subtotal Private</td>
<td>3,489.6</td>
<td>3,459.4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,032.1</td>
<td>4,000.7</td>
</tr>
</tbody>
</table>


Job Gains and Losses in New York City, November 2012 to November 2013

- Health Care and Social Assistance: Gain of 10.1 thousand jobs
- Accommodation and Food Services: Gain of 8.5 thousand jobs
- Educational Services: Gain of 6.5 thousand jobs
- Retail Trade: Gain of 4.7 thousand jobs
- Professional, Scientific, and Technical Services: Gain of 3.3 thousand jobs
- Arts, Entertainment, and Recreation: Gain of -1.6 thousand jobs
- Wholesale Trade: Gain of 0.1 thousand jobs
- Construction and Mining: Gain of 0.0 thousand jobs
- Finance and Insurance: Gain of 0.0 thousand jobs
- Transportation and Warehousing: Gain of 0.0 thousand jobs
- Real Estate and Rental and Leasing: Gain of 0.0 thousand jobs
- Information: Gain of 0.0 thousand jobs
- Utilities: Gain of 0.0 thousand jobs
- Administrative and Support and Waste Management: Gain of -1.7 thousand jobs
- Management of Companies: Gain of -0.3 thousand jobs
- Government: Gain of -1.3 thousand jobs

Jobs (in thousands)
Lessons for London

- NYCLMIS show how real time vacancy data can be used and presented in an accessible format. The GLA would need to establish with any supplier of this type of data (e.g. Monster) the variables needed. We’re not convinced listing actual companies is useful (the webpage shouldn’t be turned into a jobs board) and maybe company details are better suited for the Mayor’s London Ambitions project but the sector and occupational analysis certainly would help – especially if combined with the qualifications and skills needed for those occupations (see the Austrian Skills Barometer case study).

- New York has shown how collaborating with commercial companies can yield useful analytics. This is an approach becoming more common in the UK as Hounslow have shown with their collaboration with EMSI. Setting real time data from commercial companies alongside data from public sources such as the ONS and UKCES can fill gaps and offer the user a more complete picture of current skills demand.

- The rest of this section focuses on future need. In particular we present a detailed case study of Austria’s qualification barometer. Both case studies offer some useful lessons for London and we have listed these after each case study.

Who produces skills forecasts?

Many countries around the world already use skills forecasting as a technique to help better understand their labour markets and future skills needs. The table below outlines a range of countries which take a quantitative approach to skills forecasting. National census data combined with sample surveys such as Labour Force Surveys tend to form the basis of the underlying data used to produce the skills forecasts.

<table>
<thead>
<tr>
<th>Which countries produce skills forecasts Country</th>
<th>Data used</th>
<th>Who compiles the forecasts?</th>
<th>Who uses the forecasts? In red: if available at the regional level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Census data and sample surveys</td>
<td>Centre of Policy Studies</td>
<td>Australian National Training Authority</td>
</tr>
<tr>
<td>Austria</td>
<td>Census data, national accounts, companies database, micro data of unemployment</td>
<td>Austrian Academy of Science, Austrian Institute for Economic Research, Institute for</td>
<td>Low demand for results</td>
</tr>
</tbody>
</table>

---

12 https://www.london.gov.uk/priorities/schools-and-education/for-teachers/london-ambition
<table>
<thead>
<tr>
<th>Country</th>
<th>Methodology</th>
<th>Data Source</th>
<th>Responsible Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>National census, monthly labour force survey</td>
<td>Human Resource Development Canada</td>
<td>Federal Government</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Census and labour force survey</td>
<td>Human Resource Development Authority</td>
<td>-</td>
</tr>
<tr>
<td>France</td>
<td>Census, labour force survey, national accounts</td>
<td>Ministry of Employment, Ministry of Education, Institute of Economic Forecasting</td>
<td>State and regional governments</td>
</tr>
<tr>
<td>Germany</td>
<td>Labour force survey, national census, micro census, expert interviews</td>
<td>Institute For Labour Market and Vocational Research</td>
<td>Federal and regional governments</td>
</tr>
<tr>
<td>Great Britain</td>
<td>Labour force survey, census, employer skills survey, establishment based surveys</td>
<td>The Institute for Employment and Research</td>
<td>Government bodies, local authorities, training and enterprise councils</td>
</tr>
<tr>
<td>Japan</td>
<td>Census basic survey of employment structure</td>
<td>Ministry of Labour</td>
<td>Government and social partners</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Labour force survey, unemployment survey, school leavers follow up survey</td>
<td>Research Centre for Education and the Labour Market</td>
<td>Government ministries, individuals and firms for research</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>Labour force survey, IDBR, employer survey, training data</td>
<td>Priority Skills Unit</td>
<td>Department for Employment and Learning, Sector Skills Councils, NI expert Group on Skills, Career counsellors</td>
</tr>
<tr>
<td>Republic of Ireland</td>
<td>Labour force survey, Census</td>
<td>Economic and Social Research Institute</td>
<td>Government and state agencies for planning education and training</td>
</tr>
<tr>
<td>Spain</td>
<td>Labour force survey, National accounts, unemployment data</td>
<td>National Institute of Employment</td>
<td>Expert groups</td>
</tr>
<tr>
<td>Sweden</td>
<td>Data collected from questionnaires</td>
<td>Mainly Statistics Sweden and National Labour Market Administration</td>
<td>-</td>
</tr>
<tr>
<td>USA</td>
<td>Labour force survey, Census</td>
<td>Bureau of Labour Statistics</td>
<td>Government agencies concerned with training, education or migration. Career counsellors</td>
</tr>
</tbody>
</table>

Source: URBACT, ESIMEC Skills Forecasting Manual and Tool
4.3 Good practice: case study in the use of forecasts

Austria’s qualification barometer

The AMS-skills barometer is the first comprehensive nation-wide online labour-market information system in Austria. It was designed for the Austrian Public Employment Service (AMS) in 2002 and has developed further since then. Basically the AMS-skills barometer provides a broad group of different users with valid, comprehensible and well-structured information on current and medium term occupation and qualification needs. It is a tool to inform not only ‘expert groups’ about labour-market needs, but also to guide individuals on jobs and qualification levels for those jobs. Along with recent trends in vocational research the tool also attempts to pay more attention to skills and competences.

The primary task of The Austrian Public Employment Service (AMS) is to do labour-market matching by assisting job-seekers and companies in their search and providing various services such as information, advice or finance. In the late 1990s the AMS reworked its labour-market information system. At that time, labour-market information was mainly targeted at young people entering the labour market and encompassed only a few specific occupations. Job counselling was also complicated by no uniform source of information. The AMS responded by developing an encompassing labour-market information system for job and career guidance and counselling. For this purpose the AMS skills barometer was implemented with the main objective of providing a broad group of different users (explored later in the case study) with valid, comprehensible and well-structured information on current and medium-term occupation and qualification needs. As job flexibility gained in importance at the expense of stable job requirements defined by occupations, the new system integrated comprehensive information on skills and competences over time (Humpl and Kargl, 2008).

Basic structure of the AMS-skills barometer

The AMS-skills barometer is based on two different systems: occupational classification and qualifications (skills and competences). Both are integrated within the tool, so that information on skills and competences for specific occupations can be portrayed. The user can navigate through the tool by using given frames, links and buttons. Figure 5 shows the basic structure of the barometer.
Occupational information

The occupational classification distinguishes 24 occupational areas (Berufsbereiche) – which are presented first (see Figure 6) and compares with the previous year for both AMS jobs and those from ‘print media’. These then expand to 95 occupational fields (Berufsfelder) and several occupations in each field. These occupational areas do not follow any other classification (like ISCO or the former Austrian classification of occupations), but was designed for the purpose of describing the occupational structure of a modern labour market.

Figure 5: Basic structure of occupations and skills in the AMS-skills barometer

<table>
<thead>
<tr>
<th>Hierarchical level</th>
<th>Occupational structure</th>
<th>Skill structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>24 occupational areas</td>
<td>23 skills areas</td>
</tr>
<tr>
<td>Level 2</td>
<td>96 occupational fields</td>
<td>Appr. 230 skills</td>
</tr>
<tr>
<td>Level 3</td>
<td>Appr. 600 occupations</td>
<td>Appr. 8 000 detailed skills</td>
</tr>
</tbody>
</table>

Source: 3s.

Figure 6 Initial occupation areas
Occupational information follows a hierarchy whereby ‘bigger’ occupational areas are broken down to ‘smaller’ occupational fields and eventually occupations very much like the UK SOC system. For each of the 24 occupational areas and 95 occupational fields’ labour market needs and trends are illustrated. Figure 7 shows the occupational area ‘information technology’ with overall trends visualised with a diagram. Further information on trends is displayed by using the button ‘more information’. Within the occupational area of information technology data on previous and current vacancies and future trends of the respective occupational fields within information technology are shown. Trends are visualised by arrows and the current labour-market significance of the occupational fields by dots. Exact numbers are only stated for jobs available (at print media and the AMS) in the last two years and current vacancies at AMS.
Figure 7 Occupational area ‘information technology’

Economic and employment upswing in IT continues

Despite a decline in demand in some partially professional fields of the "Information Technology" (IT) make in the forecast period to 2018, both the economic as well as employment prospects generally favorable. Industry experts expect the IT market will continue to grow in Austria. Growth is expected mainly in the areas of cloud computing, apps and mobile applications, data management and security solutions.

Women and men in the labor market: Information Technology

Almost three times as many males as female employees

This professional range is clearly male-dominated, women make up only 27% of employees. Comparatively most women working in the field "Data processing, hosting and related activities, web portals" (30%).

Development of employed persons in the field

Source: Federation of Austrian Social Security, Graphical: AMS Austria.

<table>
<thead>
<tr>
<th>Career Options</th>
<th>Employee forecasts at present</th>
<th>Print media</th>
<th>Vacancies</th>
<th>AMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Technology and Programming</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis and organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data bases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer and Networking Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support, consulting and training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: AMS-skills barometer.
For each single occupational field, such as ‘software technology and programming’ categorised under ‘information technology’, estimates of jobs available in the previous two years, current vacancies and forecasts are provided for several occupations in the same manner as before (Figure 8). At this level the AMS-skills barometer is also directly linked to jobs available at the AMS - the ‘eJob-Room’ - being the largest job exchange in Austria (see right hand side of Figure 8 and the AMS button).
Figure 8 Occupational field software technology and programming

<table>
<thead>
<tr>
<th>Professionals</th>
<th>Employee forecasts</th>
<th>Employee at present</th>
<th>Print media</th>
<th>Vacancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software developer</td>
<td>↑↑</td>
<td>↑</td>
<td>105</td>
<td>370</td>
</tr>
<tr>
<td>SAP programmer</td>
<td>↑↑</td>
<td>↑</td>
<td>52</td>
<td>95</td>
</tr>
<tr>
<td>Software developer</td>
<td>↑</td>
<td>↑</td>
<td>322</td>
<td>2,727</td>
</tr>
<tr>
<td>Computer Scientist</td>
<td>↑</td>
<td>↑</td>
<td>91</td>
<td>396</td>
</tr>
<tr>
<td>Computer Scientist (Teaching Profession)</td>
<td>↔</td>
<td>↑</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>System analyst</td>
<td>↔</td>
<td>↑</td>
<td>52</td>
<td>89</td>
</tr>
<tr>
<td>Media Informatiker</td>
<td>↓</td>
<td>↑</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>Software Advisor</td>
<td>↓</td>
<td>↑</td>
<td>91</td>
<td>64</td>
</tr>
</tbody>
</table>

Source: AMS-skills barometer.

Qualification information

Similar to occupational areas the AMS-skills barometer defines 23 skill areas, also designed especially for the purpose of the description of a modern labour market and not following any other classification of skills and competences. Those 23 skill areas are again subdivided into approximately 230 skills at the level of occupational fields. Every occupational field integrates information on relevant knowledge, skills and abilities. The skills analysis does not only focus on skills acquired on the basis of formal education. It integrates skills acquired through non-formal education and informal learning at the workplace. The skills analysis is visualised by differentiating occupation specific skills and non-occupation specific skills. The latter are for instance personal and social skills, language skills, generic skills or transversal skills. Figure 9 shows the representation of skills at the AMS-skills barometer at the level of
occupational fields whereby dots illustrate current labour-market significance of respective skills and arrows the forecasts. More information on skills (around 8,000 detailed skills) is given at the third level of occupations linked to the AMS-vocational information system – see Figure 10.

**Figure 9 Occupational field computer and network technology**

<table>
<thead>
<tr>
<th>Professions</th>
<th>Employee forecasts at present</th>
<th>Print media</th>
<th>Vacancies AMS</th>
<th>currently online</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Technician</td>
<td>↑</td>
<td>397</td>
<td>780</td>
<td>770</td>
</tr>
<tr>
<td>System Administrator</td>
<td>↑</td>
<td>384</td>
<td>257</td>
<td>280</td>
</tr>
<tr>
<td>Network administrator</td>
<td>↑</td>
<td>130</td>
<td>227</td>
<td>246</td>
</tr>
</tbody>
</table>

*Source: AMS-skills barometer.*
Regional information

An important feature regarding the basic structure of the tool is the regional dimension. The AMS-skills barometer provides regional labour-market information as well as for the nine Austrian federal provinces. Such information was integrated right from the beginning, even though the main focus of the tool is at national level. Regional information is still guided primarily by occupational information, even though skills trends are referred to in texts. Administrative boundaries are not necessarily the same as regional labour markets. The barometer partly refers to regional specifics. Recently, the limited database at this level was improved by using a regular employer survey carried out by the AMS (Humpl and Kargl, 2008).
Methodology

The methodological approach applied during the process of establishing and updating the AMS-skills barometer is one of editing existing labour-market relevant information. This is done by a process of searching sources, collecting and evaluating information critically, joining these together and finally editing them along the given structures of the barometer. A general update of the online tool AMS-skills barometer takes place every March and October. Editing is done by a team of experienced authors. They follow a common framework of ‘working rules’ that guarantee that all texts within the barometer are homogenous with regard to content and style.

The sources of information are both quantitative and qualitative:

(a) yearly analysis of job advertisements commissioned by the AMS;

(b) statistical AMS data on job vacancies;

(c) regular enterprise survey for more than 20 000 firms with at least 20 employees. Survey is carried out by the regional offices of AMS. Allows for quantitative occupational information and information on skills and competences;

(d) AMS standing committee: three yearly sectoral discussions between experts, company representatives and educational providers for 10 different sectors;

(e) quantitative data (labour-market statistics from data providers like Statistics Austria, public insurance association, etc.);

(f) research, analyses and forecasts on skills demand for the Austrian labour market (at regional and national level);

(g) relevant texts from a broad range of sources ranging from general publications (even articles from mass media) to specific branch journals;

(h) relevant PhD- and Master-theses.

To use these sources for representing current labour-market needs and provide for short to medium-term forecasts (up to three years) the editing process is crucial. To allow for solid forecasts and a common framework, several levels of analysis have to be considered. First, since many of those sources use labour market classifications different from the AMS’s own system, the sources must be critically adapted to the AMS structure. Second, it is necessary to consider levels of differentiation. The AMS-skills barometer delivers information for occupations and skills at a highly detailed
level. Other sources often focus on trends for specific sectors (not necessarily labour-market specific) or focus on skills on a more general level. Third, sources have different spatial scales. The barometer provides information at national and regional level, whereas studies dealing with certain regions or branches have limited value for forecasts within the tool. Fourth, differences in time frames have to be dealt with. The barometer has a time span of up to four years and other sources must be adjusted to this time frame (Humpl and Kargl, 2008).

The quality of forecasts is improved by making use of several sources for occupations and skills. Qualitative expert interviews are useful for validating and supplementing available sources. Recently, quantitative data such as the large enterprise survey covering more than 7,000 companies has been integrated. This allows for the quantification of skills at the regional level.

**User groups of the AMS-skills barometer**

The objective of the AMS-skills barometer is to provide a broad group of users with relevant labour-market information. Among them are individual job-seekers, labour-market counsellors, enterprises and policy-makers in public agencies. More detailed knowledge about the preferences of user groups has been gained by regular surveys. The latest user survey delivers information on the purpose of visiting the website; time spent using the tool, how often it is used, usability of the tool, satisfaction, recommendations for improvement and information on the user itself (Ziegler, 2010).

Results of the previous survey show two main groups of users. Most people use the tool for the first time for seeking jobs and information about jobs. A smaller group of regular users not only search for jobs and vocational information, they also use it for research on the labour-market. This means that the tool is also used by a group of ‘expert users’.

About half of the first time users completed education up to the level of primary or apprenticeship level. Another 30% completed secondary education and 20% tertiary education. Among the regular users about 40% have tertiary education and only 30% completed primary education or apprenticeship. This shows that among the regular users the qualification level is much higher (Ziegler, 2010).

Of first time users, 39% were job-seekers, 17% were still in education, 21% were working for private companies and 23% for the AMS, educational providers, public administration, NGOs or social partners (Ziegler, 2010).

The most popular sites at the AMS-skills barometer are vacancies, job information, labour-market developments, occupational and qualification structures and
information on occupational fields. In the future, information for the broader public and for experts might be separated to allow for more customised results.

**Lessons for London**

- The AMS barometer doesn’t over reach in terms of projecting forward. It presents short to medium-term forecasts (up to three years) which users may have more confidence with compared to longer term forecasts presented by GLA Economics and Working Futures. Projecting forward by three years is perfectly adequate for curriculum planners.

- As mentioned above, administrative boundaries are not necessarily the same as regional labour markets. This is something the GLA should consider as jobs outside GLA boundaries maybe relevant to those living in London Boroughs with good transport connectivity to towns outside Greater London.

- A regular user survey of those visiting the Datastore webpage to gauge: time spent using the tool, how often it is used, usability of the tool, satisfaction and recommendations for improvement. This would keep the webpage relevant for its target audience.

- Information on qualifications, skills and competences for specific occupations should be displayed together.

Follow this link ([http://bis.ams.or.at/qualibarometer/berufsbereiche.php](http://bis.ams.or.at/qualibarometer/berufsbereiche.php)) to the AMS-skills barometer (The website is in German and is best viewed via online translation software such as Google translate).

**Links to international tools**

Details of how other countries have analysed skills data to inform future need can be viewed via this link:

## Annex 1: Links to useful resources and tools

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Tool Name</th>
<th>Aimed at?</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Labour Insight Job Vacancy Data</td>
<td>Careers advice and guidance</td>
<td>Web based application for Councils, Local Enterprise Partnerships, Colleges, Universities, Private Training Providers and Commercial organisations to track and analyse real time labour market job vacancy activity and employer demand for skills. Real Time Information is aggregated de-duplicated and assimilated to detail key data from each job listing describing the specific skills, skills clusters, education, qualifications, experience and work activities required for the job, as well as information about salary, number of openings and job type.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Active</td>
<td>Careers Explorer</td>
<td>Careers advice and guidance</td>
<td>A careers advice application that focuses on national and regional Labour Market Information (LMI) to help students make informed choice about their further education and career. Careers Explorer was designed to be used by students, staff, and careers professionals during one to one interviews, group discussions or privately.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Burning Glass</td>
<td>Labor Insight</td>
<td>Educators, researchers, workforce and economic development agencies</td>
<td>Analytical tool to allow users to understand and adapt to the labour market in real time. Burning Glass collects online job postings from close to 40,000 sources and describes the specific skills, education, experience, and work activities required for the job. The Labour Insight dashboard allows detailed analysis of hiring activity by industry, occupation, education, and skills.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Cascade</td>
<td>WorkTrack</td>
<td>Job seekers and advisors</td>
<td>WorkTrack is an online program for jobseekers and advisers focussed on identifying sustainable job opportunities.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>EMSI</td>
<td>Analyst</td>
<td>Business, education, workforce development and economic professionals</td>
<td>Analyst is a web-based tool that gives users access to local information on jobs and skills across industries and occupations. It is designed to help business, education, workforce development and economic professionals understand the population, economy and labour market of the regions they serve.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>EMSI</td>
<td>Career Coach</td>
<td>Job seekers</td>
<td>Designed to inform current and prospective students how the education a college provides will lead to a sustainable career. The web-based tool provides localised labour market intelligence to promote the college's curriculum offer and inform information, advice and guidance (IAG) activities.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Organisation</td>
<td>Tool Name</td>
<td>Aimed at?</td>
<td>Description</td>
<td>Link</td>
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</tr>
<tr>
<td>Institute for Employment Research (IER) University of Warwick</td>
<td>National Guidance Research Forum - LMI Future Trends</td>
<td>Career guidance and those wanting to improve and update their knowledge of the UK labour market</td>
<td>Has labour market information on 25 sectors and broad occupational groups focusing on future changes in the labour market and skills. The information has been composed from a range of high quality sources, thus ensuring that it is up-to-date, reliable and impartial. It brings together key research and information from leading datasets, linking to full texts and leading organisations in the sectors. It is aimed at those wanting to improve and update their knowledge of the UK labour market. Each sector includes:  - Sector information – sector profile, skills gaps and shortages, future employment and drivers  - Regional and national dimension – what’s happening in your area  - Occupations – job information, salary levels and occupational demands  - Equal opportunity issues – key statistics, issues and challenges  - Education and training – qualification profile, education and training opportunities.</td>
<td>Link</td>
</tr>
<tr>
<td>IPPR</td>
<td>Skills Calculator</td>
<td>Job seekers and advisors</td>
<td>The calculator is constructed by comparing demand for entry level job seekers with the available supply of new graduates or trainees. They are doing this by connecting degrees and jobs. The connections are between existing published mapping of degrees to jobs, further refined by using Burning Glass’s job market analytics. In particular, they plan to analyse CVs to determine the most common career trajectories for recipients of each qualification. They will then analyse the skills, credentials and qualifications requested by employers in “over 6 million online job postings”.</td>
<td>Being developed</td>
</tr>
<tr>
<td>London Councils</td>
<td>Skills Match London</td>
<td>Careers advisor, Employer, Policy makers, Schools Colleges</td>
<td>Interactive tool which allows the visual exploration of the relationship between skills supply and employer demand (at Level 3 and below) in London up to 2020. It brings together skills data and labour market data enabling policy-makers, practitioners and employers to take an intelligence-led, geographically-specific approach to addressing youth unemployment in London. Currently only covers 17 and 18 year old leavers, and skills and jobs below level 4 at the moment.</td>
<td>Link</td>
</tr>
<tr>
<td>National Careers Service</td>
<td>Skills to Succeed Academy</td>
<td>Job seekers</td>
<td>Free, interactive, online training programme. It is designed specifically to meet the needs of young people. Its aim is to help young people choose the right career as well as build the key employability skills needed to find and keep a job. It focuses on teaching people how to do things for themselves and building skills. Need an access code when registering to the site. To get this access code ring their advisers on 0800 100 900.</td>
<td>Link</td>
</tr>
<tr>
<td>National Careers Service</td>
<td>Skills Health Check</td>
<td>Job seekers</td>
<td>A series of questions and activities to help point people in the right direction in terms of what kind of job suits them. It can also show people which skills they might want to brush up on. Consists of online questionnaires with a report at the end. Designed to give people information about their skills, interests and motivations in the workplace. The tools help young people to think about the kinds of jobs that might be best for</td>
<td>Link</td>
</tr>
<tr>
<td>Organisation</td>
<td>Tool Name</td>
<td>Aimed at?</td>
<td>Description</td>
<td>Link</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Nesta (jobs open data challenge)</td>
<td>Pikhaya Smart Streets</td>
<td>Business</td>
<td>A tool designed to attract small, independent businesses to discover commercial opportunities in deprived urban centres. Using a combination of socio-economic data (such as the Regional Household Income and Expenditure data) along with local data from councils (Rates, and Licensing) to present a bottom-up calculation of economic potential in each postal district.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Nesta (jobs open data challenge)</td>
<td>Performance in Context</td>
<td>Recruiters</td>
<td>Uses data from applicants and match it against Government education and other datasets to enable recruiters to see their applicants’ performance in context. The hope is that by enabling recruiters to see performance in context they are widening the talent pool and increasing access to jobs and university, especially for applicants from less-privileged backgrounds.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Open University</td>
<td>Adult Directions</td>
<td>Job seekers (OU students)</td>
<td>Tool available to OU students which helps them to identify potential career options. The occupational information in this resource focuses mainly on opportunities in England and Wales. Will need an OU computer username and password to access this tool.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Prospects</td>
<td>Career Planner</td>
<td>Job seekers</td>
<td>Helps people to match their skills, interests and motivations to occupations.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>RCU market intelligence</td>
<td>MiDES Labour Market Intelligence (LMI) tool</td>
<td>Colleges</td>
<td>Shows the current and future employment demand for jobs across all occupations at a local, regional and national level. It also provides information on average earnings, current skill shortages, skill levels demanded by employers, and the balance between full and part time jobs. Access to the MiDES LMI service is through an annual subscription.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Target Jobs</td>
<td>TARGETjobs careers report; career planner</td>
<td>Job seekers</td>
<td>Online tool which can help people match their abilities against possible career paths and create an action plan to build on their skills and strengths. Can also download and print off a report.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>The Recruitment &amp; Employment Confederation (REC)</td>
<td>Jobs Outlook</td>
<td>Research</td>
<td>The REC’s JobsOutlook publication surveys a representative sample of employers every month about their short and medium-term plans for hiring permanent and temporary staff. The report features original survey data which provides a monthly picture of permanent and temporary recruitment, vacancies, and earnings in all regions and sectors of the UK labour market.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>URBACT (EU) &amp; Oxford Economics Ltd</td>
<td>ESMeC Skills Forecasting Manual and Tool</td>
<td>City practitioners involved in economic and employment development</td>
<td>Excel document which consists of a series of data tables and spreadsheets. A step by step guide is included in the tool and provides guidance and information on how to complete the tables. Requires cities to collect data on the supply and demand side of the labour market.</td>
<td><a href="#">Link</a></td>
</tr>
<tr>
<td>Organisation</td>
<td>Tool Name</td>
<td>Aimed at?</td>
<td>Description</td>
<td>Link</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------</td>
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<td>-----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Windmills</td>
<td>Life Fitness Check</td>
<td>Job seekers</td>
<td>Interactive Life Fitness Check: help young people identify their skills, values and motivations to help with career progression.</td>
<td>Link</td>
</tr>
</tbody>
</table>
## Annex 2: Workshop attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julian Gravatt</td>
<td>Association of Colleges</td>
</tr>
<tr>
<td>Nicola Mayell</td>
<td>London Work Based Learning Alliance</td>
</tr>
<tr>
<td>Vic Farlie</td>
<td>London Work Based Learning Alliance</td>
</tr>
<tr>
<td>Janice Pigott</td>
<td>Prospects</td>
</tr>
<tr>
<td>Souraya Ali</td>
<td>London Councils</td>
</tr>
<tr>
<td>Yolande Burgess</td>
<td>Young People’s Education and Skills, London Councils</td>
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<tr>
<td>Kris Krasnowski</td>
<td>Central London Forward</td>
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<tr>
<td>Dan Gascoyne</td>
<td>West London Alliance</td>
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<tr>
<td>Jon Thorn</td>
<td>Skills Funding Agency</td>
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<tr>
<td>Brian Mckeown</td>
<td>Department for Work and Pensions</td>
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<td>Mark Hilton</td>
<td>London First</td>
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<tr>
<td>Daisy Greenaway</td>
<td>GLA Education and Youth</td>
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<tr>
<td>Tim Chewter</td>
<td>Association of Employment and Learning Providers</td>
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<tr>
<td>Nicky Freeling</td>
<td>Islington Learning Skills and Employment service</td>
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<tr>
<td>Nick Kimber</td>
<td>Camden and Central London Forward</td>
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