On Analysis and Forecasting of Skills Demand and Supply, on Real Local Labour Markets

- Approaches and Rationale
- Effective and Affordable Tools

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European Union: Connecting cities Building successes
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And the partners of the JobTown URBACT network
JobTown is a network of 11 localities across Europe, co-financed by the European URBACT programme for promoting sustainable urban development.

The JobTown network believes that youth unemployment, poor employment and inactivity need to be understood as structural problems pre-dating the economic crisis (though severely worsened by it), and as such must be treated by systemic approaches. The network understands efforts for the creation of youth employment and opportunities, and local development strategies, as ultimately two sides of the same coin.

In keeping with the URBACT approach, each JobTown locality has established a Local Support Group, as a basis for developing sustainable Local Partnerships.

http://urbact.eu/

<table>
<thead>
<tr>
<th>Table of contents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>About this Learning Module</td>
<td>p. 4</td>
</tr>
<tr>
<td>Oxford Economics Skills Forecasting Tool</td>
<td>6</td>
</tr>
<tr>
<td>Two Polish Initiatives:</td>
<td></td>
</tr>
<tr>
<td>Adapting the Occupational Barometer, and Monitoring Youth on the Labour Market</td>
<td>8</td>
</tr>
<tr>
<td>Rennes’ CODESPAR: development and forecasting, through diversity and involvement</td>
<td>16</td>
</tr>
<tr>
<td>Demographic challenges in Germany and the use of the Labour Market Monitor/ Arbeitsmarktmonitor</td>
<td>18</td>
</tr>
<tr>
<td>Web crawling to Analyse Labour Markets, Using online Job Vacancies – A Growing Practice</td>
<td>22</td>
</tr>
<tr>
<td>Concluding remarks</td>
<td>26</td>
</tr>
</tbody>
</table>
About this Learning Module

This publication is about what local authorities can do to better understand their local labour markets, so as to better serve their residents and to guarantee that their own policymaking be soundly knowledge-based.

It stems from and builds on JobTown’s 3rd Transnational Workshop, held in Rennes in February 2014 and dedicated to building the capacity of attending towns, to carry out their own labour market analysis and forecasting.

What’s a ‘local’ labour market?

When discussing ‘local labour markets’ in this publication, we are referring not to the specific confines of an administrative area (e.g. the boundaries of municipality, borough, county etc.), but rather a functional definition – i.e. the general area in which their residents move about for work or job seeking.

A local authority, and its partners need to understand this local labour market – i.e. analysis of current skills demands, job profiles etc. – and where things are going – i.e. forecasting skills demand and identifying trends.

Why are skills so important?

In of itself, the term ‘skills’ can refer to a range of things, from the more formal (e.g. qualifications as a medical doctor, electrician etc.), to what are termed ‘soft’ or ‘generic’ skills (e.g. teamwork, time management, so-called ‘people skills’, etc.).

Kieran Ferran, of Oxford economics provided us with this definition of ‘skills’, in the training session he led in the Rennes Workshop (see above):

“Attributes that make employees effective and productive in their roles... an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carry out complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills).”

The available skill supply in any given locality is fundamental to making an advanced economy possible in that place and to making that place competitive. Globalisation only means competition is growing – coming not just from other EU cities, regions and mobile labour, but potentially from anywhere in the world.

A low wage ‘race to the bottom’, is one in which European communities can only lose, in various senses. Skills are key to escaping any such downward spiral and thus to Europeans enjoying the kinds of lives and places they want.

Productive, high value added economies – i.e. that are attractive to investment, competitive exporters and/or strong in sectors with high growth potential – all depend on adequate supply of the right skills. There are no strategies based on innovation and R&D without the corresponding skills. Places and people with the right skills earn more and experience less unemployment.

What do you use labour market analysis for?

Local authorities and the partners – employers, employment-related bodies and organisations, other levels of government or neighbouring communities – use the results of labour market analysis and skills demand forecasting for a range of inter-related purposes.

Having complete and reliable information, allows an administration to provide useful careers advice to young (and not so young) people. It allows a public administration, and providers of training and education, to decide what sort of training and education mix to offer or plan for, and what investments to make. All this allows for skills shortages and mismatches (people with skills and qualifications unrelated to the jobs that are actually on offer) to be reduced or avoided altogether.
Having the tools at their own disposal, allows local authorities to be independent of other providers of information, and to seek out the kind of information within the kind of timeframe that best suits their own needs.

All too often, local actors depend on information from a regional or national body, which is often inexact regarding their specific local situation (the data being aggregated to a larger area, and/or the questions asked not being quite the same ones the local authority would want answered) and delayed in reaching them, possibly to the point of being outdated.

Without access to the right information, on time, and without the ability to conduct their own local labour market analysis, an administration is unable to provide guidance to others or make its own decisions and planning in full light of the facts.

The publication

The following publication does not set out to provide an exhaustive inventory of possible tools and approaches to labour market analysis and forecasting or make any blanket recommendations (other than the obvious ‘do analysis and forecasting’) for all localities. Rather, it presents a range of tools and approaches – requiring different degrees of technical capacity, covering different timeframes and suitable for different purposes. Some of them are tools that are ready to be adopted and used right away by other administrations, and others are more narratives of a given city’s experience that can serve to help other places form a view of what’s best for them.

The endgame is to support and encourage cities, and their stakeholders, to take action to build their own capacities – leading to better understanding and more effective actions and policies in favour of employment, growth and young people.
Summary:
A labour market analysis and forecasting tool designed specifically for use by local authorities, to focus on local/sub-regional labour markets, and provide long-term projections on that level. It’s a free ‘off-the-rack’ tool, flexible and easily adaptable, and not requiring significant technical skills.

Background
Oxford Economics – an international, UK-based, advisory services company, specialised in economic forecasting and modeling – has produced this tool for analysing local labour markets. Initially commissioned for the purposes of ESIMEC, a now wound up URBACT network; the tool has been made freely available to any local administration that wishes to make use of it.

The Skills Forecasting Tool:
How it works:
The computer tool comes in the form of a template Excel file, accompanied by a User Guide which walks the user through the various steps, explaining what type of data to plug in where, and so forth. Only moderate computer proficiency is needed. However, the execution of the digital tool comes wrapped in a larger process, involving stakeholders, exchange, revision, and communication actions. This larger picture is the complete tool.

The process around the tool:
- Effective collaboration is key. The process includes a broad range of stakeholders – i.e. employers, education & training institutions, employment agencies, students and the unemployed.
- Results are shared via ongoing discussion, with said stakeholders, and their feedback is continually incorporated. This iterative process hones the forecasting and strengthens credibility.
- The answers produced in response to key questions are communicated – e.g. Will there be skill shortages or surpluses in future? If so, in which sectors? What will the impact be? In what timeframe? What would need to be done differently?
- Forecasting results are regularly updated – an economic environment, especially at city level, can change quickly, making forecasts outdated.
- Outcomes are continually contrasted with their forecasts, so as to make improvements in the methodology.

Why pick this tool:
- It’s user friendly
- It’s open, transparent and adaptable
- It complements other analyses and models of future skill needs – using it is not an ‘either/or’ choice

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http://www.oxfordeconomics.com/about-us
• It improves understanding of the forecasting process
• Fundamentally: It helps the city administration work and plan more effectively

Uses of forecasting outputs:
• Fundamentally: Understanding and balancing future skills supply and demand
• Determining long-term skill needs in quite specific labour markets
• Reducing education and training mismatch with labour market needs
• Collaborating with education providers and helping them respond to future skills needs
• Coordinating skill actions and efforts towards the same skill goals
• Better matching the skills of the unemployed with labour market needs
• Material to share with stakeholders, to drive discussion etc.

Limitations and risks:
By using such a tool, a city administration should be able to know more rather than less — and thus be better equipped to act and plan — however it is important to manage expectations by making limitations clear to participants and users.
• Data quality and availability — results are limited by the accuracy and detail of the data utilised.
• Missed linkages and contextualisation — e.g. detailed sector studies may be done in isolation from the rest of the economy, thus not taking into consideration pertinent factors.
• Claims and perception may differ from truth — e.g. Employer surveys may produce biased responses; it can be difficult to distinguish between what employers want and need.
• The non-quantifiable — it can be difficult to quantify or ensure representativeness, in qualitative consultations with employers and sector experts.
• The unknowable — you may need to consult with tomorrow’s employers not just today’s.
• Margin of error — forecasts are not predictions; they are about probabilities and the direction of trends, not certainties.

How to begin using the tool:
A blank template of the forecasting tool, with a User Guide at the end, is available here: https://projectworks.files.wordpress.com/2015/01/template.xlsx
A sample output from the tool – based on the UK city of Basingstoke, in Excel format – is available here: https://projectworks.files.wordpress.com/2015/01/example.xlsx

Kieran Ferran, the tool’s creator (this chapter is based on material provided by him) and City Data Manager at Oxford Economics’ London office, is happy to help cities with using the tool and can be contacted here: kferran@oxforeconomics.com

Past and likely future trends in employee jobs by sector, UK city of Basingstoke
Two Polish Initiatives: Adapting the Occupational Barometer, and Monitoring Youth on the Labour Market

Executive summary
This article presents two youth-related labour market monitoring good practices, implemented in the Małopolska region (Poland). The first is the successful adaptation of the Occupational Barometer – a short-term (one-year) forecast of demand for occupations – to the needs of this Polish region. The Barometer offers a qualitative method for gathering information on workforce demand by occupations, is suitable for analysing local labour market, and is a flexible system that can use various types of indicators and be used by people with different profiles and levels of expertise. The second – “Model for monitoring the situation of young people on the labour market” – is a statistical tool, describing a composite of key factors – e.g. demography, unemployment/employment, education, family or living conditions, allowing for comparisons of position and career prospects of youth in different Polish regions.

The tool provides a holistic view and introduces qualitative factors. The author presents background, methodology and results of these two studies and considers if and how they could be transferred to other European regions.

1) Adapting the Occupational Barometer in Poland

1.1. Background
The Occupational Barometer originates in Sweden. Its methodology was developed in the 1990s as an element of a broader system for forecasting changes in the labour market. The forecasting was intended to provide information to employment policymakers and institutions offering services to employers and the unemployed. In 2007, the Occupational Barometer was adopted by the public employment service in south-western Finland. Since then, the Finnish have managed to extend the survey and apply it with success throughout the country. In 2009, the staff of the Labour Market and Education Observatory of Małopolska learnt about the Barometer during a study visit to Turku. In that same year, a pilot survey was carried out in the Małopolska Region, in courtesy of Ms. Michalska-Sabal.

Occupational Barometer 2014
Malopolska

Article contributed by Antonina Michalka-Sabal, Research specialist, Regional Labour Office in Krakow – Labour Market and Education Observatory of Małopolska, Poland.

(All photos and graphics in the article courtesy of Ms. Michalska-Sabal)

The Occupational Barometer 2014
Malopolska

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Occupational Barometer 2014
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(All photos and graphics in the article courtesy of Ms. Michalska-Sabal)
collaboration with six local labour offices. Since 2010, the “Occupational Barometer” has been utilised throughout Małopolska – the only Polish region using this tool to date.

1.2. Methodology
The Occupational Barometer is a short-term (one-year) forecast of demand for occupations in the Małopolska Region. It is done through the cooperation of Regional Labour Office and local labour offices in Małopolska. The forecast is developed for each county by local labour office staff in the form of expert panels. The panel members are: placement officers, career counsellors, people in charge of relations with employers or the organisation of training events, as well as EURES (European Employment Services) assistants and job club leaders.

In Krakow, the forecast is compiled by employees of the Labour Office for the City of Kraków and representatives of private employment agencies. Engagement of private sector representatives in the region’s capital was necessary, as they play a quite significant role in the market for job placement services. In smaller counties local labour offices are main actors who offer this kind of service and have the most extensive knowledge of supply and demand for workers.

The forecasts are made for each county individually and for the whole of Małopolska. They are formed in late autumn, by groups of four to eight people. One meeting usually takes up to 3 hours. The deliberations of the panel members on the situation in each of the occupational fields provide answers to the following questions:

- How is the demand for employees in the occupation concerned going to change in the coming year? Is it going to grow or decrease? Or maybe it will remain unchanged?
- What is the relationship going to be between the labour force and the demand for employees in the occupation concerned? Will there be a deficit or a surplus of job seekers? Or will demand and supply balance out?

On the basis of these deliberations, the panel experts qualify jobs into three groups: Deficit occupations, in which it should not be difficult to find a job in the coming year since the demand from employers will be high, combined with a low supply of labour willing to take up employment and having the right qualifications, Balanced occupations, in which the number of vacancies will be close to the number of people capable of, and interested in taking up employment in the occupation concerned (the supply and demand sides will be balanced), Surplus occupations, in which it might be more difficult to find a job because of the low demand and numerous candidates willing to take up employment and meeting the employers’ requirements.

In their assessment, the experts use data on the numbers of vacancies and people registered as...
unemployed in the particular occupation. They also take account of situations where, in an occupation, most vacancies will be for internships. This data, however, is only auxiliary in its nature.

Statistical data does not provide a complete picture of the situation in the labour market. Indeed, it does not answer questions as whether a person who declares having skills in a particular occupation is actually capable of doing the job to the required standard, and if so, on the terms and conditions offered by the employer. Neither does it indicate whether the employer is willing to hire such a person and if not, why (problem of qualifications, job experience, expectations as to the pay, etc.).

Local labour office statistics will not answer such questions. Rarely are these issues touched upon in classical questionnaires either. As such, information gathered by labour office staff, which goes beyond statistics, is of great importance. Staff knows, for instance, which of the vacancies are notified repeatedly, where there is high turnover of employees and what the reasons are. They are also aware of the seasonality of employment, and the impact of this factor on the labour market statistics. However, the greatest advantage of the Barometer is that it can take into account employees’ qualifications and their actual preparedness to perform the occupation. Having only information about the number of unemployed registered in the occupation, one is unable to establish whether they are really capable of taking up employment – i.e. whether they have the right qualifications and the supporting certificates, whether they are experienced enough and willing to take up the job.

The Barometer incorporates all these factors and uses them to describe a supply and demand relationship that is much closer and truer to the reality of a given local labour market. The experts supplement basic data with their own local knowledge, as to whether the unemployed are capable of, and willing to take up employment – whether they are equipped with the right skills, qualifications and certificates validating it, whether they have the relevant occupational experience, etc.

The panel members assess only those occupations that are present in the local labour market. If there is no such occupation locally or they lack awareness of it, they leave it out – that is why the list of occupations included in the forecast for a county may be shorter than the maximum (of approximately 170 items). The full list of occupations for assessment was developed on the basis of statistical data (vacancies reported to the local labour offices) and expert opinion.

The occupational categories differ slightly from those of the current Polish Classification of Occupations and Specializations3. The names of professions have been adapted to the common language used by employers and job seekers, with a view to being more accessible for both groups.

The expert panel work in each of the counties is then followed up by the creation of the Occupational Barometer for the Małopolska region, which is compiled by aggregating the information gathered within the different county panels.

1.3. Utility

The Occupational Barometer has been employed in various contexts in Małopolska. The results of the forecast are used above all by the staff of local labour offices – career counsellors and placement officers. They are useful in their daily work with the unemployed and job seekers, when they need to explain local labour market job prospects.

The Barometer also serves as basic orientation for choosing training courses for the unemployed in local labour offices. It is popular among job seekers and young graduates, who are searching for employment on their own, and useful for those employed considering reskilling. As a means to compare a given local situation with that of neighbouring counties, the Barometer can facilitate the mobility of workers (cross-county and cross-border). Likewise, in the context of limited resources, officials have to choose which training courses to finance each year, and the Occupational Barometer guides that decision, towards courses for deficit professions with more chances of resulting in employment.

3 The Polish Classification of Occupations and Specializations is based on ISCO standard.
Employers, for their part, are interested in the information it produces, as a means to understanding what the available resources in the local labour market are (i.e. with what occupations they might have recruitment problems). The Regional Labour Office, being an institution implementing the European Social Fund, uses the Occupational Barometer as a criterion for project assessment, which in turn influences training policy in the region.

It’s also worth mentioning that the Occupational Barometer has proved to be an attractive product for external users, particularly the media, as it provides information that is clear, coherent, up-to-date and easy to understand, regarding the circumstances of a given local labour market.

1.4. Concluding remarks

The Occupational Barometer can be easily transferred, regardless of the structure of a labour market-related administration. Its methodology is easy and the study itself costs little money and time. The main success factor is selection of appropriate experts, who are knowledgeable about supply and demand issues in the labour market in question.

The “Occupational Barometer – Małopolska” website was launched in 2013, for informational and promotional purposes. The portal presents the results of the Occupational Barometer survey in graphic form, contributing to ease of understanding and analysis. It was designed as a user-friendly tool, easy to use and consult what

Limitations:
It’s limitations all have to do with the quality, types and availability of data to feed into the tool – e.g. problems like:
- Different reporting periods
- Different levels of data aggregation
- Delays in the publication of data
- Availability of data segmented by age groups, or by region and locality
- Information gaps
- Reliability of data concerning migration (e.g. emigration is frequently less documented than immigration)
- Continuity – e.g. where you have ‘one off’ ESF financing to conduct a survey.

For more information

On the Polish use:

Regarding the original Finnish Barometer, on which the Polish one was based, contact:
Jouni Marttinen, Senior Foresight Advisor at Centre for Economic Development, Transport and the Environment (ELY Centre) for Southwest Finland, whose organisation is willing to help other countries adopt the system.

jouni.marttinen@ely-keskus.fi

Documents:
Creating Finland’s Occupational Barometers
https://projectworks.files.wordpress.com/2014/10/finish-occupational-barometer2010214.docx

Interview with Marttinen
https://projectworks.files.wordpress.com/2014/10/interview_marttinen_2012-05-23.docx

Observatory Workshop outcome:
https://projectworks.files.wordpress.com/2014/10/ob_workshop_outcome_-_15102014-2.docx

Recent Observatory results poster
https://projectworks.files.wordpress.com/2014/10/ob_workshop_outcome_-_15102014-2.docx

4 Those projects offering training courses in deficit occupations were given additional points and had greater opportunities for co-financing.
2. Model for Monitoring the Situation of young people on the Labour Market

2.1. Background
The Model for monitoring the situation of young people on the labour market was developed in cooperation with seven Regional Labour Offices in Poland, among these the Regional Labour Office in Krakow. The idea of such a working group, established in 2011, arose during one of the meetings of the European Network on Regional Labour Market Monitoring.

With the labour market situation for youth worsening throughout the EU, there is a need for information of good quality, with which to design effective policies and interventions. A fundamental problem is that the data on young people’s situation is generally diverse and dispersed, coming from different sources. As such, it is often incomparable – not only between countries but also on the regional level in one country.

Accordingly, there is the need to unify the indicators for monitoring the situation of youth, in the regional, national and European contexts. The role of the working group of Polish labour market institutions was thus to identify possibilities for indicators comparable across the Polish regions, as well as across Europe. The latter objective has proven elusive. The group’s work was mainly concentrated on the statistical model for Polish regions. An effort was also made to develop a transnational model in partnership with the German Federal Employment Agency in Berlin, however the transnational model ran into considerable limitations (see chapter 2.3.).

2.2. Methodology
The first step in the development of the model was data overview. Each member of the working group had to check the accessibility of data from public statistics. Then, the concepts involved were worked on in a set of workshops, resulting in six fields for analysis being selected:

- Core (key) indicators:
  - Unemployment
  - Youth employment
- Context indicators:
  - Education
  - Demography
  - Family and living conditions
  - Social activity

Then for each field of study, descriptive indicators were chosen. The original set was composed of more than sixty indicators, selected on the basis of the statistical data available and working group members’ opinion.

Next, a set of potential indicators was submitted to experts for evaluation, in the form of an Internet questionnaire, and the final list was limited to the most crucial measures.

The final list of indicators included:
- Employment rate of young people
- Average total monthly gross salary
- Unemployment rate of young people
- Share of long-term unemployed young people in total population of the same age
- Early leavers from educational system
- Average monthly disposable income per person in the household and more.

The next step in the analysis was to reduce the complexity of the model, by limiting the number of indicators to the most relevant ones, and by creating one synthetic (composite) indicator describing the overall situation of young people.

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5 The working group leader is Regional Labour Office in Białystok.
6 The European Network on Regional Labour Market Monitoring (ENRLMM), based in Frankfurt, Germany, is the main referent at European level, for regional and local labour market analysis. It brings together institutes, organisations and companies from 26 countries all over Europe – i.e. research institutes, university departments, state/regional agencies and ministries, etc.

The idea for this tool arose from a 2011 ENRLMM conference, and was then developed and implemented in Malopolska, Poland, by the Regional Labour Office in Cracow (a member of ENRLMM).

For more information visit: http://www.regionallabourmarketmonitoring.net/

The working group agreed that such a synthetic measure was easier to interpret and more useful – enabling:

- Comparative **interregional** analysis
- Quick identification of fields in which the situation of youth is worsening – i.e. a **warning** function.
- Decision makers to better direct **EU regional policy financial instruments** in support of young people.

To create a synthetic indicator, two approaches were chosen for monitoring young people’s situation on the labour market: **statistical analysis** based on the standardized sums method, and analysis based on **soft modelling** methodology (see below). The working group engaged experts in the field of statistics at this stage of work.

**First approach:**
For the ‘**statistical analysis** based on the standardized sums method’ approach, successive steps were taken:

- For each of the variables it was decided whether its impact on the situation of young people in the labour market is **positive** (stimulant) or **negative** (depressant).
- The **accuracy and reliability** of proposed indicators were verified with respect to the correlation of individual measures.
- Then, for each field of analysis, a synthetic indicator was constructed, describing the situation in a given field (employment, unemployment, demography etc.).

- Finally, the **general aggregated indicator** of the youth situation was formed, as a **weighted average** of synthetic measures of each field. Weights for each field were developed on the basis of expert assessment of the impact of particular fields on the overall situation of young people in the labour market.

This approach was **criticized** for its combination of statistical methods and expert evaluation; the assigned definite weights to particular fields became controversial. Nonetheless, the synthetic indicator proved to be useful. Expressed in standardized values, it showed how the situation in the region differed from the average, and Polish regions were ranked on this basis. The territorial units were divided into **four groups** (the best, above average, below average and the worst conditions for young peoples’ activity).

**Second approach:**
Based on the so-called soft modelling method, some **restrictions** from the standardized sums method (#1, above) were eliminated. Primarily, this enabled mathematical evaluation of the impact of one or another specific context field, on the labour market situation of young people.

The theoretical background of this method is described in a **summary report**: “According to the theoretical basis of soft modelling, each such model consists of two parts: the internal model and external model. The **internal model** shows the relationship between studied areas, in particular the impact of respective ‘context areas’ on ‘key areas’.”

That is, in this type of model there is the key area (e.g. employment/unemployment of youth) and the context areas that affect it (e.g. education or family background). What the model measures is the **impact** of said context areas, on the key area, producing responses to questions like ‘how much (to

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8 When two indicators showed a strong correlation, the indicator that could more differentiate the regions was chosen (i.e. had a higher coefficient of variation).
9 Ibid. p. 34-36.
10 Ibid. p. 69.
11 Ibid. p. 72.
what extent) is the situation of youth determined by education, or by the general economic situation?

“The external model elucidates the impact of detailed indicators on specific areas\(^{12}\), which are also defined by said indicators.

That is, each area is defined, on the basis of a set of indicators that describe it – e.g. the “education” area was defined on the basis of indicators like: Early leavers from educational system; Vocational examination passing rate; Matriculation examination passing rate etc.

Some important changes in the previous assumptions were made at this stage. For example, economic condition of a region was added to the model as another important context area, in addition to education, demography, living conditions and social activity. The number of indicators was again limited only for those statistically proven to have an impact on the labour market situation of young people.

The other two fields – demography and social activity – proved to have small and negative effect\(^{13}\), i.e. higher indications of social activity correlate with less labour market activity, presumably because when there’s no work, young people search more actively for other fields of activity, like membership in different associations etc. With demography, the better the demographic structure, the more young people who are on the labour market searching for jobs, thus having less success because of the competition.

This analysis also led to the categorisation of Polish regions by better or worse situation for youth.

2.3. Results on an international level

The Polish model was constructed on the basis of Polish public statistics and it cannot be simply reproduced in other conditions. An overview of international data found that it is difficult to obtain more than the basic EUROSTAT data from the Labour Force Survey.

Nevertheless, the working group decided to search for some other data from national statistics that could be compared on an international level. In 2013 the group leader signed the transnational partnership agreement with German Federal Employment Agency in Berlin (Bundesagentur für Arbeit Regionaldirektion Berlin Brandenburg) to seek out possibilities for a transnational model.

The collective work resulted in 15 indicators chosen, to be monitored both in Germany and in Poland\(^{14}\). The scope for statistical modelling was nevertheless limited, not only due to shortage of data. The work goes beyond the current partnership arrangements, and adequate funding is required. Currently the German partner has made their Internet tool\(^{15}\) available (see later chapter on Labour Market Monitor in Germany), which generates graphic presentation of data and comparison of values, for indicators in a given year, between Polish and German regions.

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\(^{12}\) Ibid. p. 72.

\(^{13}\) Ibid. p. 75.

\(^{14}\) Ibid., p. 58.

\(^{15}\) Arbeitsmarktmonitor System, https://arbeitsmarktmonitor.arbeitsagentur.de
2.4. Concluding remarks

As mentioned previously, the biggest challenge – which arose while working on the model for monitoring the youth situation – was how to deal with limitations concerning data availability. There were problems making youth situation data difficult to compare, e.g. diversity of reporting periods, and age groups for which data is presented. Age group was particularly difficult to define for the analysis; some of the indicators were reported for those 15–24 years old, others for 18–24.

Limiting analysis of youth to the youngest age sets proved ill advised, given issues like extended periods of education, and lengthening periods of integration into professional life. The age category finally chosen for analysis was quite broad – 25–34 years.

Another limitation was the absence of reliable data concerning important fields of activity of young people – e.g. in/out migration numbers. Other important information gaps concerned public regional labour demand statistics. In each country, databases with job offers are organized differently. In Poland job offers are collected by local labour offices – but these databases are incomplete because many employers do not use public placement services, as they advertise their posts in the internet or hire by recommendation.

Such data is also obtained through an Employers’ Survey. However, such surveys are usually done ad hoc (there are problems with continuity of access to data) and they use different methodologies, which frustrates comparability of indicators.

All that said, the Polish model can serve as a reference for using statistical methods to monitoring the situation of youth on the labour market. Some concepts used in this approach can be transferred to other contexts – such as, the fields and indicators used.

Contact information

For more information on either of these two practices contact Antonina Michalska-Sabal, Research specialist, Regional Labour Office in Krakow – Labour Market and Education Observatory of Małopolska, at: amichalska@wup-krakow.pl or observatorium@wup-krakow.pl.
Rennes’ CODESPAR: development and forecasting, through diversity and involvement

– This chapter is an edited and translated version of a text kindly provided by the CODESPAR organisation.

The ‘Conseil de Développement Économique et Sociale du Pays et de l’Agglomération de Rennes’ – or ‘CODESPAR’, as it’s commonly referred to – is an organisation dedicated to the economic, social and environmental development of the French city of Rennes, and its larger surrounding area. It carries out labour market analysis and forecasting, and also implements projects largely conceived as a response to said analysis and forecasting.

The body’s Development Council is geared towards collective work and reflection; it monitors developments throughout the territory, and provides a reliable knowledge base to local stakeholders and political decision makers. Members are representatives from the private sector, trade unions, associations and local politicians – the idea being to involve a full range of viewpoints.

CODESPAR seeks to anticipate shifts in the territory’s development – serving as a ‘detector’ of innovation and change, and, effectively, as a sort of support tool for change management. Accordingly, it can choose to examine a given trend or issue, of its own initiative.

Additionally, CODESPAR is recognised by central government as the ‘Labour Market Committee’ for its territory; meaning it plays the role of a kind of designated platform for social dialogue, on which decision-making is also meant to be based.

Timeline:
CODESPAR was created some 30 years ago by local elected officials, who wanted to establish a stable structure for dialogue among social and economic actors, associations (third sector), and local government. Cross-sector exchange and cooperation was to support and develop a developmental project for the territory. In 1984 CODESPAR was accorded the role of ‘Labour Market Committee’, with a mission to facilitate social dialogue within the territory, on matters of employment, training and economic development.

The Council describes itself according to 4 basic ‘Missions’:
• Monitor: Monitor the current situation, changes, emerging issues, and problem signs.
• Anticipate: Build understanding of the region’s future possibilities.
• Facilitate: Provide a space for consultation and debate, the sharing of knowledge regarding the territory and its trends, and for social dialogue.
• Foster: Try out innovative projects, and accompany them towards sustainability.

The Set Up: CODESPAR is an autonomous body, organised upon associative principles with voluntary participants, supported by a fulltime staff of five. There are 120 members, drawn from 4 ‘colleges’, of 30 members each:
• Business and economic activities
• Unions
• Associations
• Local elected politicians and their associates
The Structure
Outer circle = General Assembly, 120 members, 30 per college
Middle circle = Board, 48 members, 12 per college
Inner circle = Bureau, 16 members, 4 per college
Green = Associations
Red = Business
Blue = Trade unions
Black = Elected politicians

CODESPAR is guided by an annual work programme structured around priority projects, initiated by CODESPAR itself, or one of its partners – i.e. Rennes Métropole, Pays de Rennes, or ‘Maison de l’emploi de l’insertion et de la formation’ (a key local employment and training body). These projects are meant to identify a given problem, and, as a means to tackling it, assemble the relevant expertise from civil society.

Strategic axes
The development and promotional projects CODESPAR pursues are oriented by the multiyear strategies that the members define. i.e.:

• Climate and energy: transition to new and/or more efficient energy uses
• Forecasting: detecting economic trends and their impact on jobs and skills demand
• Social cohesion: Stakeholder involvement and strengthening social fabric

For project examples, see:
http://www.codespar.org/nos-projets/

Limitations
A sense of crisis and a quickening pace of change stimulate, understandably, public appetite for immediate solutions. However, CODESPAR is more geared for relatively longer-term work; with projects being typically two, or at least one, year timeframes, they are not suitable vehicles for immediate action or tackling challenges of a particularly conjectural nature.

Where to now?
New legislation coming through at the time of writing, will give new powers to France’s metropolitan administrations. Accordingly, CODESPAR will become a ‘Council for Metropolitan Development’, in 2015 – meaning it will have new competences and a stronger role in designing public policy for Rennes Métropole.

Requirements for transfer
Establishing a similar Development Council for a given territory requires local political will and appetite; creating such a Council is pointless if no use is made of what it produces. Elected officials must be ready to involve civil society in setting public policy, and ready to build programmes in partnership with socio-economic stakeholders and civil society representatives from the area.
Likewise, political independence is essential; any co-opting of the Council by narrower political or sectoral interests is a risk to be avoided – for, the autonomy of the Council is directly linked to how what it says is valued.

Final remarks
CODESPAR is about collective work and a shared culture of dialogue. It was built out of diversity and respect for difference – i.e. divergence – of opinion.
CODESPAR is a means of looking ahead, to anticipate, to the degree possible, the implications of emerging trends for Rennes – economically, socially and environmentally.
For more information: www.codespar.org

An added value – of the way CODESPAR conducts labour market analysis and skills demand forecasting – is that it puts in place consultation and cooperation processes, facilitating exchange, buy in and support for the resulting initiatives. While each project has its specificities, they are all based on a diagnostic carried out through exchange of views and insights from multiple stakeholders, many of these from the CODESPAR membership itself.
Demographic challenges in Germany and the use of the Labour Market Monitor/Arbeitsmarktmonitor

Key points:
- The Labour Market Monitor is an IT tool for the in-depth analysis of the Labour Market.
- Awarded ‘Most Innovative eGovernment Project’
- Data generated specific to national, regional and local levels, as well as some neighbouring European regions.
- Context of major demographic shifts and looming skills shortages.

The Setting and the Challenge
Major demographic shifts are currently unfolding throughout Germany, though the impact on different regions will vary notably. Western Palatine is one of the regions facing particularly significant demographic ramifications. As elsewhere, the region has to manage its resources and adapt to deal with new problems emerging on the horizon – in their case, a large projected deficit in skilled labour.

Western Palatine is a sparsely populated region, with just over half a million inhabitants (e.g. about half of the population of the city of Cologne) in an area of 7,990 km². The area’s municipalities are among the smallest in Germany and are scattered throughout the region. The supply of skilled labour is already limited, as is the ability of the municipality to affect said supply and other location factors that attract investment and business.

Furthermore, Western Palatine is affected by a long-term structural crisis resulting in a relatively high unemployment rate. The region is transitioning from a predominance of old industries, to a focus on research and development and the IT-sector in the area of Kaiserslautern, the region’s main city.

This tenuous initial position will come under more pressure as the effects of demographic changes reveal themselves in the area; by 2060 (at current rates), the population is projected to decline by 30% to 40%, vis-à-vis 2010. This striking development will be accompanied by a shift in age pattern; the median age for the region is projected to be 48 years in 2020 and 51 years in 2050. For some time a range of stakeholders from business, science and politics have been seeking to combine forces and coordinate already existing approaches to cooperation, in Western Palatinate. The shared goal of this network building is to develop the region to its fullest potential.

Western Palatine (Westpfalz) is a southwestern German region, in the State of Rhineland-Palatinate (Rheinland-Pfalz). Kaiserslautern is the main city of the area and one of the JobTown partner localities.
The Association and How it Works
To the above end, the association: “Western Palatine – a region with a future/Zukunftsregion Westpfalz” (http://www.zukunftsregion-westpfalz.de/) was founded in April 2012, with the mission of establishing and safeguarding the kind of work force the region needs. The membership is multi-sectoral and made up of companies, Chambers of Commerce, research facilities (e.g. universities), ministries, municipalities and certain individuals.

Tiny HR footprint gets a lot done – how?
The association stands out for having only two employed staff members (one project leader and one secretary, both part time), plus one honorary director – yet managing, nonetheless, to be highly productive. How? Some of its over 170 members are strongly integrated into regional networks – e.g. the honorary director, the board of directors and the board of trustees. Many members actively support and involve themselves in achieving the association’s goals and shouldering its distributed task load; they don’t just kick in funds, they contribute work.

The Tool and its Findings
To equip regions like Western Palatine to deal with this sort of challenge successfully, accurate regional labour market data is of fundamental importance. Accordingly, the German Employment Agency has developed the ‘Labour Market Monitor’ (Arbeitsmarktmonitor), which is designed to support all players in the labour market in their networking and decision-making.

In 2009 the Federal Republic of Germany suffered the worst crash in its post-war history, with national economic output falling 5%, from 2008 to 2009. The development of the tool by the German Employment Agency, was in part motivated by that crisis situation, the intention being to provide an improved understanding of the dynamics of regional labour markets and to support better coordination and communication among employees of the Employment Agency and active players in regional labour markets.

Innovative e Government Award
The Labour Market Monitor (‘LMM’) was introduced in 2010 as an IT-platform for regional labour markets. It produces data on the structural conditions of labour markets, to be used in assessing different industrial sectors, and in evaluating the supply and demand of skilled labour on a regional level. Its data is based on employment data gathered by the Agency itself, as well as on data generated by the Federal Statistical Office. In 2011 it was awarded “Most Innovative eGovernment Project”.

One of the ‘Western Palatine – a region with a future’ association’s key projects is to determine and classify the needs for skilled labour that will develop in Western Palatine over a 10 to 15 year timeframe – and to ensure that the corresponding training offer is in place, as and when needed. One of the main tools this project depends on is precisely the Federal Employment Agency’s ‘Labour Market Monitor’.

Broadly, Germany faces one of Europe’s more severe dynamics of aging population, and the LMM is a tool for analysis and prognosis, to help identify impending imbalances in skills supply and demand and to assess employment-related risks – on federal, regional and local levels.

The information the LMM offers is classified into three areas:

1. Structural conditions
   - Labour market
   - Education
   - Social Indicators, i.e. rates of:
     - Pre-school children in care [Kindergarten, day nanny etc.]
     - Able-to-work people aged 15–65, and their dependents, receiving support and benefits
     - Minors under 15 years of age dependent on people in the above category.
   - Demographic indicators

2. Occupational opportunities and risks
   - Assessment of industrial sectors at the federal level
   - Review of said assessment at the local level

3. Skilled Labour Force ‘Radar’
   - Analysis of the regional situation, regarding skilled labour forces
   - Visualisation of coming or emerging skills shortages, right down to the local level
Looking closely at articulated structural conditions – particularly through comparison with neighbouring regions and/or the overall German situation – contributes significantly to getting a better grasp of a given region’s situation.

The ‘Skilled Labour Forces Radar’ helps understand the present and coming availability of a skilled labour force. The relevant occupational data is based on three indicators – derived from open job vacancies reported to the Labour Agency by companies, persons registered as unemployed, and time it takes to fill the reported vacancy – and compiled by the Federal Employment Agency.

The indicators are:
1. Deviation of time of vacancy from federal average, over all professions
2. Shift in vacancy time length compared with previous year (measured in days)
3. Ratio of unemployed to vacancies.

The ‘Radar’s’ data outputs depict the relation between the unemployed and open job vacancies, mapping how long a given vacancy goes unfilled and contrasting this timespan with previous cases (i.e. is the wait growing, shrinking or similar?). This data is available for professions and occupational categories, in many cases down to a county level.

Caveat: The Federal Agency’s is the broadest and most complete such database available, however it reflects only part of the labour market; many high-skilled, less standardised positions are not included – e.g. academics, executives and so forth.

Some examples of the kind of data the tool pulls up:

Close to retirement ages:
The map below shows the percentage of employees aged 50 to 64. The darker the blue colour gets, the higher the percentage is. The arrow points to Western Palatine.

Breakdown by sector, age, gender, part-time or full-time status, in the region:
**Other Advantages to Working with the Tool**

Aside from the obvious function of providing highly tailored quality data on local and regional labour markets, and the value of such data for planning and so forth, the tool has other benefits worth pointing out.

For instance, it helps networking processes to become more effective, as it provides regional shareholders with easy access to the same, shared information. Some networks actually use the communication platform built into the LMM to coordinate their projects, conduct panel discussions on related topics, and schedule their network meetings.

A rather interesting aspect of the LMM is that it produces data on certain regions neighbouring Germany – in Austria, Belgium, Denmark, France, Italy, Luxembourg, the Netherlands, Poland and Switzerland. For instance, structural indicators are available for Alsace-Lorraine in France, or Wallonia and Flanders in Belgium.

**Editor’s note:** In the context of a network like JobTown, concerned with transnational and cross-border European cooperation and exchange on employment issues, this aspect of the tool’s functioning stands out particularly, and stimulates one to speculate on how such a tool could eventually be taken further, with a view to enhancing EU labour market performance as a whole.

**Contact and Further Info**

The Labour Market Monitor is available here: https://arbeitsmarktmonitor.arbeitsagentur.de

To pursue any further enquiries about the tool or the association ‘Western Palatine – a region with a future’, please contact Ms Anke Heckmann: heckmann@westpfalz.de

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### Population development in the last decade:

<table>
<thead>
<tr>
<th>Demographic indicators</th>
<th>Western Palatine</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>population</td>
<td>520,966</td>
<td>82,020,578</td>
</tr>
<tr>
<td>population development since 2000</td>
<td>-5.8</td>
<td>-0.3</td>
</tr>
<tr>
<td>population younger than 25 years</td>
<td>24.1</td>
<td>24</td>
</tr>
<tr>
<td>population 50 years and older</td>
<td>44.2</td>
<td>41.8</td>
</tr>
<tr>
<td>Youth - Elderly - Relation</td>
<td>54.6</td>
<td>57.4</td>
</tr>
<tr>
<td>Percentage of Immigrants</td>
<td>6.5</td>
<td>9.4</td>
</tr>
</tbody>
</table>

At a glance, one sees Western Palatine does not have the highest numbers in the country for close-to-retirement-age population, but does follow these regions (mostly in the East) with ‘runner up’ level figures.

**The Emerging Problem and its Implications:**

Regarding the development of the general German population compared to that of Western Palatine, the region is demonstrably losing more population than can be explained by birth-death ratios; Western Palatine suffers from out-movement. Given that the lack or loss of skilled labour is a vital threat to any competitiveness strategy based on R&D and high value added production, this demographic “bleeding” is a red flag.

Analysis of supply and demand for skilled labour shows that certain occupational categories – e.g. healthcare professionals and technical occupations, including IT – are already suffering from skills shortages and, unless something happens to alter the projection, demand for such skilled labour is set to outstrip supply even further in the coming years.

This trend is a direct threat to the region’s ambitions and strategy for economic competitiveness. The obvious implication is that Western Palatine will have to either compensate with a significant influx of skilled migrants, or somehow alter the approach to territorial development it currently relies on.
Web crawling to Analyse Labour Markets, Using online Job Vacancies – A Growing Practice

Executive summary

A web crawler is a free computer programme that pulls data from the Internet – e.g. job-related sites. It is cheap to use, provides real-time data, is easily customisable, and is one of the directions labour market analysis is going in. It is particularly of interest for administrations or organisations with budget restraints, and/or looking for an independent access to current data; optimised according to their own specific needs.

Web Crawlers as Tools for Labour Market Analysis

A Web Crawler (other common synonyms: Web Spider, Web Scraper) is a kind of software that trawls the Internet for information. Various parameters are set for its search and examination functions; generally the application is programmed to visit a list of URLs (web addresses) and identify further hyperlinks (i.e. setting the ‘crawl frontier’) – e.g. links to job descriptions. The programme then retrieves this information as an automated task, and said data is compiled and analysed as required.

To understand a given labour market (of whatever geographical dimension), on top of the Web Crawler (which gathers the job data from the web) an algorithm can be programmed (or simple text analysis software can be used) to analyse the job vacancy advertisements of public or private organisations, like Eures, Randstad, Monster and so forth. The analysis is conducted in terms of whatever parameters are of concern – i.e. the jobs that are in demand, the skills and requirements that are being sought, gaps in supply, length of time posts go unfilled, wage trends and dynamics, and so forth. The application can be set to drill down into these questions as deeply as possible – cross-referencing, sub-compartmentalising and breaking them down into as many sub questions as desired.

This data obtained can then be extrapolated and handled in any number of ways, using standard tools for data analysis, such as Excel or Access.

Why pick this tool:

- **Frugal factor**: It is cheap – i.e. the software is free; the only expense is the staff time using it. Obviously, being inexpensive is good anywhere anytime, however being a low cost option is particularly important for smaller and more resource stretched administrations.

- **Ease of Use**: The tool is relatively easy to use, requiring some computer proficiency and a manageable learning curve.

- **Data from now**: A Web Crawler can supply real time data fast. As such, the tool is potentially a response to the serious need, on the part of numerous local administrations, for access to up-to-date data.

- **Limitless tailoring and follow up**: With traditional survey techniques – conducted through filling out questionnaires, verbal questioning etc. – there is a limit to how much the queried person’s time can reasonably be occupied, and thus to the number of questions and follow up questions that can be posed. With a Web Crawler – a computer/internet process – this is not an issue, as there are no people being questioned.

- **It’s the way things are going**: In the field and among specialists, the use of this IT and internet-based approach is steadily on the rise and is widely expected to grow into the future (see for instance Jackson 2001 and 2007, Dörfler and van de Werfhorst 2009, Kuhn and Shen 2013 or Kurekova et al 2012 a,b,c).

What can be done with this tool?

Below is an example of what can be generated from data obtained via Web Crawling (Kurekova et al 2012b). It is a spider graph showing the importance of each type of skill analysed for
different jobs. It is useful for a cross-country analysis in terms of skill needs for different jobs. The graph shows, for instance, in the Czech Republic cognitive skills are considered very important for office jobs. The same skill type is much less valued for office jobs in Ireland.

Beyond the analysis of skills, yet another application would be to study questions related to occupational changes, wages and working conditions. For instance, Kuhn and Shen (2013) study gender discrimination in the recruitment process in the Chinese labour market; they find that highly skilled vacancies are less discriminatory.

Limitations:

- **Place**: Depending on location, the information available on Internet, regarding job offers and requirements may be more or less developed. However, the clear trend is for such information to grow on Internet – i.e. if there isn’t enough relevant data on the Internet now, there will be in the foreseeable future. In most of Europe the use of such a tool is already worthwhile.

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16 7th Framework Programme for Research and Technological Development
• **Private channels:** Not all job market information is public; many posts are filled through informal channels. This is a limitation for most formal approaches to Labour Market analysis. Incomplete knowledge is presumably inevitable, the operative question is whether an organisation benefits from using a given tool or not – i.e. if it is able to know more and understand better, and is thus more enabled.

• **Etiquette:** Web Crawlers can overload websites and flood servers making them inoperative for others. In some cases they can even crash a server altogether. Hence the need to follow certain protocols and what is called ‘politeness policy’ or ‘crawler etiquette’; these are technical measures regarding when to carry out the search (i.e. off hours of peak use), speed of data mining, and so forth.

• **Representativeness of the sample:** A ‘representative sample’ is one that accurately reflects the characteristics of the underlying population, and this is not always the case with internet-based data (see for instance Gosling et al. 2004 or Pedraza, Tijdens, and Muñoz de Bustillo 2007)

**Where to begin?**

At JobTown’s third Transnational Workshop in Rennes (France), February 2014, a training session – based on work by Dr. Anna-Elisabeth Thum – was given on how local authorities can use Web Crawlers to supply themselves with knowledge about their local/regional labour markets. If you’d like to see what such training is like, have a look at the PowerPoint used in the session, available here:

https://projectworks.files.wordpress.com/2015/01/presentation-web-crawling.pptx

The JobTown Web Crawling training opted to use ‘R’, a free software and coding environment, suited to building one’s own tailored Web Crawler. ‘R’ and information on ‘R’ and its uses are available here: http://www.r-project.org/

Co-author Dr. Thum has prepared an R-based Web Crawler application ready for use, with accompanying step-by-step instructions, and offers it freely. It’s an excellent starting point for any ‘newbie’, and is available here:


Also, see Spector (2011a and 2011b) and Jockers (2013) for a comprehensive tutorial on web-crawling and text analysis in R.

Moreover, a plethora of tutorials and instructional videos, on how to use the ‘R’ software, can easily be found on the Internet; searching on sites like Google or YouTube, using terms like ‘R tutorial’ or ‘R programming’, produces plenty of material. Of course, a lot is available in other languages than English, and there are R User Groups (RUGs) throughout the world, providing peer-based support.

Likewise, there are other free Web Crawler options out there, e.g.:


And finally, where DIY is not the best option, there are commercial purveyors of customised Web Crawlers, e.g.: http://www.ficstar.com/ http://80legs.com/ https://www.mozenda.com/

Myriad local administration and other territorial or employment-related bodies, hampered by a lack of resources and knowledge relevant to their specific needs, can use a free or inexpensive tool like a Web Crawler to greatly empower themselves – becoming more independent and equipped to make knowledge-based choices. More and more are doing so.

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17 Some can be found here: http://rwiki.sciviews.org/doku.php?id=rugs:r_user_groups

18 Orientational purposes only, this constitutes no commercial endorsement
References


Spector, P. (2011a): Reading Data from Web Pages with R, University of Berkeley, Class Notes s133.


Concluding remarks

This publication has been a look at some of the options, for labour market analysis and skills demand forecasting, available to the more local level of action – in favour of youth employment and opportunity, and economic development. They all have strengths and weaknesses, involve choices and trade-offs.

For instance, Web Crawlers are great tools and have a promising future, but there is information not on the web or that will fall outside of any such search for one reason or another. Western Palatinate (Germany) may be using the award winning Labour Market Monitor, but they are also developing another tool for longer-term – i.e. 10 to 15 years ahead – forecasting of skills that will be required in their region.

Ultimately, local and regional authorities and other employment-related bodies and organisations will need to depend on a ‘mixed salad’ of tools and approaches. They will use different tools for different purposes and combine them, according to need.

The point is to have a strategy for equipping a city, region or local community, with the type and quality of information needed for real knowledge-based policy, decisions, actions and planning.

Local authorities, even small ones, don’t have to accept to operate ‘in the dark’, taking decisions and setting policy without the support of adequately reliable and complete information. Towns don’t have to wait around for someone else to provide them with what they need.

The next point to take away is that – with a little initiative – there are tools suitable to all degrees of technical know how, and available resources. Furthermore, making analytical and forecasting processes effective is about more than the right mix of tools; it’s about a good mix of participants. Most of these tools work best when supported by extensive stakeholder support and contribution.

Likewise, the analytical tools and their processes can, themselves, be a means to building and obtaining greater stakeholder involvement – a means to achieving ‘buy in’.

In some cases local innovation, in labour market analysis, is happening more in terms of building partnership and inclusive participatory processes with stakeholders, rather than in the form of a ‘number crunching’ technical breakthrough – though there’s that too.

Ian Goldring, Lead Expert for JobTown, Brussels, 2014
URBACT is a European exchange and learning programme promoting sustainable urban development. It enables cities to work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal challenges. It helps them to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professionals involved in urban policy throughout Europe. URBACT is 300 cities, 29 countries, and 5,000 active participants.

www.urbact.eu/jobtown