



European Network on Regional Labour Market Monitoring

**13th Annual Meeting of the
European Network on Regional Labour Market Monitoring
(EN RLMM)**

DEVELOPING SKILLS IN A CHANGING WORLD OF WORK:

Concepts, Measurement and Data Applied in
Regional and Local Labour Market Monitoring
Across Europe

10-11 September 2018

XFI Building—Henderson Lecture Theatre

The Business School

University of Exeter

Marchmont Employment and Skills Observatory





I am pleased to invite the membership of the ENRLMM Network to hold its 13th Annual Meeting here at the University of Exeter. The University has been a keen supporter of the network for many years and I myself attended the Marseille conference several years ago.

This year's topic is extremely pertinent, given the likely implications of increasing digitalisation and automation in the workplace and I hope that attendees are able to benefit from the intensive study programme.

Chris Evans

Assistant Director, Regional Impact and Innovation
University of Exeter



Exeter City Council are delighted to welcome the ENRLMM to Exeter in partnership with the University. The city and university have grown substantially over the last few years and are working ever more closely together to help deliver sustainable employment, innovation and economic growth.

This is an ideal time to visit the City and we hope you enjoy your time with us.

Victoria Hatfield

Economy & Enterprise Manager
Exeter City Council



EN RLMM

The European Network on Regional Labour Market Monitoring (EN RLMM) focuses on innovative approaches for the monitoring of labour markets in regions and localities across Europe.

Through various activities involving the publishing of Anthologies and organising meetings, it seeks to further the concepts and instruments in regional and local labour market monitoring and to diffuse the common methods for research and analysis in this field.



In 2017, the Annual Meeting of the EN RLMM will take place in Exeter, UK. It will be organised jointly with the Marchmont Observatory at the University of Exeter.



The annual topic of the EN RLMM is concerned with skills development in the changing world of work. We will explore which skills enhance the employability of different target groups, what kind of data are available for measuring the skills and

how regional and local actors ensure that the skills needs of their regions are met by the providers of initial and further education and training.



At the University of Exeter we combine teaching excellence and high levels of student satisfaction with world class research at our campuses in Exeter and Cornwall.

We are a member of the UK Russell Group of leading research-intensive universities. Our success is built on a strong partnership with our students and a clear focus on high performance.

DEVELOPING SKILLS IN A CHANGING WORLD OF WORK:

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Many European regions and localities experience shortages of skilled labour arising from the growing impact of technological change in conjunction with globalisation and demographic developments. The changing world of work poses new requirements towards the skills that are needed for acquiring and retaining employability.

The Annual Meeting of the EN RLMM explores the transformation of skills needs in European regions and localities. On 10 September, it focuses on the specific needs of different target groups, such as young people entering the labour market, low and unskilled workers or unemployed. The emphasis is on the availability of data for monitoring such developments and different concepts for operationalising and measuring skills. Furthermore, it addresses the needs for action required from regional and local decision-makers, providers of initial and further education and training and labour market intermediaries.

On 11 September, the focus is on the use of Big Data for studying the changes in the regional and local labour markets and the governance of (vocational) education and training systems in the light of these new insights. Moreover, the changing requirements towards skills and the new learning formats will be reflected from the point of view of individuals.

The conference language is English and the participation is free of charge.

10 September 2018

9:00-9:30

Registration/welcome tea and coffee

9:30-10:00

WELCOMING ADDRESSES

Professor Mark Goodwin, Deputy Vice-Chancellor (External Engagement), University of Exeter (UK)

Chris Evans, Deputy Director Innovation Impact and Business, University of Exeter (UK)

10:00-10:45

INTRODUCTION TO THE ANNUAL TOPIC

Insights from the EN RLMM Anthology 2018

Dr Christa Larsen, IWAK/Centre of Goethe University Frankfurt (Germany)

Introduction to the Agenda and Activities of the Annual Meeting

Dr Andrew Dean, University of Exeter (UK)

Moderation: Päivi Holopainen, University of Lapland (Finland)

10:45-11:10

Tea and coffee break (La Touche Café)

11:10-13:00

CONCEPTS, MEASUREMENT AND DATA APPLIED IN THE MONITORING OF CHANGING SKILLS NEEDS IN:

Sectors and Companies:

Analysing Demand-oriented Skills in the Swiss Commercial Sector

Dr Moreno Baruffini, IRE/Università della Svizzera italiana (Switzerland)

The Potential and Challenges Arising from Digitalisation for Companies and Providers of Further Education: The Case of the Federal State of Hesse

Oliver Lauxen, IWAK/Centre of Goethe University Frankfurt (Germany)

Target Groups:

Generation Z vs. the Labour Market: Skills Expectations in a New Era

Dr Ciprian Panzaru, University of Timisoara (Romania)

How to Survive in the Precarious Labour Market: New Skills for the Unemployed and the Employers: A Mutual Approach

Rolf Keil and Bettina Splittgerber, Hessian Ministry for Social Affairs and Integration (Germany)

Moderation: Professor Ronald McQuaid, University of Stirling (UK)

13:00-14:00

Lunch (La Touche Café)

14:00-14:15

Group photo (outside the FXI Building)

14:15-15:45

WORKING GROUPS

Please see pages 8-10 for a short description of the cases to be presented and discussed in the Working Groups.

Tea and coffee (La Touche Café)

15:45-16:30

PLENARY SESSION

Results from the Working Groups and Discussion

Moderation: Professor Jan Brzozowski, Cracow University of Economics (Poland)

16:30-16:45

RESUME

Professor Marco Ricceri, EURISPES (Italy)

16:45-17:00

INVITATION TO MOSCOW 2019

Professor Vyacheslav Bobkov and Dr Vadim Kvachev, the Russian Academy of Sciences (Russia)

18:00-19:00

RECEPTION WITH THE LORD MAYOR OF EXETER

Exeter Guildhall

From 19:30

CONFERENCE DINNER

Rougemont Hotel, Queen Street, Exeter, EX4 3SP

Overview of the Working Groups on 10 September 2018

Working Group 1: Building One, Constantine Leventis Room

Monitoring Changing Skills and Competence Needs in Sectors, Occupations and Certain Types of Companies

Presenters:

Remigiusz Lesiuk, Mazowian Labour Market Observatory (Poland)

Anja Walter, Brandenburg Economic Development Board (Germany)

Moderator:

Marta Sosnowska, Voivodeship Labour Office in Białystok (Poland)

This Working Group addresses the variations in skills and competence needs across different sectors, occupations and types of companies. We will consider from a comparative perspective how these changes can be captured by labour market monitoring at regional and local level.

To start with, Remigiusz Lesiuk will explore the relationship between the employers' demand for competences and the availability of employees with a specific competence profile. His presentation will address the changes in the demand for competences in Mazovia and Poland in relation to training needs in this area.

Anja Walter will focus on the impact of corporate digitalisation processes on the competence requirements of employees. The presentation will take up the findings of two empirical studies— an explorative survey conducted in 2016 and an extensive enquiry conducted in 2017— and consider: 1. Have the competencies that businesses require of their employees changed as a result of digitalisation? 2. What skills and areas of expertise have been affected by the changes in competency requirements?

Working Group 2: Building One, Kolade Teaching Room

Monitoring Changing Skills and Competence Needs in Specific Target Groups

Presenters:

Professor Patrizio Di Nicola, Istat (Italy)

Professor Vyacheslav Bobkov and Dr Vadim Kvachev, Plekhanov Russian University of Economics (Russia)

Moderator:

Professor Marco Ricceri, EURISPES (Italy)

This Working Group explores the skills and competence needs associated with certain qualification levels (e.g. high- and low-skilled workers) or employment status (e.g. unemployed or self-employed).

In his presentation, Professor Patrizio Di Nicola will argue that work today is supported by technology and hyper-connection and can be done anytime and anywhere. In contrast, the working organisation was in the past determined by clearly defined working hours, places of work and the ways in which to do it. While Smart Working seems to be a good paradigm for the future organisation, we need to explore if top managers are ready for a huge cultural change, what skills they need and what the most fitting leadership models for the new era are.

The systems of skills monitoring have become an important part of today's regional labour market monitoring. Professor Vyacheslav Bobkov and Dr Vadim Kvachev outline the main characteristics of the three major systems: American, European and international system, presented at International Economic Forum in 2016. They contend that the appropriate system of skill monitoring should meet certain requirements including being a convenient instrument for both the employer and employee. However, the socially vulnerable groups require such system most, because their members lack stability and self-reliance in defining their socio-professional positions in the labour market.

Working Group 3: Henderson Lecture Theatre

Regional and Local Strategies for Monitoring and Responding to Skills and Competence Needs

Presenters:

Dr Andrew Dean and Ben Neild, University of Exeter (UK)

Moderator:

Dr Franz Clément, LISER (Luxembourg)

This Working Group will focus on strategies of regional/local actors for establishing and developing further skills and competence monitoring.

Dr Andrew Dean and Ben Neild will focus at the emergence in the Exeter sub-region of a cluster of employers, including the Met Office, who have a need for high level Data Analytics skills. They will explore how the region and its education providers have responded to these developments by establishing the Data Analytics Skills Escalator aiming to ensure that the skills are provided locally and that these high quality and sustainable jobs are ones that local people can aspire to and gain entry to.

11 September 2018

9:00-9:30

Registration/welcome tea and coffee

9:30-9:40

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Dr Andrew Dean, University of Exeter (UK)

9:40-10:30

KEYNOTE SPEAKERS

Decoding the Logics and Practices of Networks: Cross-cutting Competencies and Soft Skills in Digital Professions

Professor Renato Fontana, La Sapienza University (Italy)

Moderation: Dr Christa Larsen, IWAK/Centre of Goethe University Frankfurt (Germany)

10:30-10:50

Tea and coffee break (La Touche Café)

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SKILLS FOR THE FUTURE: LABOUR MARKET, EDUCATION AND VET

Skills Intelligence for Labour Market Actors

Jiri Branka, Cedefop (Greece)

OECD Skills for Jobs Database: Changing Occupational and Skills Demands Across OECD and EU Countries

Fabio Manca, OECD (France)

Strategies for Upskilling People with Low Qualifications to Improve Their Employability (REPLAY-VET, Erasmus+ Strategic Partnership)

Eugenia Atin, Prospektiker (the Basque Country)

Trade Union Strategy for Skills Assessment Formats in the Age of Digitalisation (Rainbow Years, Erasmus+ Strategic Partnership)

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BIG DATA WORKING GROUP

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Silvia Dusi, CRISP/University of Milano-Bicocca (Italy)

Moderation: Michel van Smoorenburg, UWV (the Netherlands)

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THE FUTURE OF JOBS: NEW KNOWLEDGE FROM BIG DATA

Using Big Data for Monitoring the Labour Market: The Perspective of Statistical Offices

Fero Hajnovic, Office for National Statistics (UK)

Skills Demand Evolution and the Future of Jobs: Replacement of Occupations Due to Robotisation/Digitalisation

Professor Mario Mezzanzanica, CRISP/University of Milano-Bicocca (Italy) and Professor Emilio Colombo, Università Cattolica del Sacro Cuore (Italy)

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RESUME

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19:00-20:00

HISTORY AND LEGENDS WALKING TOUR of Central Exeter

Meeting point in front of the Cathedral

From 20:00

INFORMAL NETWORK DINNER

The Stable, 32 Guildhall Shopping Centre, Exeter, EX4 3EB

TRANSPORT

Airports: Exeter Airport—Direct flights operate into Exeter from Paris, Dublin, Amsterdam, Geneva and airports in the United Kingdom including Aberdeen, Belfast, Edinburgh, Glasgow, Guernsey, Jersey, Leeds/Bradford, Manchester, Newcastle and Norwich. Alternatively there are regular trains from Heathrow Airport via London Paddington station and a Bus and Rail link from Bristol Airport.

Trains: Exeter has two railway stations - Exeter St David's (main station) and Central. Exeter St David's Station is approximately 10 minutes walk from the Streatham Campus and taxis are available. The average journey time from London Paddington is 2 hours 30 minutes to Exeter.

Car: The M4/M5 links Exeter directly to London, the Midlands, South Wales and the North including Scotland. The average journey time from either London or the Midlands is 3 hours. Parking on the Streatham Campus can be very limited. For satellite navigation use se postcode EX4 4QJ.

Bus/coach: The Streatham Campus is served by the D route. The D bus route includes Digby, St Luke's Campus, the City Centre and Streatham Campus. National Express coaches (08705 808080) call at Exeter Coach Station. The Coach Station is a short walk to the High Street where you can catch the local D bus which will take you to the Streatham Campus. Use National Rail Enquiries to plan your route. For passenger information telephone 08457 484950.

Taxi: Apple Taxis Exeter (01392 666666) have a dedicated taxi rank on campus. Apple Taxis have offices at both Exeter St David's rail station and Exeter International Airport.



Dr Christa Larsen: Co-ordinator of the EN RLMM, Managing Director of IWAK

Sigrid Rand: Manager of the EN RLMM

Institute for Economics, Labour and Culture (IWAK)

Centre of Goethe University Frankfurt am Main

www.iwak-frankfurt.de | www.regionallabourmarketmonitoring.net

Senckenberganlage 31 | 60325 Frankfurt am Main | Germany

Phone: +49-(0)69-798 25474

VENUE

XFI Building, the Business School, University of Exeter

Rennes Drive, Exeter EX4 4 ST (UK)

Dr Andrew Dean

Phone: + 44 (0) 1392 72 4925

a.dean@exeter.ac.uk

Lois Spence

Phone: + 44 (0) 1392 72 2312

research-events@exeter.ac.uk

The Annual Meeting of the EN RLMM will take place with the kind support of:

Marchmont Employment and Skills Observatory



Developing Skills in a Changing World of Work: Concepts, Measurement and Data Applied in Regional and Local Labour Market Monitoring Across Europe

**European Network
on Regional Labour
Market Monitoring**



Dr Christa Larsen, Co-ordinator of the EN RLMM

Institute for Economics, Labour and Culture (IWAK)

Goethe University Frankfurt, Germany



1. Developing Skills in a Changing World of Work

Background

- Trends like digitalisation, demographic change and globalisation have an impact on labour markets, VET organisations, companies, *employees and their work*, ...

➔ (Continuous) change processes

- Managing change is concerned with structures, processes and *skills, competences and knowledge of (potential) employees*
- However regional, and local framework conditions (structure of sectors and of labour supply, types of companies, infrastructure und mobility, ...) have an impact on the dynamic, extent and manifestation of the change

➔ Needs for skills, competences and knowledge vary across regions and localities



1. Developing Skills in a Changing World of Work

Background

- Demand for regionally or locally tailored assessment and development of current and prospective skills, competences and knowledge



Regional and local monitoring of skills and competences

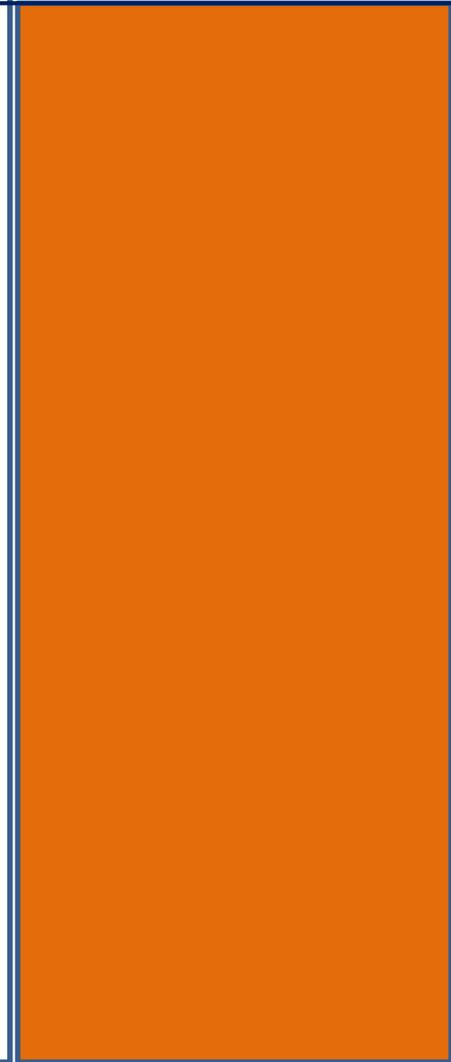
- 550 regional and local labour market observatories across Europe (and beyond) dispose major preconditions to build and perform regional and local monitoring of skills and competences
- **Regional and local labour market observatories are already key players in the assessment and development of tailored skills and competences – and will enhance their role in the process**



1. Developing Skills in a Changing World of Work

Basic Understanding and Definitions

- No unique definition of skills, competences and knowledge
- Terminology often related to the VET system
- Concerns related to static taxonomies (local or occupational variations, dynamic development)





1. Developing Skills in a Changing World of Work

Example of Definitions

ESCO taxonomy of European Commission

Skills: ability to apply knowledge and use know-how to complete tasks and solve problems

Competences: ability facing new situations or unforeseen challenges to use and apply knowledge and skills in an independent and self-directed way

Knowledge: outcome of the assimilation of information through learning. Knowledge is a body of facts, principles, theories and practices that is related to a field of work.



1. Developing Skills in a Changing World of Work

Diverse applications of the terms:

- Skills + competences are bundles of knowledge, attributes and capacities that can be learnt (OECD)
- Key competences
- Task-specific competences
- Hard skills, soft skills

How can skills and competences be acquired in learning processes?

Individual: motivation and willingness to learn

Organisation: time, support, spaces, financing, voluntariness

Region/locality: networking of labour market actors, steering of communication, regional and local strategies



1. Developing Skills in a Changing World of Work

How to build signalling?

- Specifying early indicators

Who are the relevant players in a region or a locality?

- VET
- Employment services
- Companies

 ***Challenge: pillarisation***

Demand for intermediaries:

- **To provide transparency**
- **To support matching and ...**



2. Local and Regional Monitoring of Skills und Competences

Local and regional labour market observatories are well-established intermediaries.

How can a regional or local monitoring of skills and competences be established by regional and local labour market observatories?

Good prerequisites through the four cornerstones of monitoring

- Holistic approach
- Scientific insights concerning overarching developments
- Process-orientation in regional and local monitoring
- A Europe-wide network as a resource for innovation



2. Local and Regional Monitoring of Skills and Competences

Holistic approach:

- Providing **transparency** on current situations and prospective horizons
- **Limitation of statistical and survey data** calls for additional data from Big Data and expert knowledge (bottom-up); mixed methods designs (description and explanation)
- Conceptual approach: **matching of supply and demand**



2. Local and Regional Monitoring of Skills und Competences

Holistic approach

Approaches for skill and competences monitoring:

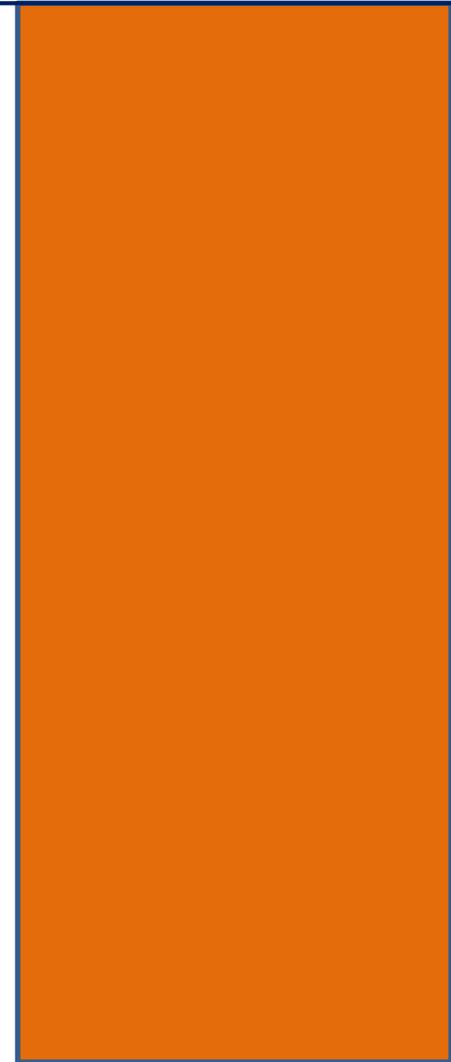
- **Big Data** (sources: job portals and social media) analyses to identify skills in occupations (ESCO-taxonomy, real-time approach)
- **Extraction of expert knowledge** (expert interviews, focus groups, Delphi method, ...) with foci on the demand-side (occupations, sectors/clusters, types of companies; the concept of occupational barometer is often applied for prospective horizon) and the supply-side (Generation Z, low-skilled, migrants/refugees, ...) as well as matching (unskilled and skilled employees)



2. Local and Regional Monitoring of Skills und Competences

Scientific insights concerning overarching developments:

- **Awareness**/consideration of current and prospective overarching trends
- Close relations to scientific organisations for studying overarching trends in society and economy (labour market/politics, VET system); **tailor scientific studies to specific situation of a region or a locality**





2. Local and Regional Monitoring of Skills und Competences

Scientific insights concerning overarching developments

Approaches for the monitoring of skill and competences

- Overarching trends used as reference points for the **demand-side** (e.g. exclusive labour market approach is too narrow, skills demand induced by organisational and cultural change processes in companies) and the **supply-side** (exclusive perspective on (formal) skills is too narrow, e.g. unemployed/low skill: competence development strongly based on attitudes and motivation; women/mothers dispose skills acquired in private sphere) as well as the **matching** of supply and demand (self perception of skills by Generation Z and detection by employers)



2. Local and Regional Monitoring of Skills und Competences

Process-orientation in regional and local monitoring

- Monitoring is framing regional and local strategy development with the goal of matching the supply and demand
- Monitoring is an **action concept** based on *demand-led information, shared interpretation and action*

Approaches for the monitoring of skill and competences:

- **Functional trust-based networks** of the observatories help **deliberating skills requirements and development as well as designing new approaches** (e.g. *Skills Escalator in Exeter*, which supports the redirection of varying training offers towards the acquiring of specific skills and competences by involving the regional economy and politics)



2. Local and Regional Monitoring of Skills und Competences

A Europe-wide network as a resource for innovation:

- Overcome **geographical isolation** and **lack of resources** in regional and local labour market observatories
- **New impulses for innovations** in the framework of research meeting practice and vice versa on concepts, data and methods; formats: anthology, annual meeting, project, personal exchange and working group



2. Local and Regional Monitoring of Skills und Competences

A Europe-wide network as a resource for innovation

Approaches for the monitoring of skill and competences:

- Different **taxonomies** for defining and measuring skills and competences, applied in varies regions and locations (how to do)
- Special focus on **functions** of taxonomies; advantages of **top-down and bottom-up** approaches facing quickly changing environments in regions and localities



Many regional and local labour market observatories have established the monitoring of skills and competences



2. Local and Regional Monitoring of Skills und Competences

Anthology:

- 22 examples of Good Practice are available in the 2018 Anthology of the EN RLMM
- Providing inspiration, encouragement and confirmation for all building regional or local monitoring of skills and competences

Annual Meeting:

- Presentations and discussions of concepts and applications – coming from different perspectives like the demand-side (companies, sectors), supply-side (target groups) and regional approaches in plenary sessions and in working groups.
- **Welcome to join!!!!**



Thank you for your attention.





European Network on Regional Labour Market Monitoring

13th Annual Meeting of the European Network on Regional Labour Market Monitoring (EN RLMM)

**Developing Skills in a Changing World of Work:
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Marchmont Employment and Skills Observatory



Introduction to the Agenda and Activities of the Annual Meeting

1. WiFi
2. Agenda
3. Practicalities

Developing Skills in a Changing World of Work:

Concepts, Measurement and Data Applied in
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Across Europe

Tea and Coffee breaks



11:10-13:00

**CONCEPTS, MEASUREMENT AND DATA APPLIED IN THE MONITORING OF CHANGING SKILLS NEEDS IN:
Sectors and Companies:**

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Mutual Approach**

Rolf Keil and Bettina Splittgerber, Hessian Ministry for Social Affairs and Integration (Germany)

Moderation: Professor Ronald McQuaid, University of Stirling (UK)

13:00-13:45

Lunch (also in La Touche)



13:45-14:00

Group photo (optional) – outside at the front of the building

Working Group 1 – Pearson Teaching Room

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Moderator:

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Working Group 3 – Henderson Lecture Theatre

Regional and Local Strategies for Monitoring and Covering Skills and Competence Needs

Presenters:

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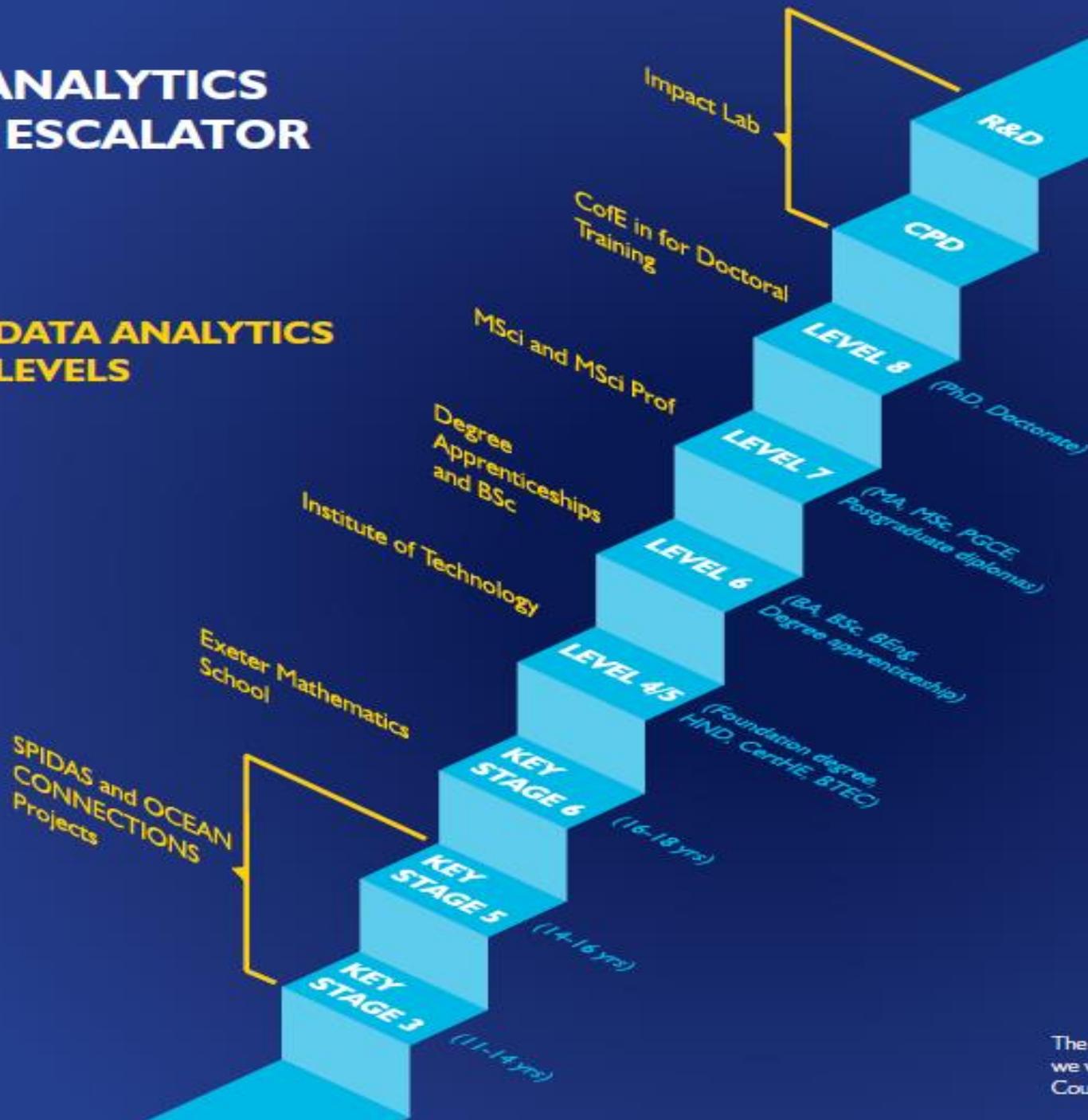
Moderator:

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DATA ANALYTICS SKILLS ESCALATOR

DATA ANALYTICS LEVELS

ESCALATOR DEVELOPMENTS



The Data Analytics Skills Escalator has been developed in partnership and we would like to acknowledge the work of our colleagues in Exeter City Council, Exeter College and Innovation Exeter.

15:45-16:30

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Results from the Working Groups and Discussion

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Skills Intelligence for Labour Market Actors

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RESUME

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19:00-20:00

HISTORY AND LEGENDS WALKING TOUR of Central Exeter

Meeting point in front of the Cathedral

From 20:00

INFORMAL NETWORK DINNER

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19:00-20:00

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Analysing Demand-oriented Skills in the Swiss Commercial Sector

Moreno Baruffini

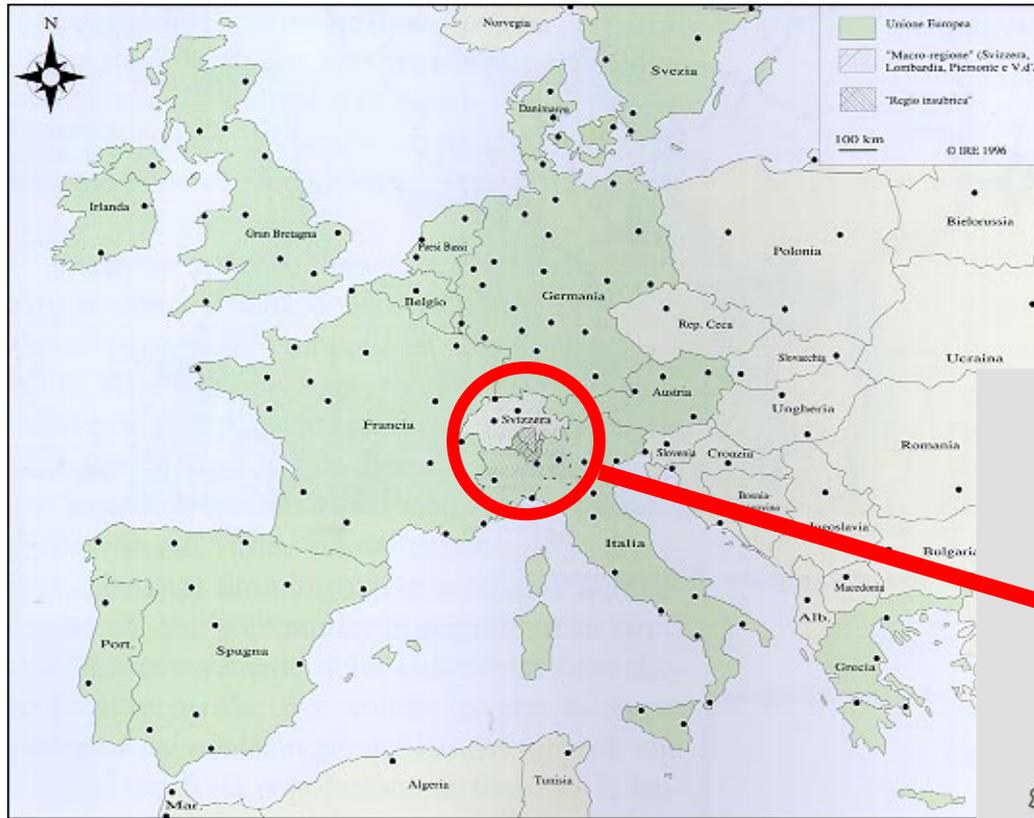
13th Annual Meeting of the European Network on Regional Labour Market Monitoring (EN RLMM)– Exeter UK 2018



Overview

- This presentation provides a case study on the analysis of demand-oriented skills using a recent experience held in Ticino.
- Preliminary challenges identified by federal and cantonal stakeholders are outlined.
- The activities of a Working Group looking for the best implementable solutions at the regional level are described.
- Some preliminary results of the Working Group are presented.
- Some preliminary results for a skills measurement activity currently under development, using an automatic tool and a web-scraper are also illustrated.

Overview



Source: IRE/USI,
Wikipedia

Motivation

- The commercial sector in Switzerland is composed by many profession related to “office work”
- Examples: Banks, Financial offices, accounting offices, etc...
- Until now commercial schools provide a “traditional” training that encompasses school subjects as economics, accounting, managerial contents, etc.
- Growing pressure related to “technological substitution”:

Skill-biased technological change (SBTC) vs Task-biased technological change (TBTC)

Motivation

- The commercial sector in Switzerland deserves particular attention as it employs **many professional** profiles that **continuously struggle to find space in the labour market.**

*The Table was promoted by SIC Ticino, its Director **Nicola Giambonini**, and the Cantonal School of Commerce.*

The project involves public institutions (DFE and DECS), the corporate and entrepreneurial world (CC-Ti, SBT, HR Ticino), as well as the academic sector (USI and SUPSI).

The Starting Point: A Changing Labour Market and a Working Table

First meeting in June 2017:

-> to discuss the needs of educational institutions.

Different workshops and meetings were set up to find concrete solutions.

- an open structure
- various seminars and activities

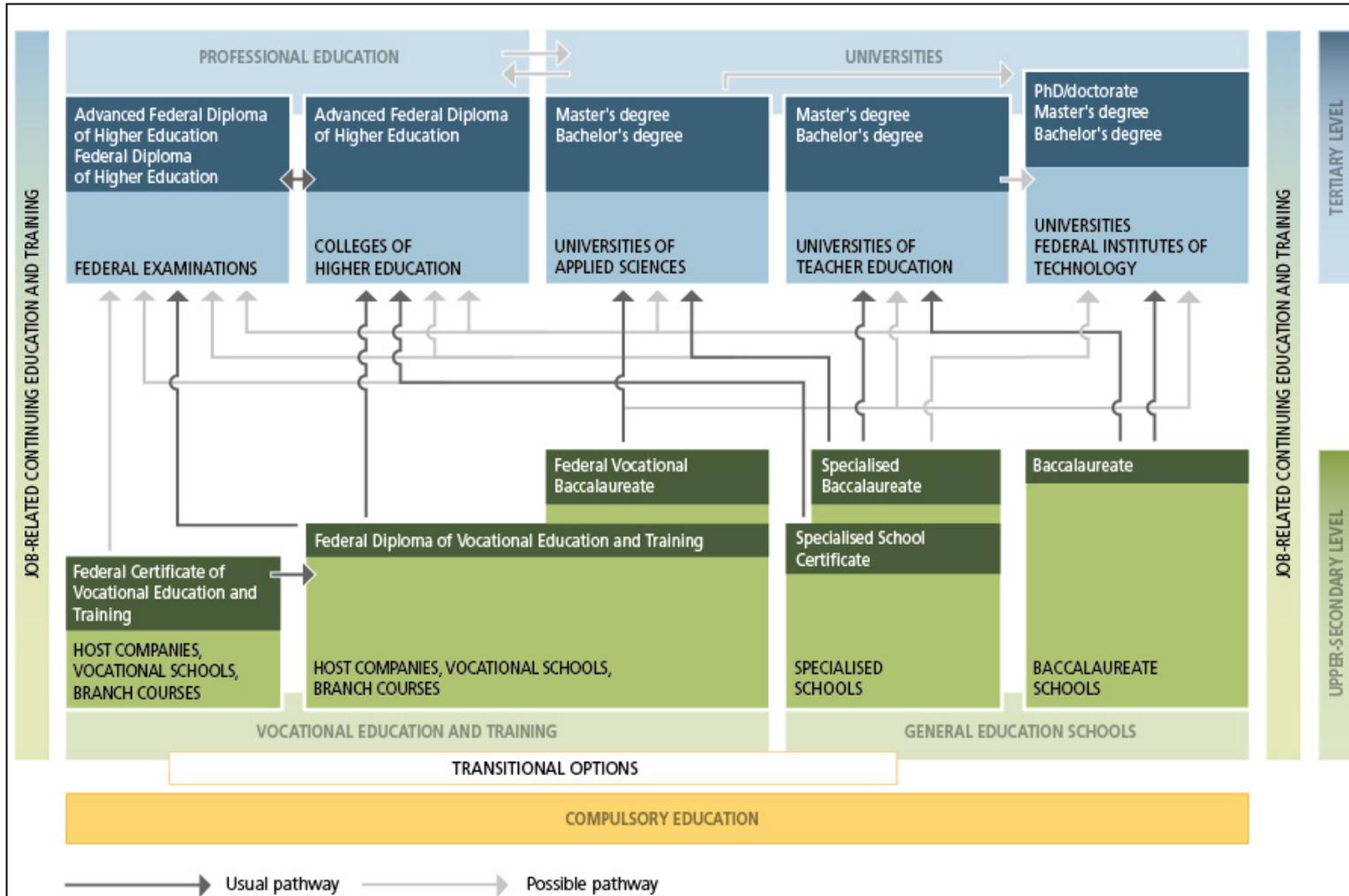
-> to create a broad vision of the problem.

Initial comments

- *In order to understand the needs of companies, it will be important to have a dialogue with them!*
- *Technology evolves faster than training does or reasonably could, which, much like other areas of training and activities, requires continuous updating.*
- *Student preparation for continuous change is a possible method for managing contingent phenomena and, even more, structural changes.*
- *It is necessary to invest in not only disciplinary, but also relational, attitudinal and personal skills.*
- *Those working in the field of human resources emphasise that flexibility increasingly becomes a central element for the selection and choice of personnel, for example.*

Challenges

- The training system requires continuous updating to adapt to changes in the society and economy
- The Swiss training system is very complex because students have access to many different types of school
- Structural difficulties of the Commercial Employee
- How about the future?



Source: State Secretariat for Education, Research and Innovation SERI

The Initial Workshop

- The initial workshop aimed to work with participants to bring out the strengths and weaknesses of the current “ecosystem” of the professions in commerce.
- The members of the Working Group were divided into two groups, and one worked at the “Table of Strengths” while the other worked at the “Table of Weaknesses”.



Source: SIC, INNO3 SUPSI

- The workshop ended with a plenary discussion to deepen and share some aspects that emerged.

Expectations

Current ecosystem	Skills	Megatrends
Concreteness/to respond to a need in the society as a whole/consistency between different needs setting concrete priorities/concrete measures to be proposed to the actors involved	Social cohesion and computer literacy	Opening to trends and internationalisation/understanding the changes, professional profiles and skills of the future (including soft skills)
Simplification – comparisons	To identify the needs of companies	Reflections on continued education
Understanding to act	To review the training offer	Possible upgrades/improvements
To optimise what already exists	Attract resources from the territory in the field of training	To know opportunities for companies
Understanding the increase in youth discomfort	Sharing of practical cases of digitisation	
	To clarify the link “school-work”	

A Discussion and Analysis Activity

-> **distance between schools and companies**

The high amount of rapid changes taking place make it essential to update training and greater dialogue with companies.

In response to this problem, the group discussed the possibility of reintroducing so-called “company contamination” programmes that allow teachers to update trainers on company news.

There was also discussion of the importance of keeping professional teachers in contact with the company and their integration into the qualification programmes, without forgetting the most important goal of teaching, which is to optimise the transmission of knowledge to students.

A Discussion and Analysis Activity

-> **flexibility of the training programmes and the currently available margins of manoeuvrability.**

-> transmission of so-called “soft skills

The participants believe that teaching these increasingly important competencies should not be left to the initiative of the most enterprising teachers, but must instead be inserted into the curriculum in a more structured way, guaranteeing all children the possibility of developing these skills.

A Discussion and Analysis Activity

-> **some critical issues that emerged during the analysis**

Among these was the role of the teacher, which, in the future, could also change in important ways.

On the Web, there are many educational offerings and even many basics in every field and discipline and at every level of training.

The quality of this information, also very much linked to the quality and veracity of the sources, is already a theme that will become increasingly relevant.

From this point of view, the role of the teacher could eventually have more to do with coaching or the selection of notions and information and less to do with being a dispenser of this information.

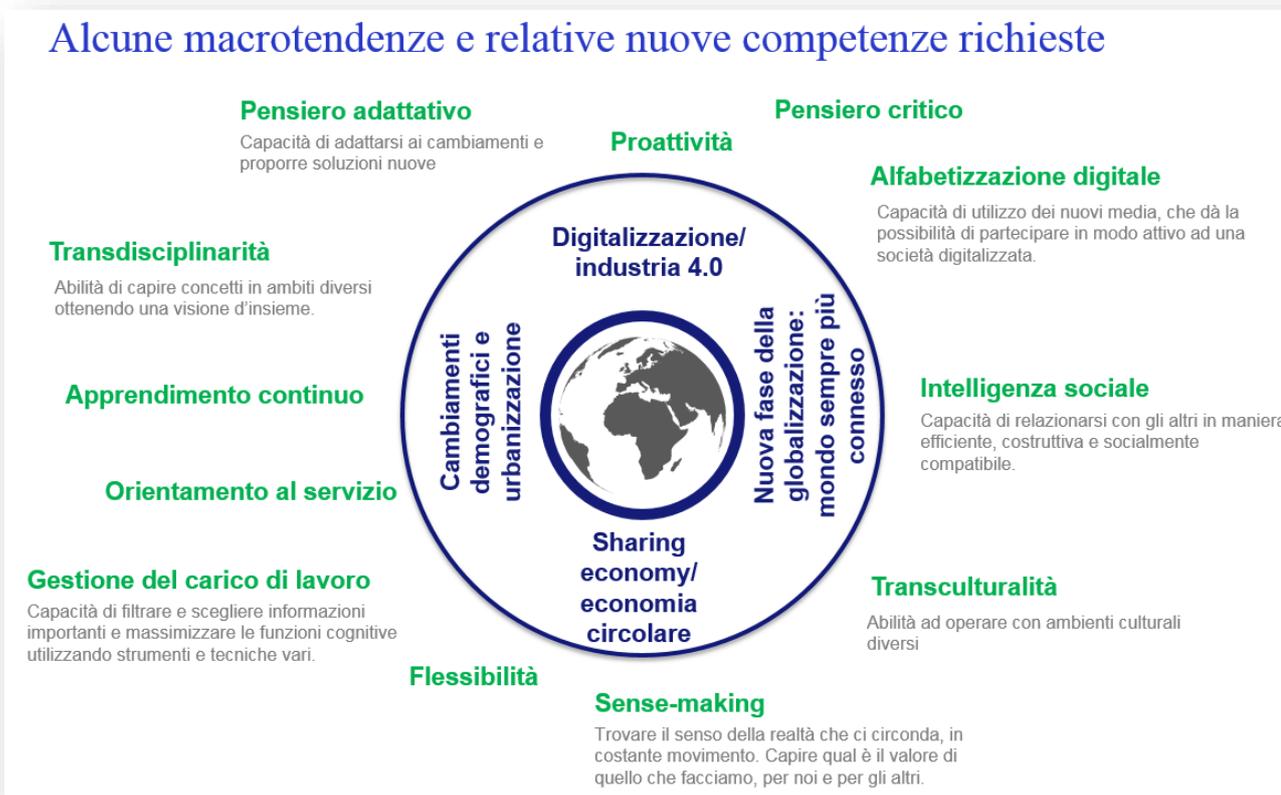
Next steps



Mega trends

A final workshop on “megatrends” was also organised in order to define a general “framework”

Alcune macrotendenze e relative nuove competenze richieste



Source: SIC, INNO3 SUPSI

Case study



A First Empirical Application: The Web-scraper *Cecilie*

- *“A web scraper accesses web pages, finds specified data elements on the page, extracts them, transforms them if necessary, and finally saves these data as a structured data set. This process essentially mimics how a web browser operates by accessing web pages and saving them to a computer’s hard drive cache”*
- One of the first activities was related to analysing job offers for commercial employees that were posted on some local internet sites. The methodology used was quantitative and based on the use of a web-scraper .
- As previously defined, this type of software is an Internet bot that systematically browses the World Wide Web and retrieves information from selected Internet sites. The tool, called *Cecilie**, can monitor the content of a web page containing job offers.

* *The tool was implemented by Laura Merlo & Marco Bedulli*

Data

- Following an initial pilot activity that collected 357 data offers, 754 additional offers were collected from May to August 2018. They were saved to a web database, using JSON as a transport storage mechanism.
- The results have been analysed in terms of quality and functions related the commercial sector.

Data contains information on job offers and some descriptive requests. They have been ordered following criteria:

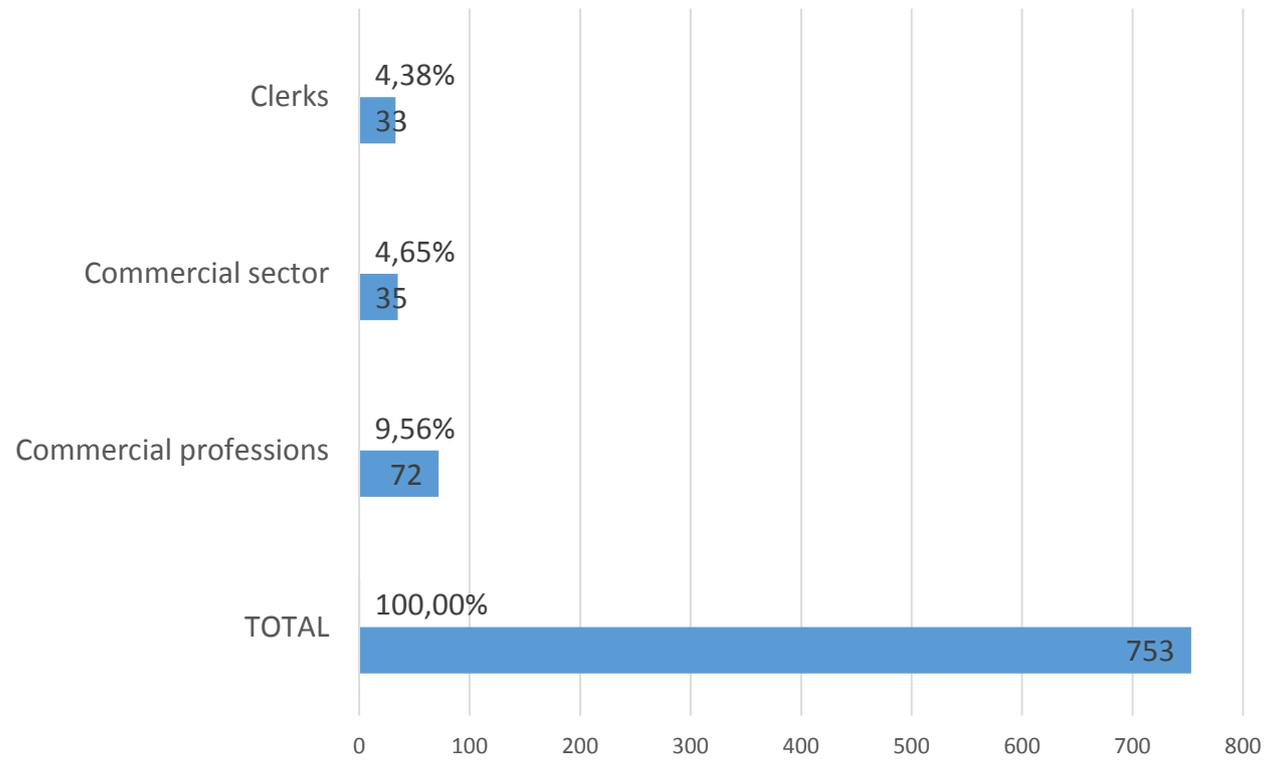
- *Total job offers;*
- *Offers in the commercial sector;*
- *Offers in the commercial professions;*
- *Offers relating to “clerks”.*

Results

- The results of the pilot activity show that the professions in the commercial sector, especially the clerk profession, are only a marginal part of the total job offer in the current *Ticinese* labour market. (Results, are, however, slightly better than the previous pilot activity)
- All commercial professions, such as “accountant”, “assistant sales manager”, and “assistant HR manager”, comprised 72 out of a total 753 offers (9,6%). Only 35 general job offers in the commercial sector were registered, and, restricting the analysis further, just 33 offers (4,4%) were posted for the clerk profession.
- The analysis confirmed the structural difficulties of the commercial sector already identified by the Working Group.
- It also provides some useful information on the skill gap that will be useful for future research. Further developments intend to not only precisely identify the job skills currently requested by the labour market, but also to define the skills that will be increasingly requested in the future by analysing the descriptions included in job offers.

Results

Web-scraping analysis results



Conclusions



Conclusions

- Many studies analyse the impact that the combined effect of digitalisation and delocalisation will have on the commercial professions in Switzerland
- **They show how the work will become exciting, creative, and less repetitive, but also much more demanding**

Furthermore, **employees will increasingly be recruited as portfolio workers and will work on a mandate to the detriment of fixed employment**

- This experience sought to identify the best implementable solutions for addressing the current trends in the regional labour market

Conclusions

- Private associations and the academic sector promoted different workshops and meetings, where the stakeholders first studied and analysed technical documents concerning the digital transformation and its expected effect on the labour market
- They were particularly interested in the commercial sector at the local level, considering new challenges that have arisen in the last few years
- The group discussed problems related to the distance between schools and companies, the flexibility of the training programmes and the role of teachers in a world of changing competencies
- The Working Group has already found some preliminary solutions that will be discussed until the end of the year

Further research

The working group will continue to work in the next month

The final objective is to promote a continuous support to students and teachers in order to facilitate the transition education-job

Thank you for listening!



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Zentrum der Goethe-Universität
Frankfurt am Main

Opportunities and Challenges Arising from Digitalisation for Companies and Providers of Further Education and Training: Case Study of the Federal State of Hesse

Oliver Lauxen

Institute for Economics, Labour and Culture (IWAK)

Guiding Questions:

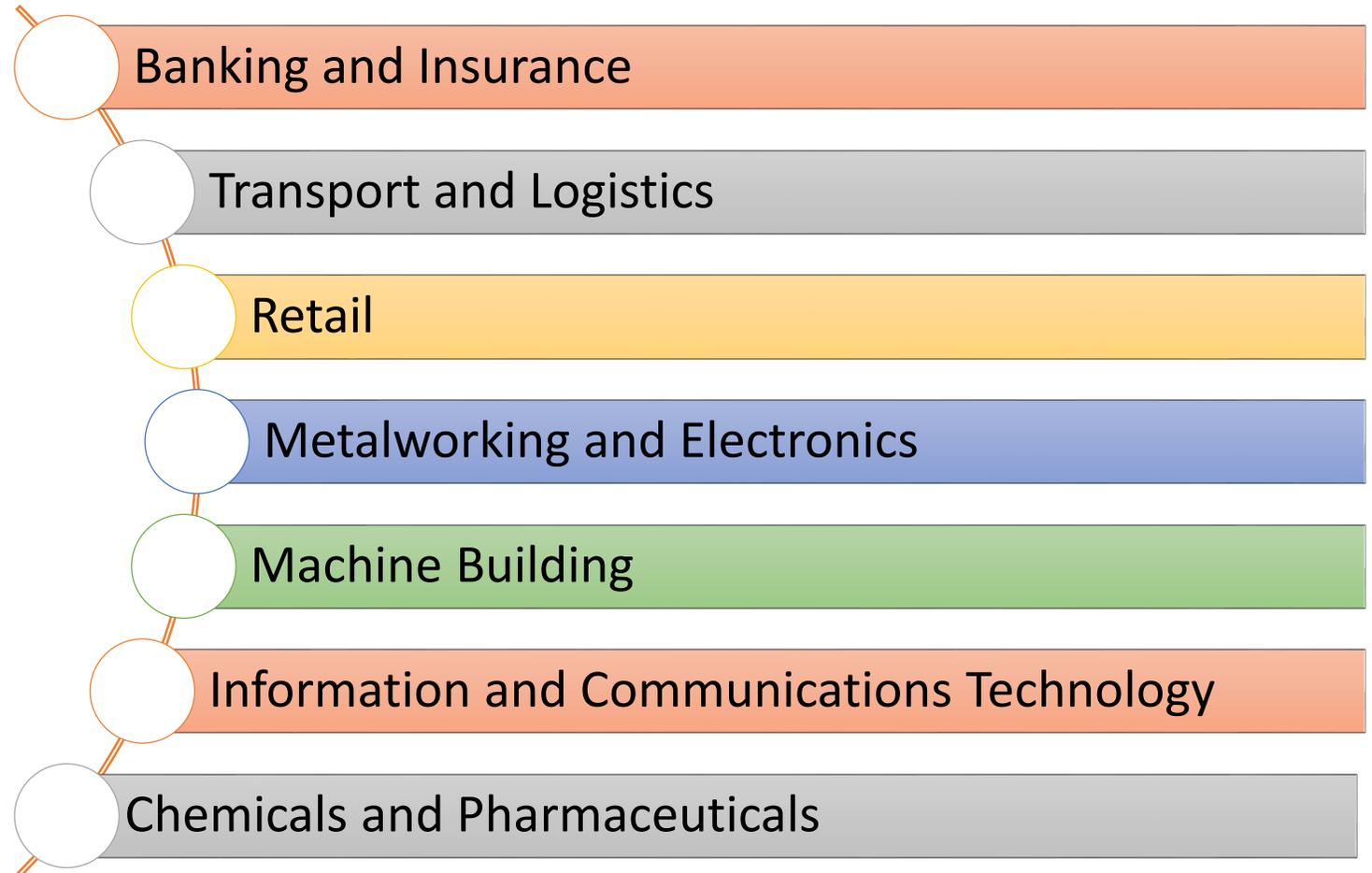
- What is the current state of digitalisation among Hessian companies?
- Which competencies and training needs are associated with digitalisation?
- What is the current state of digitalisation among Hessian trainers?
- How can Hessian trainers support companies in their efforts to digitalise?

Methodological approach

- Time span: 12.2016 – 02.2018
- Methods (cf. Kuckartz 2014)
 - electronic questionnaire (n=136)
 - evaluation of a quantitative cluster analysis (cf. Wiedenbeck & Züll 2010)
 - interviews with 76 experts from companies and training facilities
 - qualitatively and analytically evaluated (cf. Mayring 2016)
 - focus groups with industry-wide actors to validate results

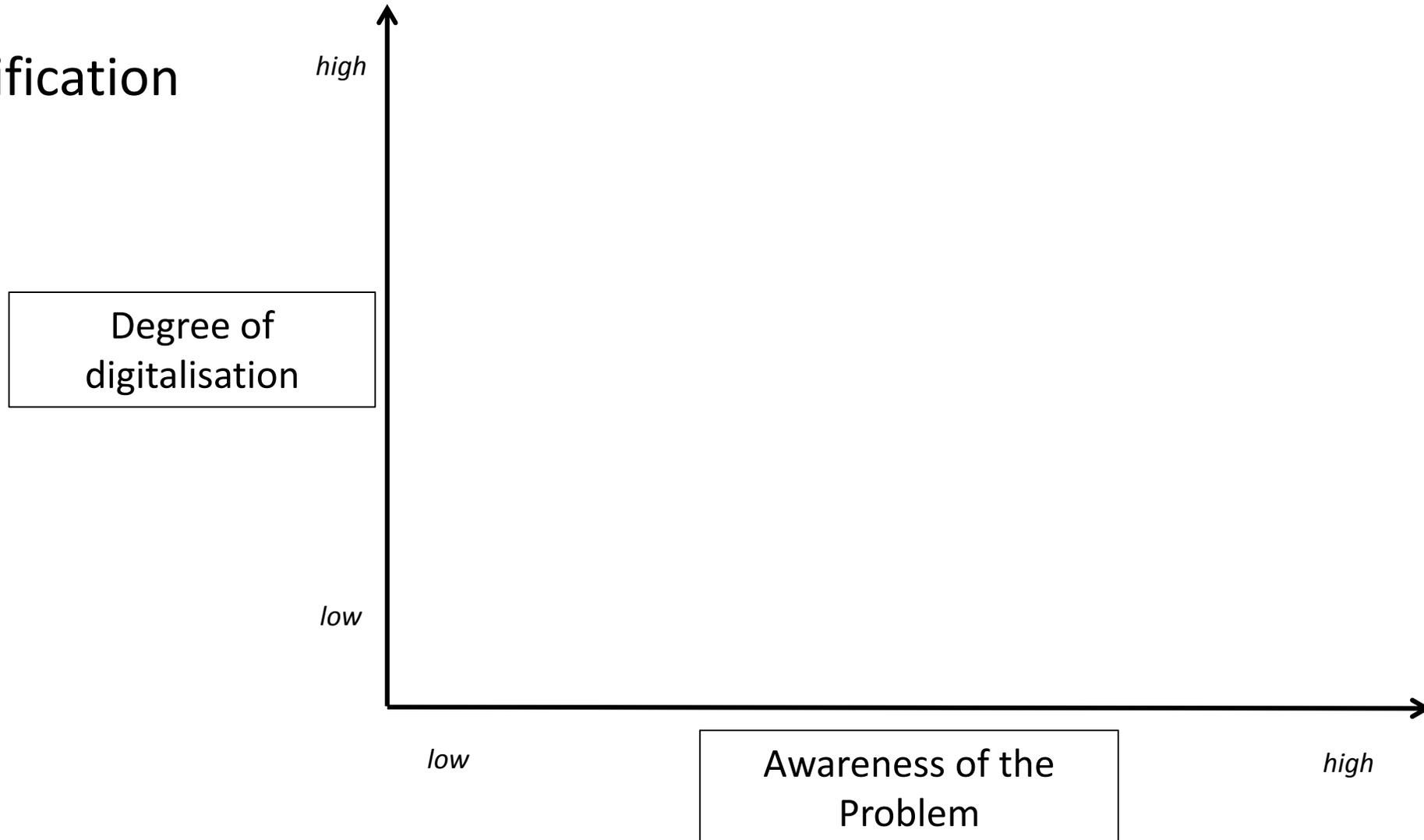
Methodological Approach

➤ Overview of 7 Branches



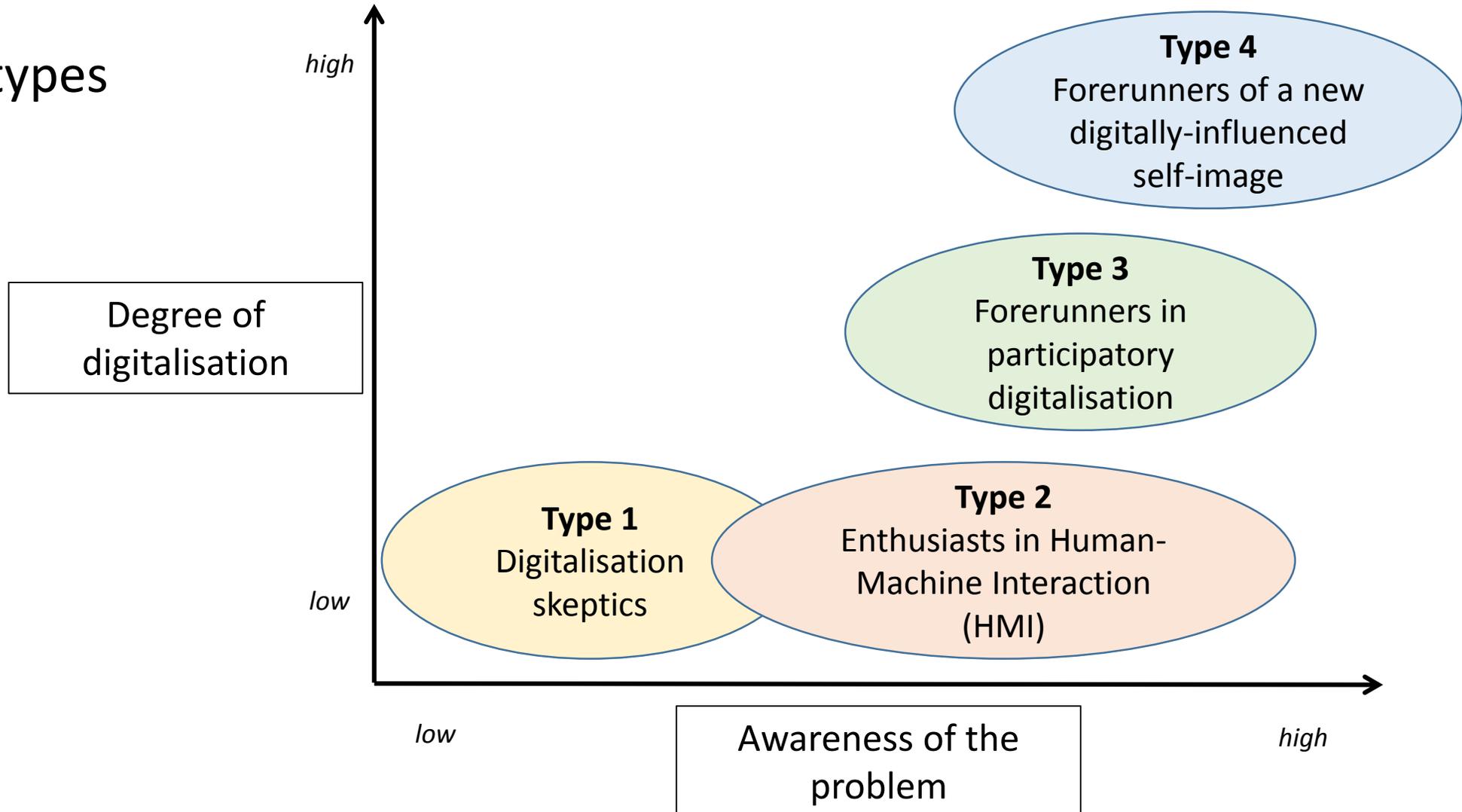
Outcomes - Companies

➤ Classification



Outcomes- Companies

➤ four types



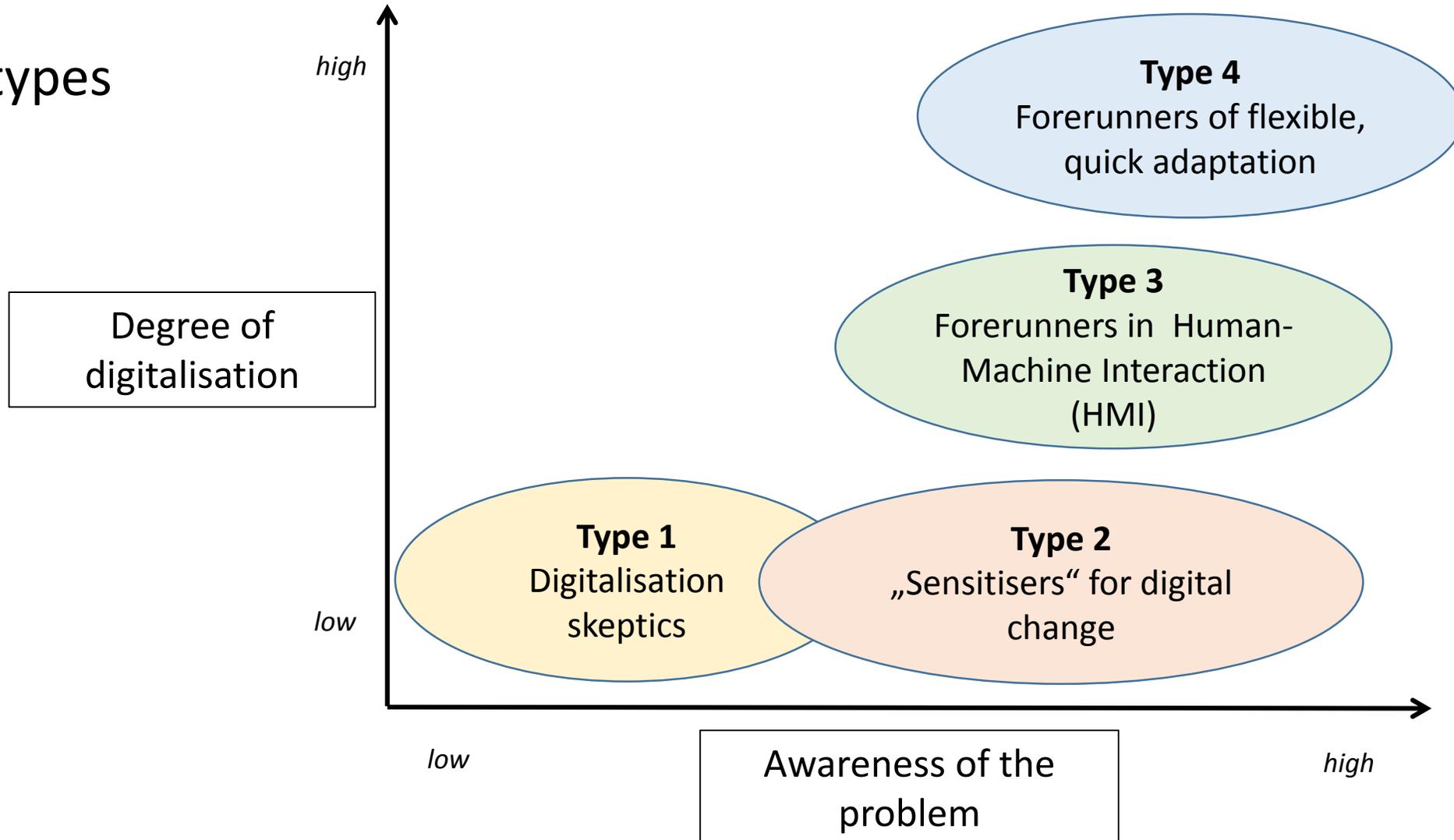
Outcomes- Companies

- Perceived *competence requirements* vary according to company classification.
- It is important to distinguish between organisational competences and digital competences of workers.

	Type 1	Type 2	Type 3	Type 4
Organisational Competences	<ol style="list-style-type: none"> Market evaluation IT- & legal expertise Digital communication with customers 	<ol style="list-style-type: none"> Networking Process thinking Agility 	<ol style="list-style-type: none"> Agility Digital mindset Digital leadership 	<ol style="list-style-type: none"> Agility Design thinking Ability to manage complex tasks
Digital competences of workers	<ol style="list-style-type: none"> Technical affinity Openness for Change Social communication skills 	<ol style="list-style-type: none"> Technical affinity Management skills Self-management 	<ol style="list-style-type: none"> Technical / IT-skills Digital mindset Communication skills 	<ol style="list-style-type: none"> Digital mindset Social awareness Process thinking

Outcomes - Trainers

➤ four types



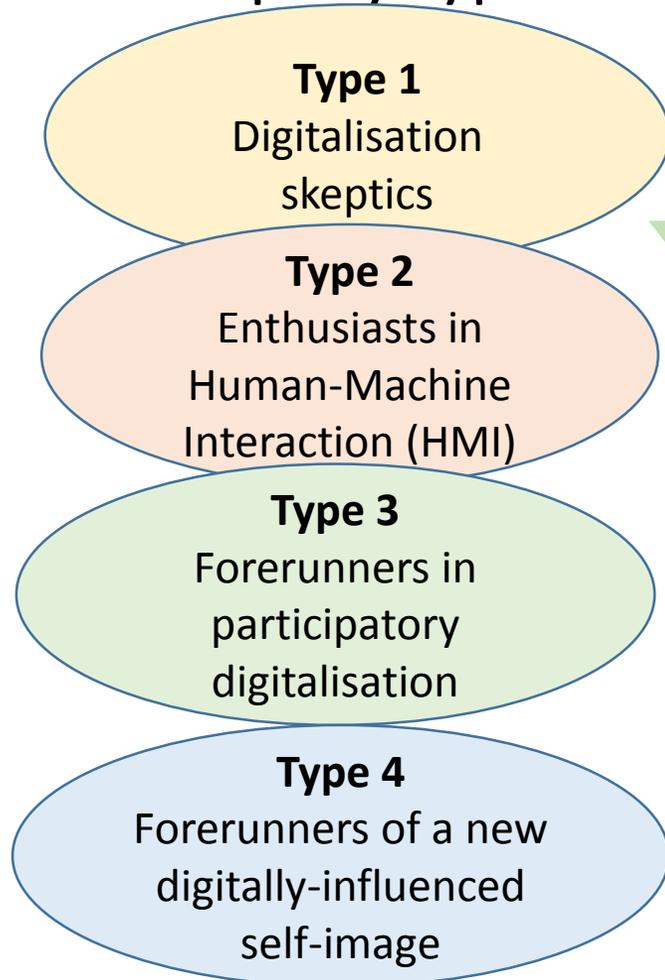
Outcomes- Trainers

- Perceived *competence requirements* vary according to company classification.
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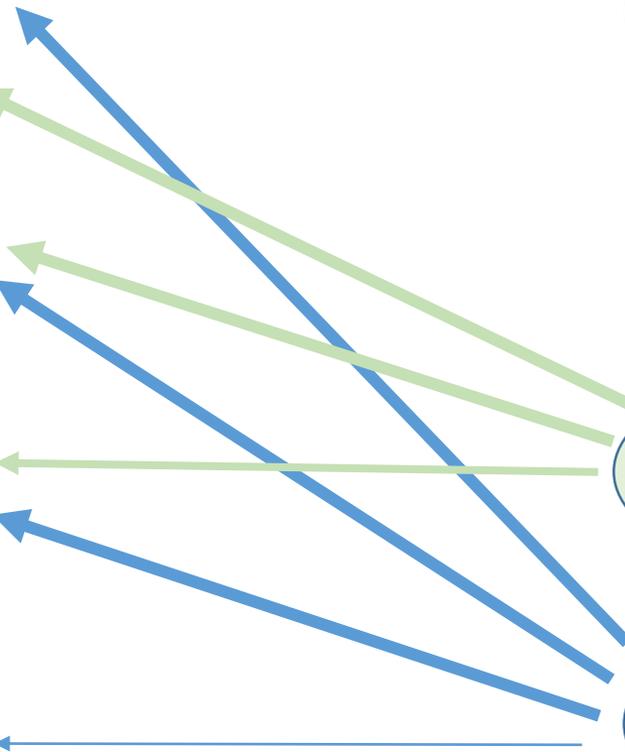
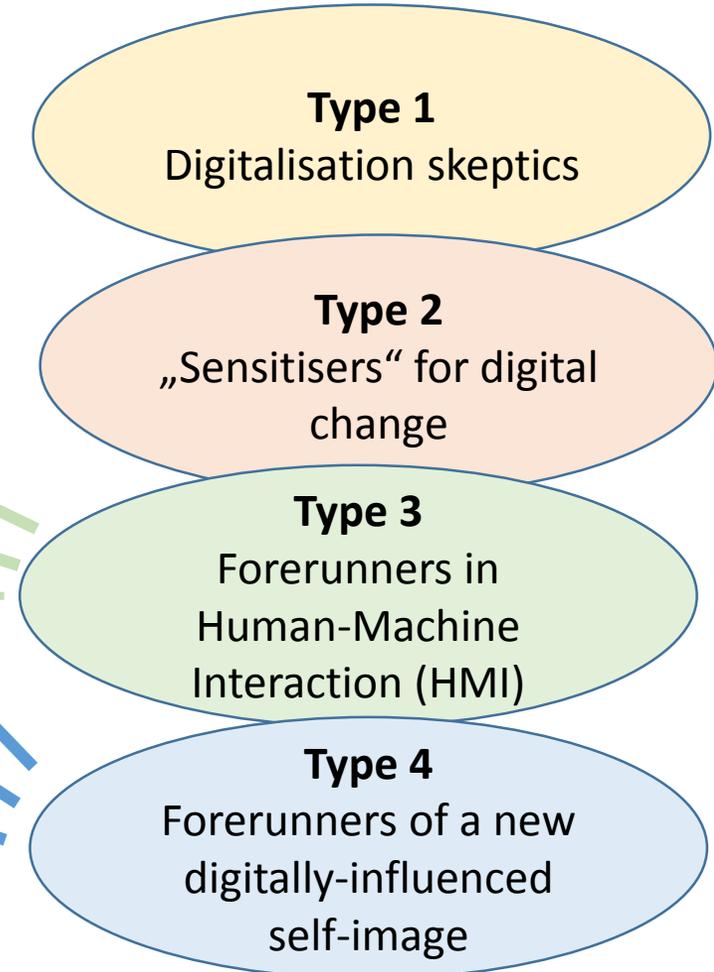
	Type 1	Type 2	Type 3	Type 4
Organisational competences	<ol style="list-style-type: none"> 1. Openness for change 2. Market evaluation 3. Advising/Consulting skills 	<ol style="list-style-type: none"> 1. Technical competence 2. Market evaluation 3. Management skills 	<ol style="list-style-type: none"> 1. Advising/Consulting skills 2. Process thinking 3. Agility 	<ol style="list-style-type: none"> 1. Interdisciplinarity 2. Digital mindset 3. Ability to manage complex situations
Digital competences of workers	<ol style="list-style-type: none"> 1. Technical competence 2. Social competence 	<ol style="list-style-type: none"> 1. Technical competence 2. Openness for change 3. Market evaluation 	<ol style="list-style-type: none"> 1. Digital mindset 2. Human-Machine Interaction (HMI) 3. Market evaluation 	<ol style="list-style-type: none"> 1. IT and legal expertise 2. Technical competence 3. Social competence

Outcomes

Company types

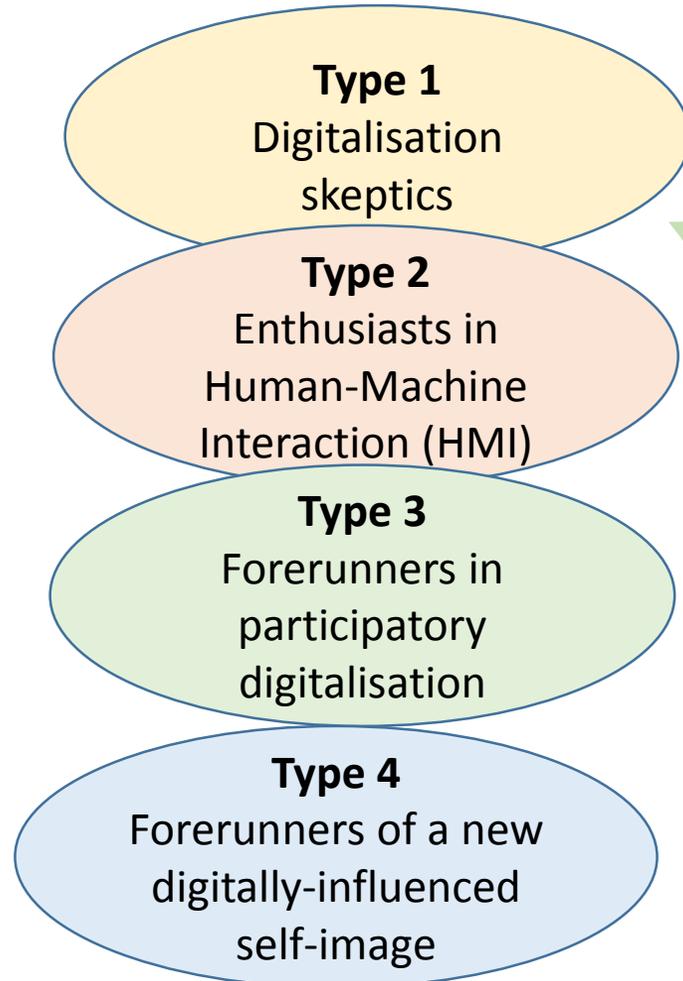


Trainer types

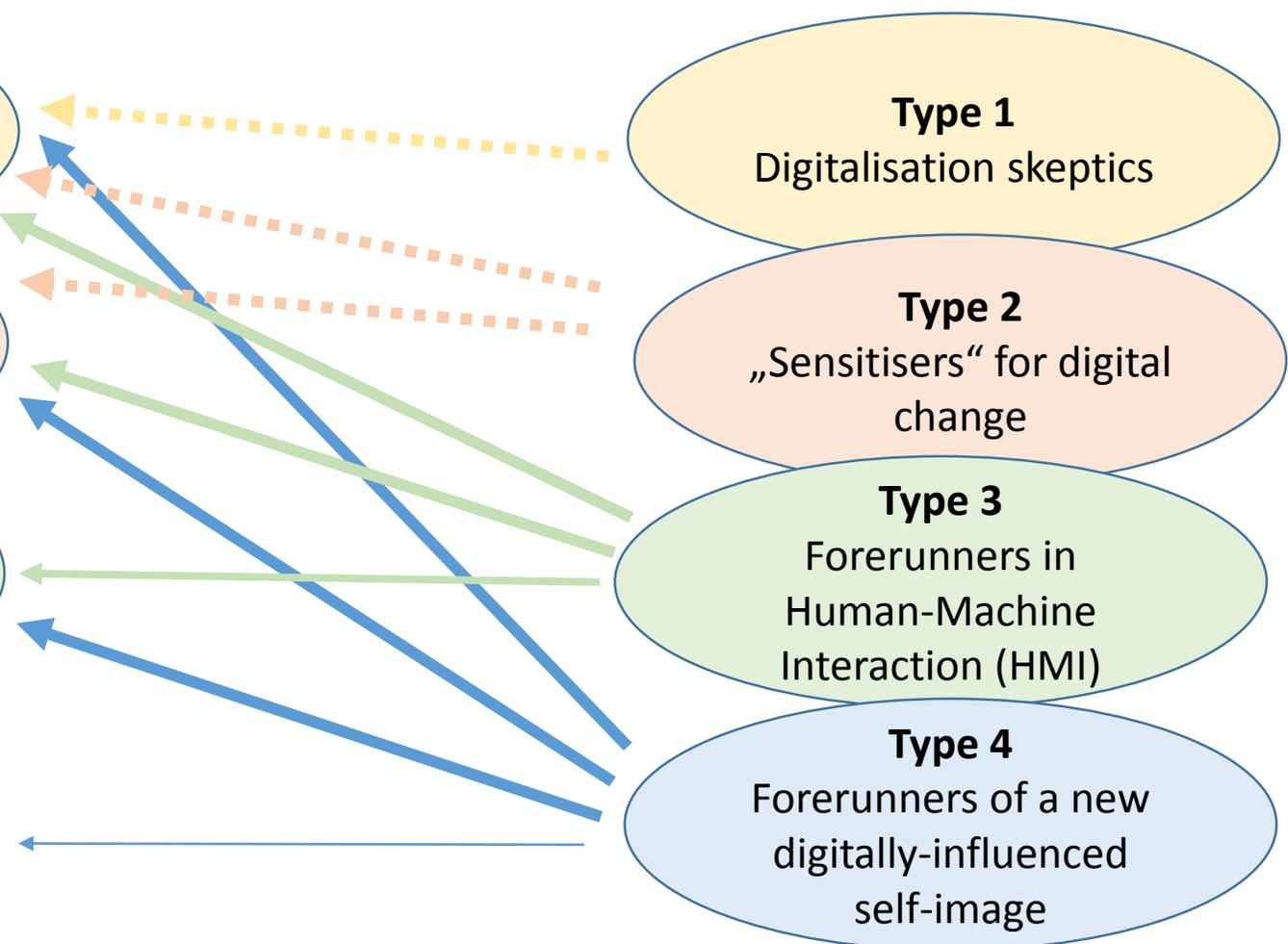


Outcomes

Company types



Trainer types





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Summary

- Hessian companies are at different stages in the process of digitalisation. They require different support from trainers depending on their stage of development.
- Trainers and their organisations in further education and training in Hesse are also digitalised to varying degrees. Only some of them are prepared to support companies in their digitalisation efforts.



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Conclusions

- Sensitise and guide companies and trainers with regard to digitalisation
- Use competence assessment techniques to measure digital competences and determine continuing education and training needs
- Prepare individualised company training plans
- Use digital teaching and learning formats in continuing education and training
- Disseminate best practice examples showing how companies implement digitalisation and qualify their workers
- Develop a technical infrastructure

Literature

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13th Annual Meeting of the
European Network on Regional Labour Market Monitoring
(EN RLMM)

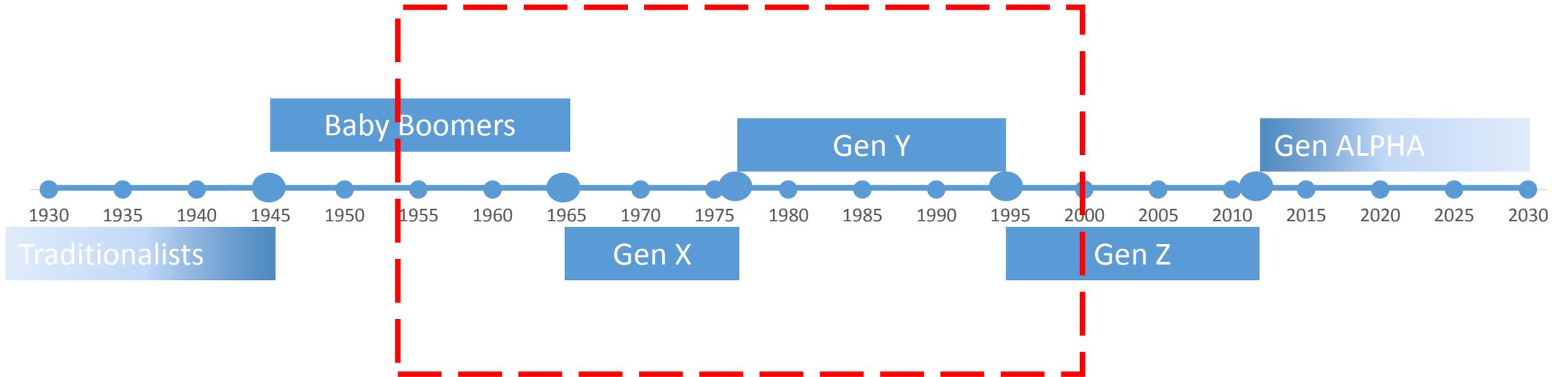
University of Exeter
10-11 September 2018

Generation Z vs. the Labour Market Skills Expectations in a New Era

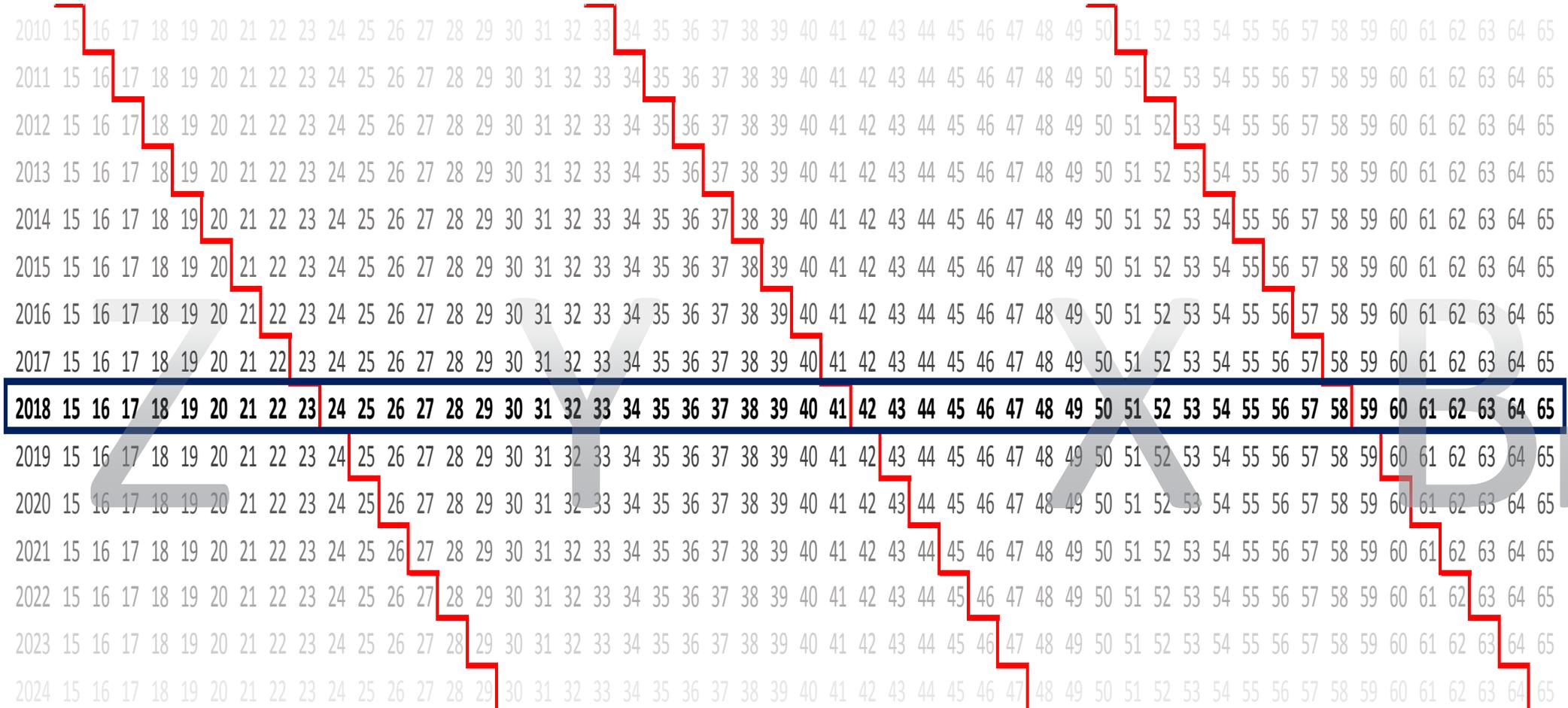
Ciprian Panzaru

West University of Timisoara
Research Group in Social and Economic Complexity
Tel: +40256592148
Fax: +40256592182
ciprian.panzaru@e-uvt.ro
www.cpanzaru.socio.uvt.ro

Four generations in the market



Generations by [working] age

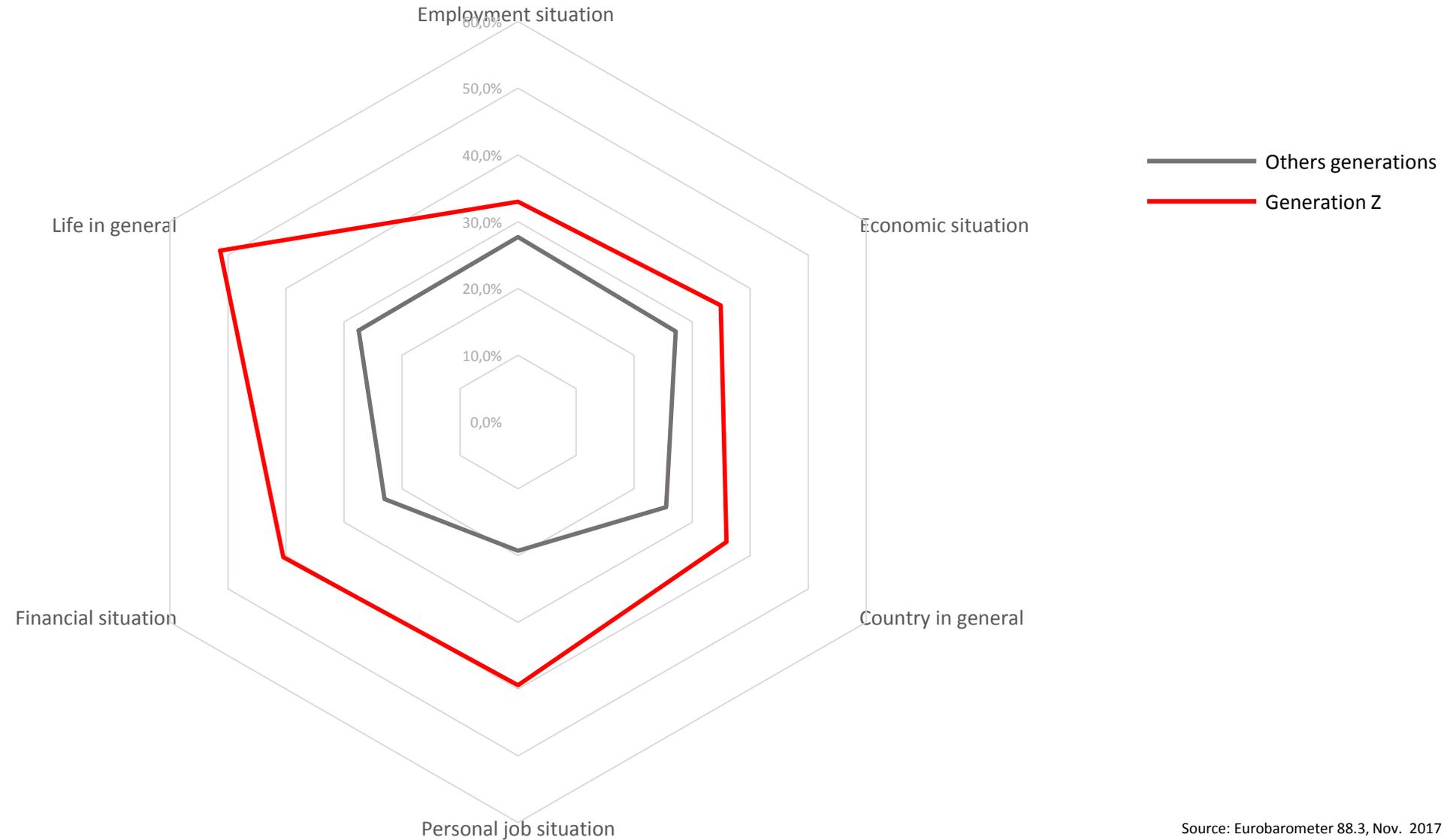


Why Generation Z is so important?

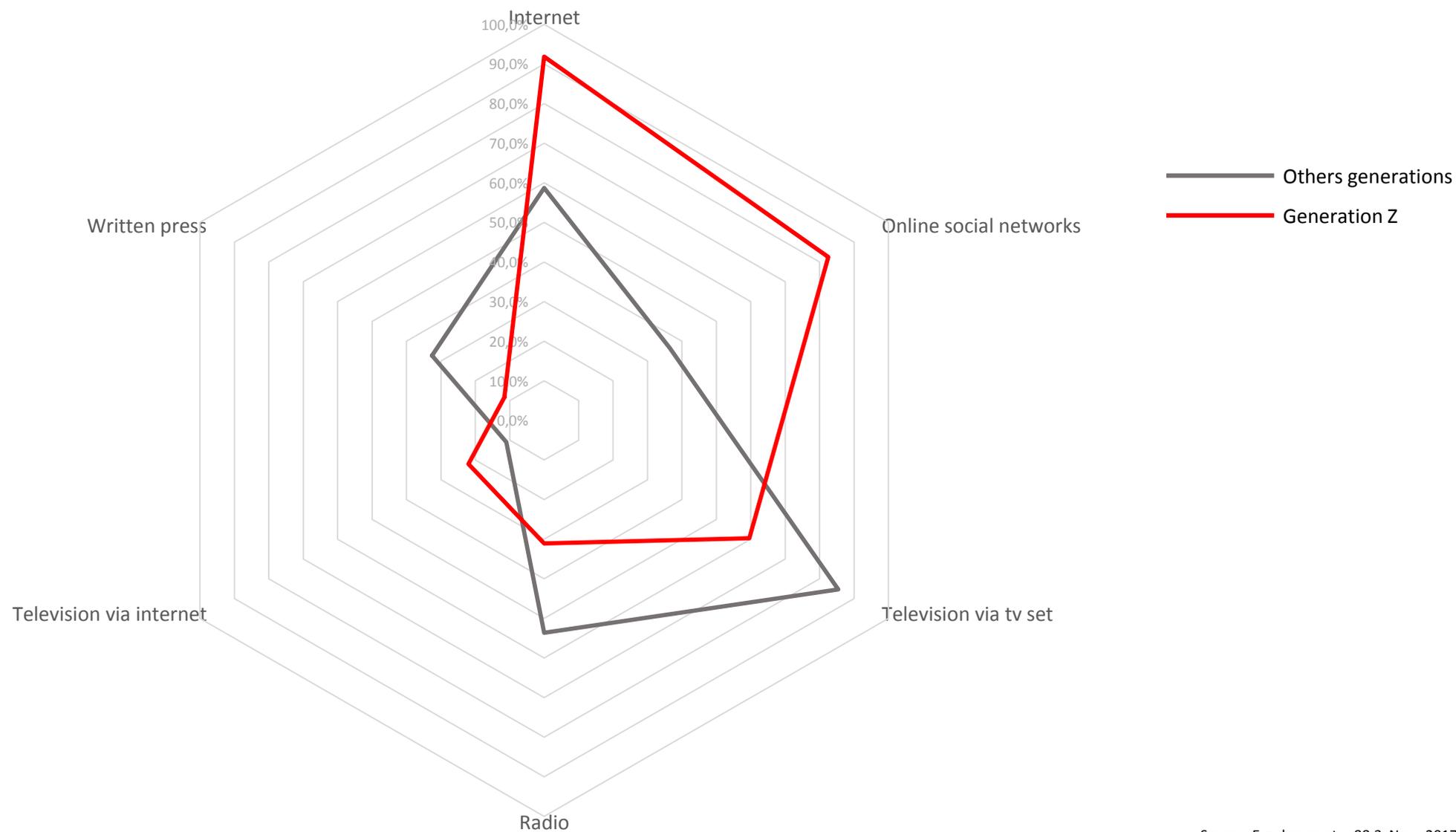
Generation Z: important issues



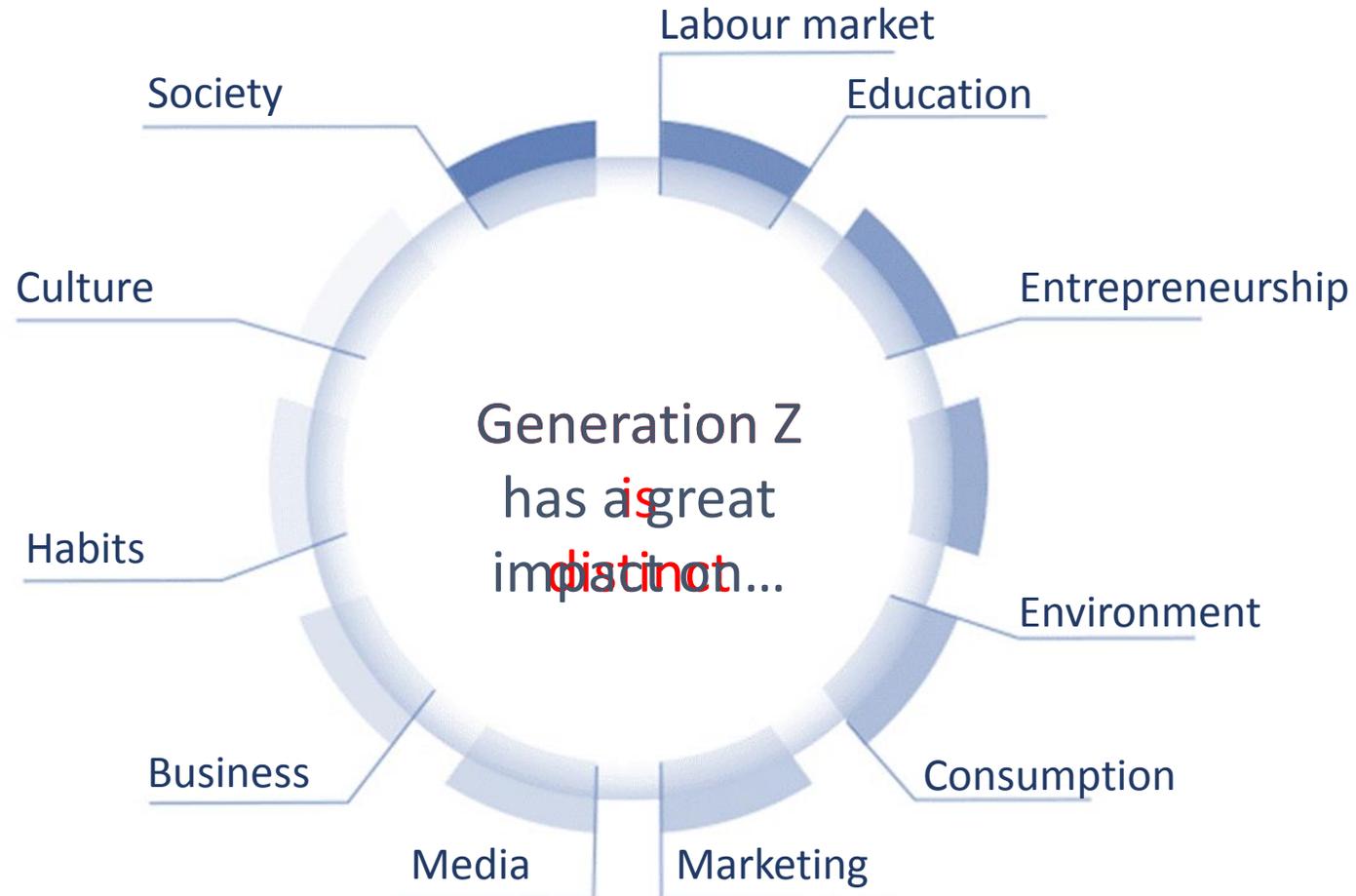
Generation Z: expectations [better]



Generation Z: media use [every day]



Intermediate conclusion



A snapshot of Generation Z vs. the Labour Market

Objectives

[1] Analysing of the self-perceived importance of interpersonal skills by both Generation Z and employers.

[1.1.] Assessing the importance of various categories of skills required for recruiting graduates

[1.2.] Assessing self-perceived technical and generic skills

Research questions

- [1] Which employability skills are considered to be the most important by individuals belonging to Generation Z?
- [2] Which are the self-perceived employability skills owned by Generation Z?
- [3] Which are the employers expected skills for Gen Z?
- [4] Are there any differences between the importance placed on skills by representatives of Gen Z and employers, respectively?

Methodology

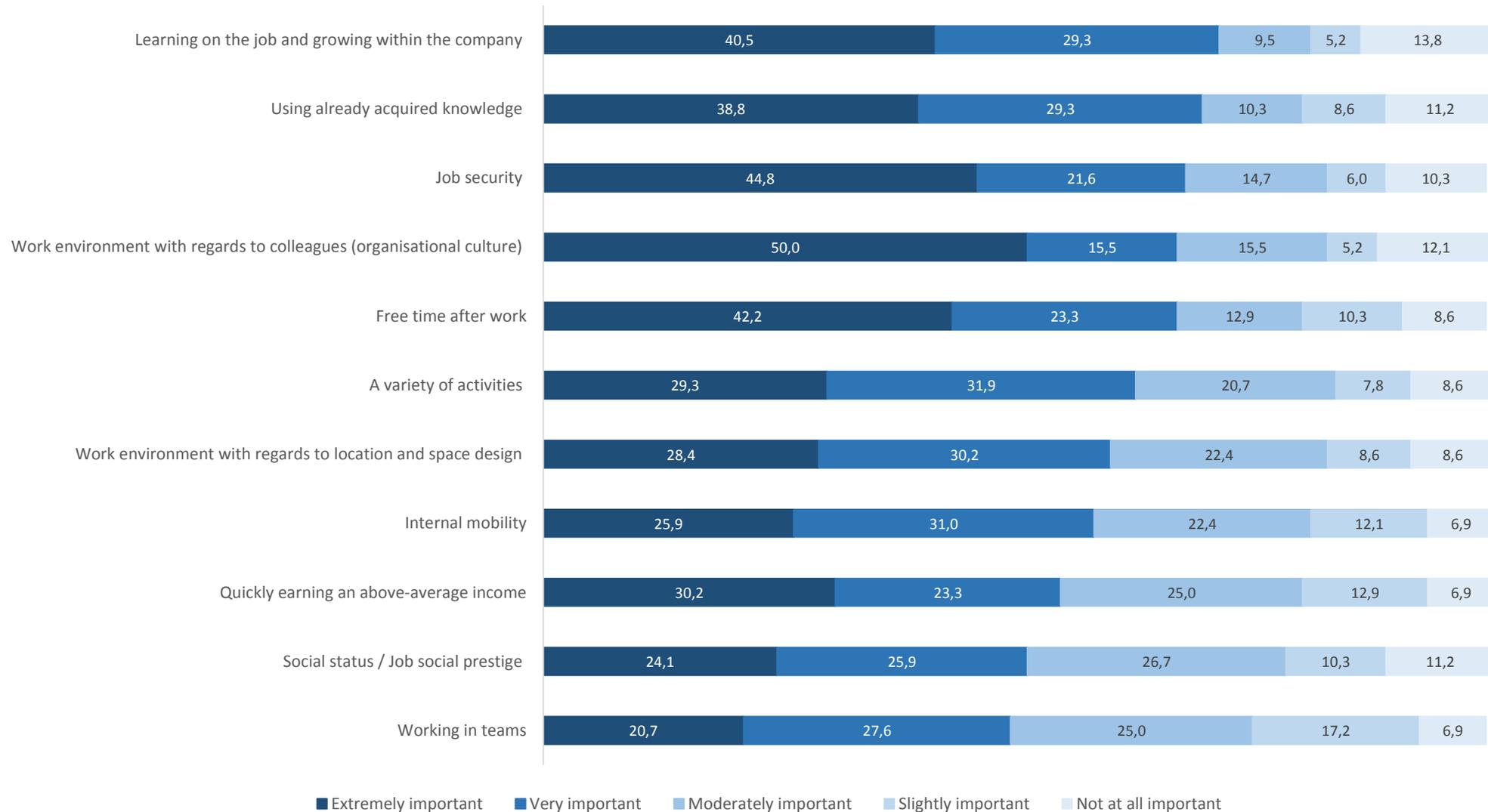
Mixed methodology:

Quantitative: survey based on questionnaire using CAWI, convenience sampling

Qualitative: semi-structured interviews

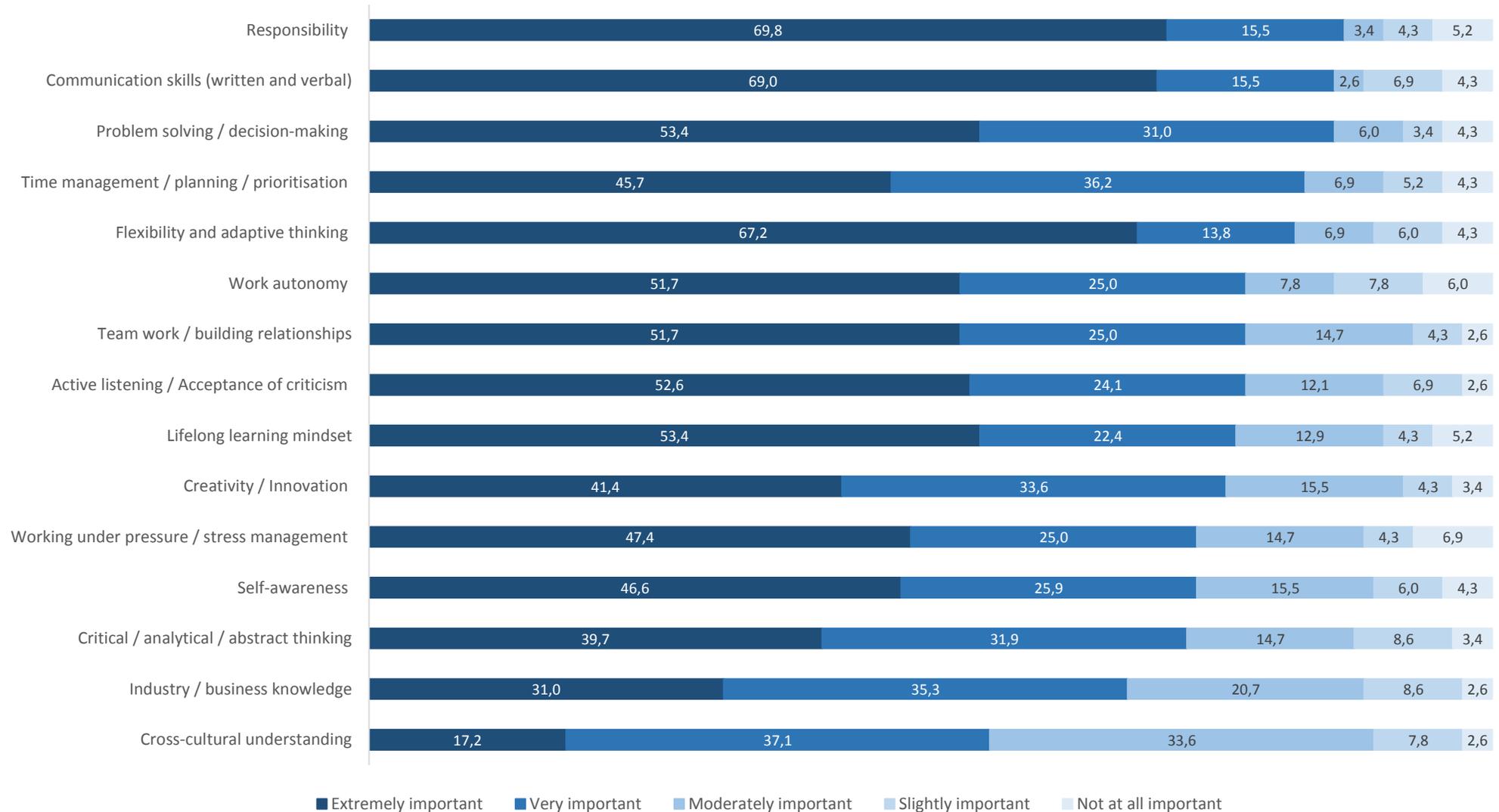
Results

Factors that matter in choosing a job



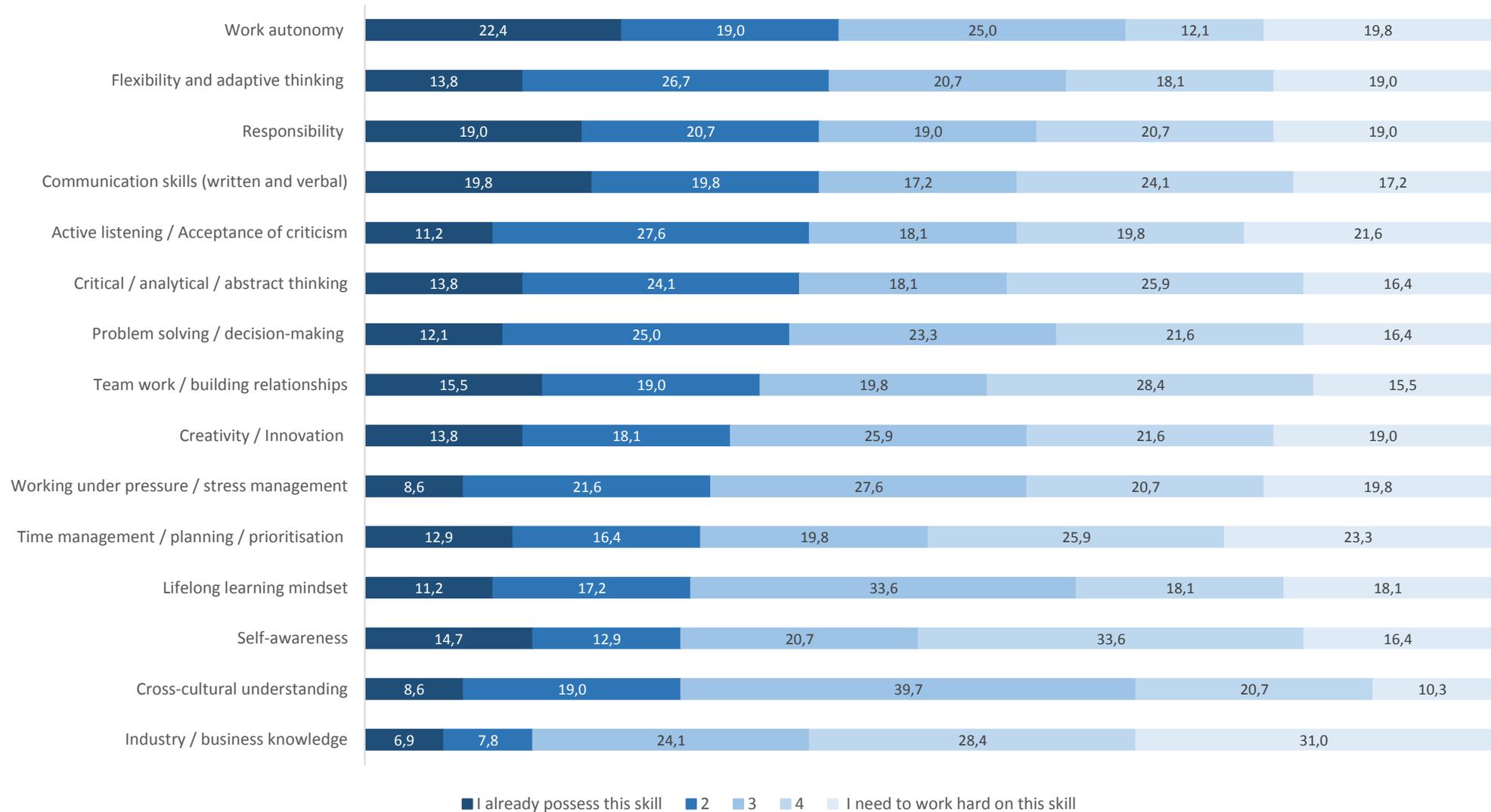
Results

Importance of skills for employability



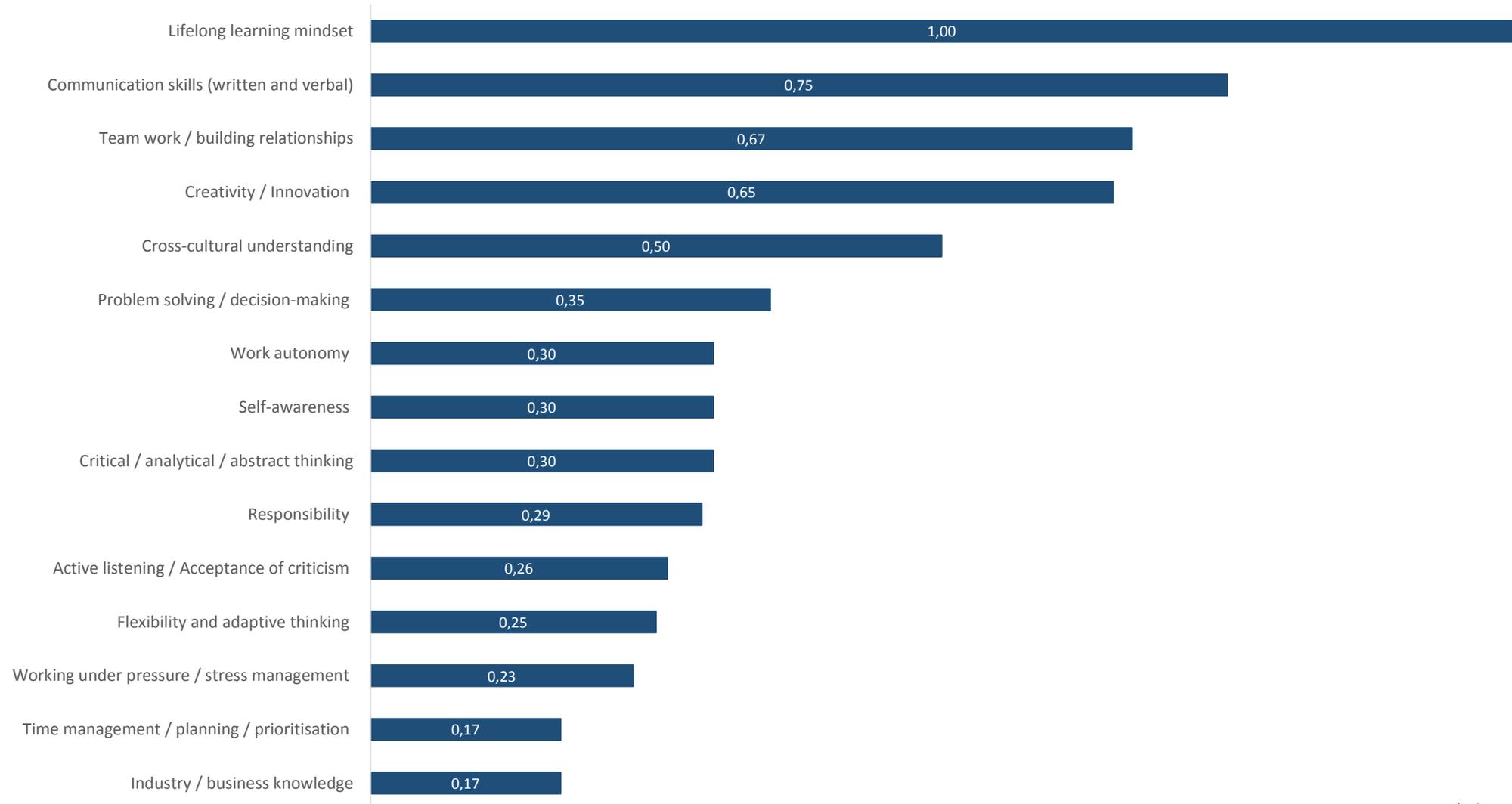
Results

Self-perceived level of employability



Results

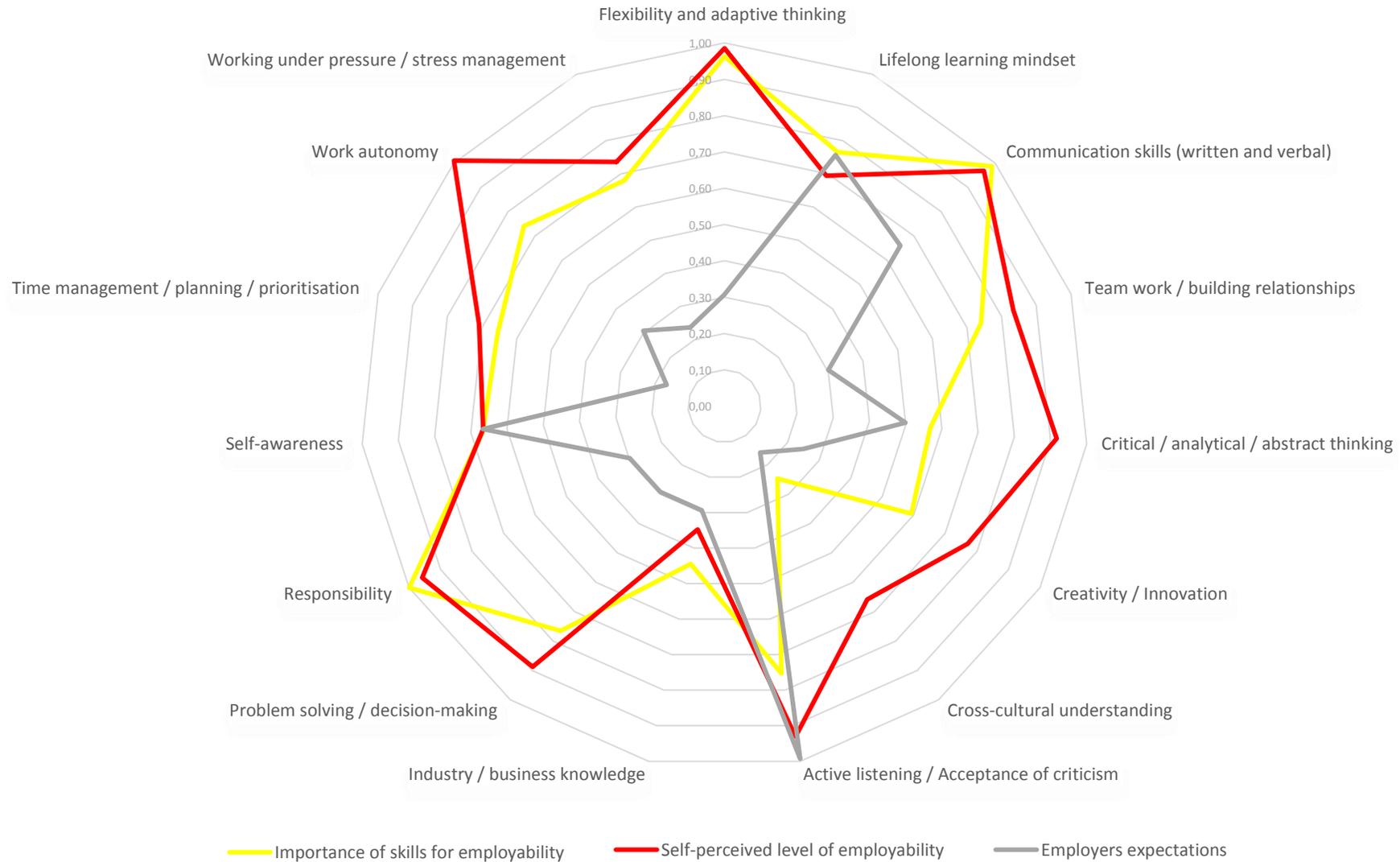
Employers expectations*



* data normalized to [0, 1]

Conclusions

Relationship between Generation Z's self-perceived employability skills and employer expectations*



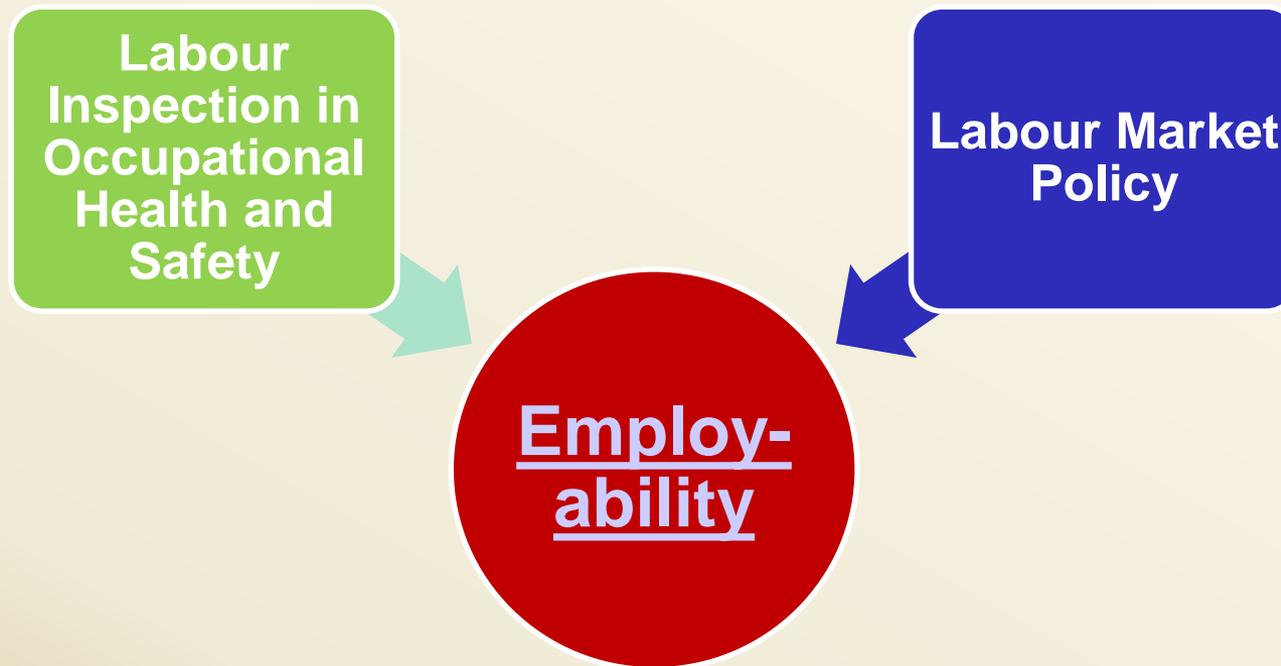
How to Survive in the Precarious Labour Market: New Skills for the Unemployed and Employers – a Mutual Approach

*Rolf Keil,
Bettina Splittgerber,*
Hessian Ministry for Social Affairs and Integration

Far-reaching changes in the world of work

- Globalisation
- Tendencies towards further flexibility
- Digitalisation and robotics
- Changes in labour relations,
 - less “regular labour” and more new forms of labour
 - Various forms of part-time work and temporary employment,
 - posted work and (“solo“) self-employment
 - new types of jobs, cloudwork
 - many people participate in the labour market, but under precarious conditions
- Government and administration have to consider these changes in their concepts and initiatives

In the department of LABOUR in the Hessian Ministry für Social Affaires we cover a broad range of issues and our mutual exchange lead to the developement of the project, we present today.



Focus: Employability

“[Employability is] the ability to gain initial, meaningful employment, or to become self-employed, to maintain employment, and to be able to move around within the labour market. This ability is influenced by personal qualifications, skills and circumstances, but also by external factors (labour market, economic situation)”

- sustainable qualifications corresponding to the increasingly complex social and political contexts
- training for unemployed people
- enable people to maintain their ability to work
- Sustain their mental and physical health
- **Enable Jobcenters to give support**
- **Enable enterprises to create adequate working conditions**

Labour Market in Hessen

- At the end of 2017, 3,467,200 people were registered as gainfully employed.
- The employment rate is 59.1%. The unemployment rate was 4.7% as of April 2018.
- A total of 157,860 people are registered as unemployed, 52,411 of them in SGB I and 105,448 in SGB II.
- Of those registered as unemployed, 91,803 have no vocational qualification, 58,981 are foreigners (i.e. people without German citizenship) and 55,439 meet the criterion of long-term unemployment.

The Organisation of Labour Market Policy in Germany

- The state has the task of creating the legal framework and monitoring compliance with standards
- Government-organised labour market policy in Germany is complex, not only in its organisation, but also in its financial structure and responsibilities
- Unemployment benefits are administered by the Federal Employment Agency
- If the unemployment benefit is insufficient or expires, the basic provision for job-seekers (SGB II) is available as a state transfer system. This social security system is administered by job centres

The Organisation of Labour Market Policy in Germany

- Most Job Centres are administered jointly by the Federal Employment Agency and the municipalities (303) Job Centres that are solely administered by the municipalities (105).
- The State of Hesse concludes annual target agreements with municipal Job Centres concerning the integration of the unemployed into working life. And the state of Hesse is in the process of establishing a target agreement with all districts and district-free cities regarding social integration services, such as debt counselling or psychosocial care.

The Role of Labour Inspection in the Field of Occupational Health and Safety (OSH) in Germany

- The central objective is to guarantee and improve health and safety protections for employees.
- Health and Safety at Work Act introduces a comprehensive approach including physical, mental health and social well-being at work + technical safety.
- Compliance with the regulations is monitored by the occupational safety inspectorates (control and sanctions); OSH authorities conduct plant inspections and provide advice and legal information
- in the precarious labour market working conditions are particularly stressful and involve many hazards.
 - Often insufficient protection against health and safety risks,
 - the stabilising function of work is lacking
 - Employees are unaware of their rights (working hours, protective equipment..).

The Role of Labour Inspection in the Field of Occupational Health and Safety (OSH) in Germany

Occupational safety inspectors

- are present in the companies and
- Are able to assess the conditions at workplaces
- and the company structure

The occupational safety inspectors therefore have a very practical view of the working conditions in companies and have specific knowledge of the sectors in the region.

Avoiding a „Revolving Door Effect“

- Which qualifications do the employees of the job centres need to acquire in order to successfully and sustainably integrate the long-term unemployed into working life?
- Which measures are suitable for moving the target group closer to the labour market?
- What prerequisites must the employer fulfil in order to employ the long-term unemployed?
- What role do the health and safety authorities have in establishing health-friendly working conditions in the sector of low-skilled jobs?
- Can a coordinated approach by occupational safety and the placement services of the Job centres lead to an improvement in the placement of the long-term unemployed and increase their job tenure?

Conclusion

- sustainable integration of long-term unemployed people requires a re-orientation: labour market policy must focus on building strengths and competences;
- cooperation of health and safety authorities and Job Centres can help interrupt the spiral of placement in precarious work and the frequently resulting discontinuity of episodes of work
- Employers – especially in the lower segments of the economy – must be prepared to deal with the often multiple problems of the long-term unemployed. A crisis intervention structure providing unbureaucratic advice should be implemented
- The design of the labour market in the lower segments is a joint task of the occupational safety authorities and job centres, but the social partners – trade unions and employers – should also be involved. Initiating this process is the task of our joint project.

Outlook, Next steps

- Workshops will be held in some regions of Hesse in order to broaden the dialog between OSH and Labour market Policy
- development of an information/training concept for occupational safety inspectors, including corresponding information seminars;
- development of an information/training concept for the employer services of job centres, including corresponding information seminars;
- The establishment of network structures between the authorities to facilitate a regional exchange of information;
- The realisation of a supra-regional conference to deepen – and broaden – the topic.

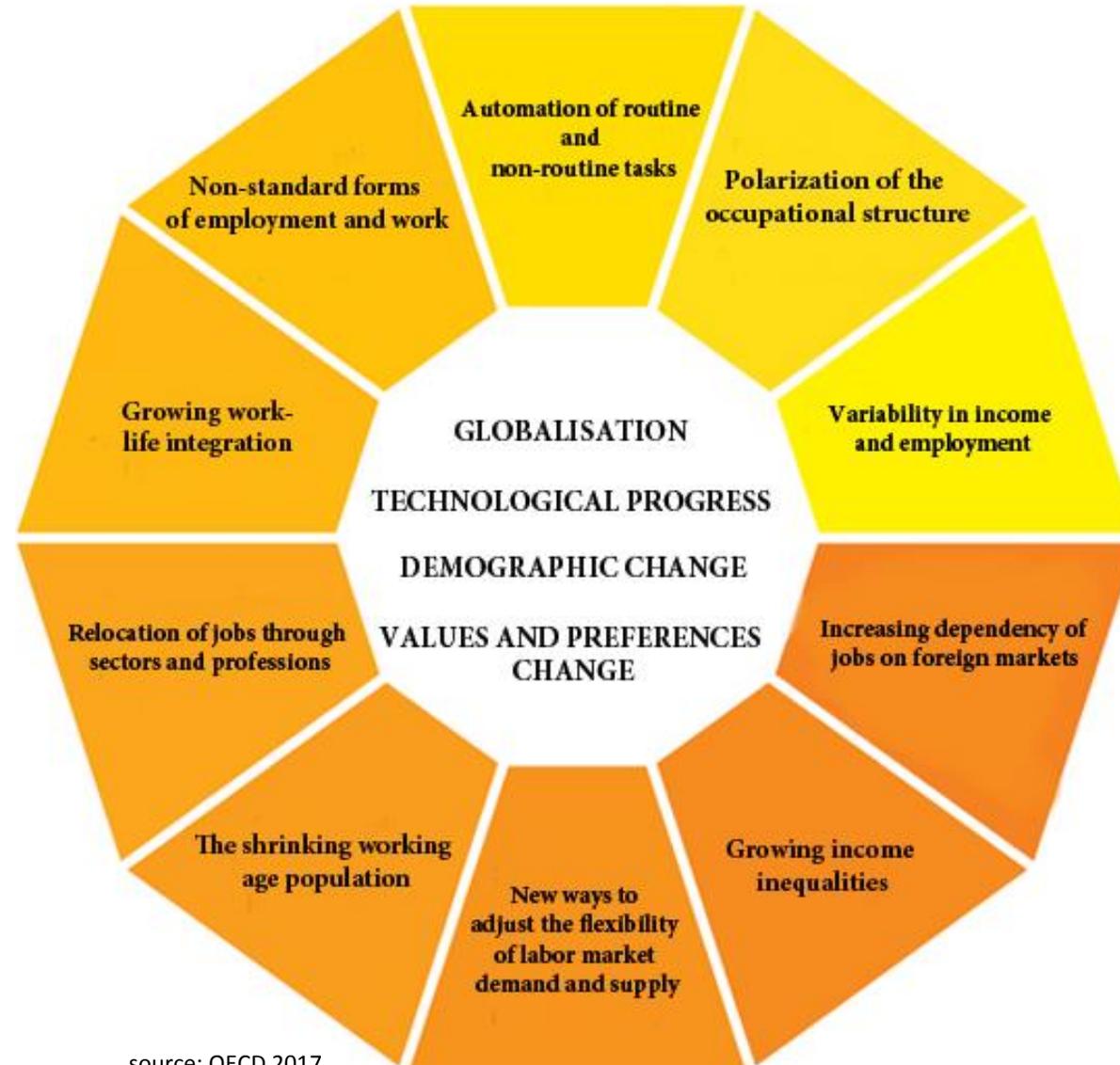
REGIONAL LABOUR OFFICE
in WARSAW



WHAT SKILLS, ATTITUDES AND KNOWLEDGE SHOULD THE EDUCATIONAL SYSTEM AIM TO DEVELOP TO ADDRESS FUTURE NEEDS?

*13th Annual Meeting of the
European Network on Regional Labour Market Monitoring. Developing skills in a changing world of work.
Exeter, 10-11.09.2018*

Future demand for qualifications based on megatrends



source: OECD 2017

Corporations are too large and extensive. The answer is building a culture of innovation.

- Many companies are too slow to make the digital jump. AI and BIG DATA they revolutionize entire business sectors.
- The advantage build small companies, often start-ups . They take over whole business liness, which where owned by corporations.
- Companies implement the culture of innovation (train employees, change the structure of employment, buy new tools) - but it's a long and expensive process.



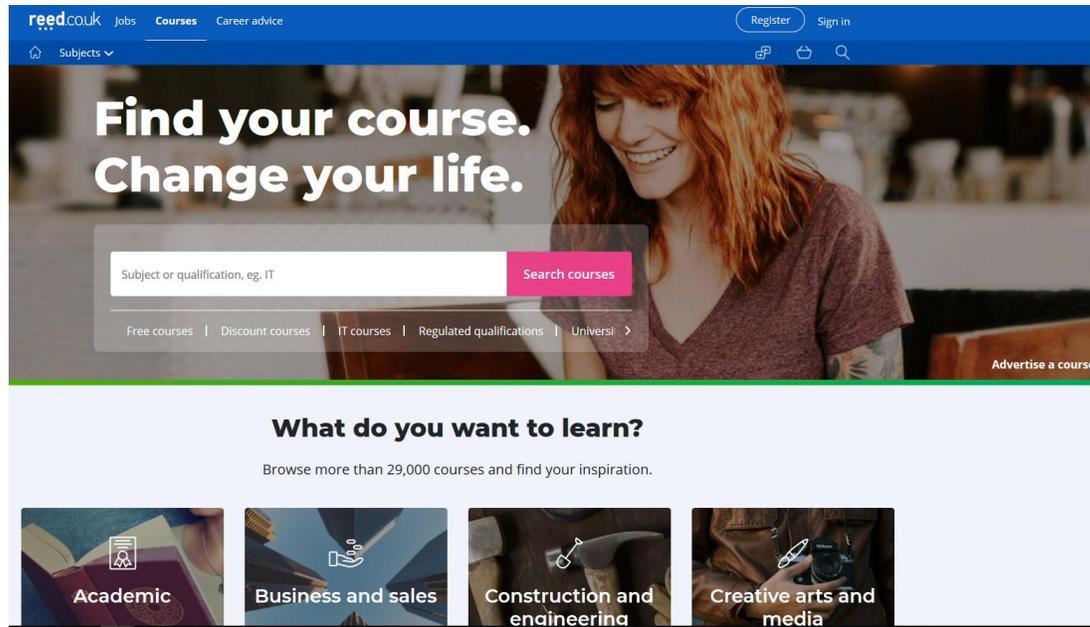
Education and government institutions are not keeping up with the development of business lines

- The educational system must prepare a person for a new profession in a very short time;
- Studies are too long-lasting to keep up with the changes – 5 years is today too long in the face of technological change;

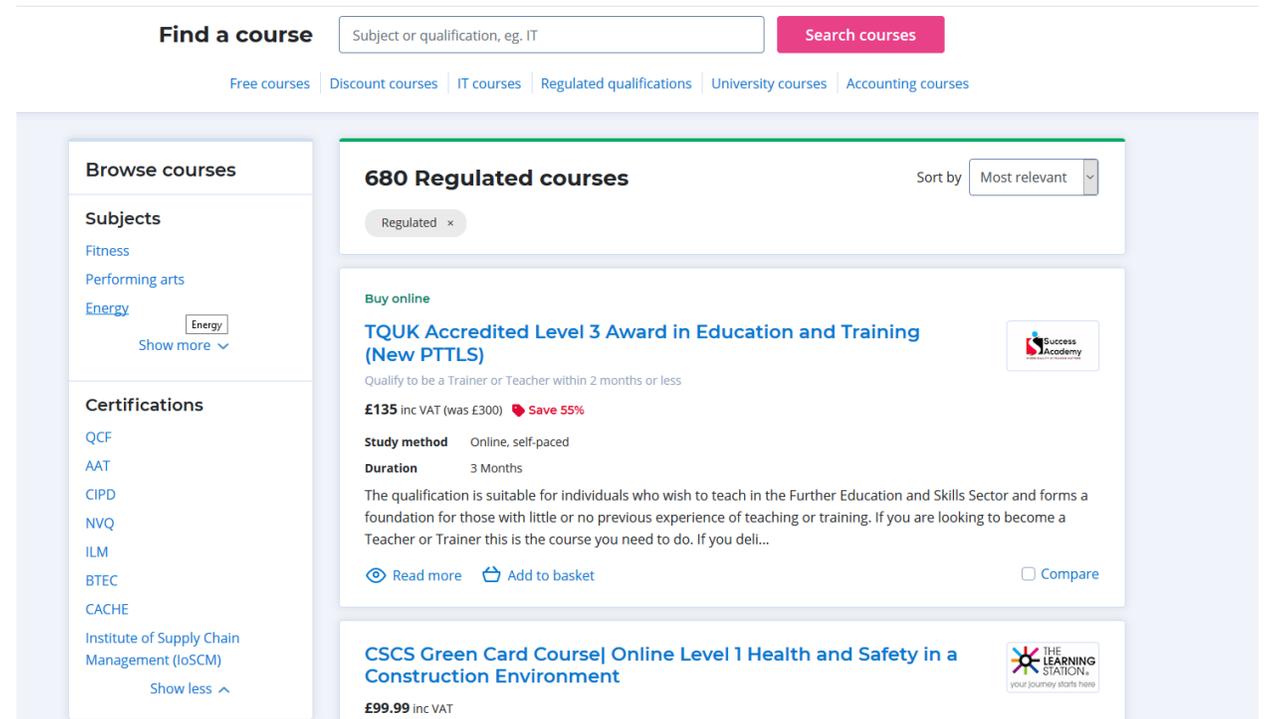


- Informal education can take over some too dynamic areas of learning;
- Companies will employ employees educated in a short time, with little or no experience – pioneers;
- It is a necessity to use very young people with high financial expectations and a small experience in the labor market;

Regulated certification and courses – British example



The screenshot shows the homepage of reed.co.uk. The top navigation bar includes 'reed.co.uk', 'Jobs', 'Courses', and 'Career advice'. There are 'Register' and 'Sign in' buttons. A search bar is present with the text 'Subject or qualification, eg. IT' and a 'Search courses' button. Below the search bar, there are links for 'Free courses', 'Discount courses', 'IT courses', 'Regulated qualifications', and 'Universi'. The main banner features the text 'Find your course. Change your life.' and a search bar with a 'Search courses' button. Below the banner, there is a section titled 'What do you want to learn?' with the text 'Browse more than 29,000 courses and find your inspiration.' and four category tiles: 'Academic', 'Business and sales', 'Construction and engineering', and 'Creative arts and media'.



The screenshot shows the search results page on reed.co.uk. The top navigation bar includes 'Find a course' and a search bar with the text 'Subject or qualification, eg. IT' and a 'Search courses' button. Below the search bar, there are links for 'Free courses', 'Discount courses', 'IT courses', 'Regulated qualifications', 'University courses', and 'Accounting courses'. The main content area is divided into two columns. The left column is titled 'Browse courses' and includes sections for 'Subjects' (Fitness, Performing arts, Energy) and 'Certifications' (QCF, AAT, CIPD, NVQ, ILM, BTEC, CACHE, Institute of Supply Chain Management (IoSCM)). The right column is titled '680 Regulated courses' and includes a 'Sort by' dropdown menu set to 'Most relevant'. Below this, there is a course listing for 'TQUK Accredited Level 3 Award in Education and Training (New PTTLs)' by Success Academy. The course details include 'Buy online', 'Qualify to be a Trainer or Teacher within 2 months or less', '£135 inc VAT (was £300) Save 55%', 'Study method: Online, self-paced', and 'Duration: 3 Months'. The course description states: 'The qualification is suitable for individuals who wish to teach in the Further Education and Skills Sector and forms a foundation for those with little or no previous experience of teaching or training. If you are looking to become a Teacher or Trainer this is the course you need to do. If you dell...'. There are 'Read more' and 'Add to basket' buttons, and a 'Compare' checkbox. Below this, there is another course listing for 'CSCS Green Card Course| Online Level 1 Health and Safety in a Construction Environment' by THE LEARNING STATION, with a price of '£99.99 inc VAT'.

Industry associations and certifications - cooperation between science and business?



- Employers, members of industry organizations know best what skills employees need;
- Members monitor the market, create working groups;
- Certification and industry supervision may immediately make program changes in teaching and exam cases;
- Certification is a way to better and faster prepare graduates –this can be done as part of the faculty to pass additional exams;
- But certificates shouldn't limit access to the profession (deregulation);

What is happening in the area of competence and qualifications in Poland?

We work on the National Qualifications Framework and job descriptions - it's a tedious and long-lasting process

We don't sufficiently monitor changes in qualifications and competences

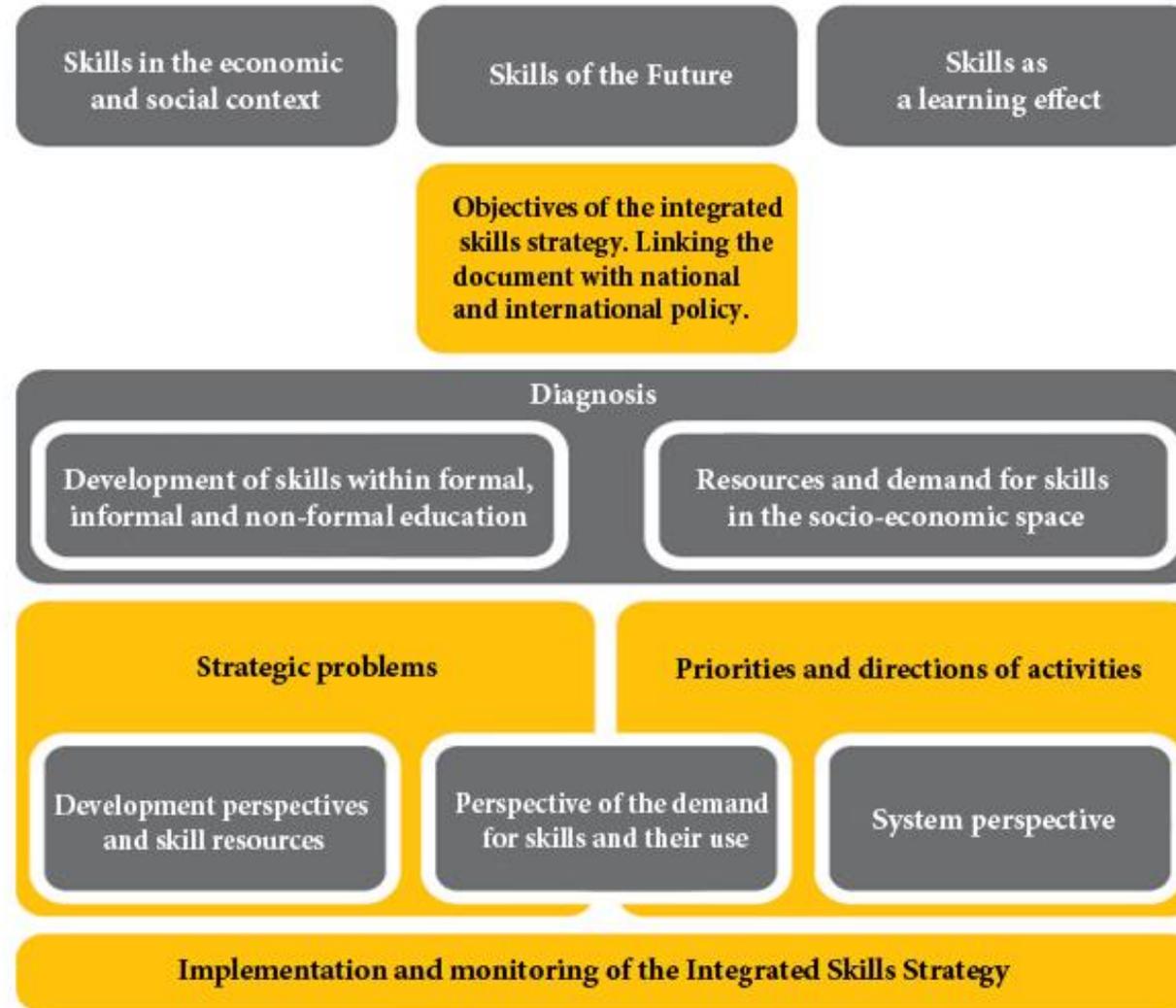
There is a lack of knowledge about new industries and experts in this area

Competence councils don't solve all problems

We don't have a structured vocabulary of qualifications and competences

Cooperation with the private sector is insufficient

Implementation of integrated skills strategy 2018-2030



Monitoring of competences and qualifications in Mazovia



- **What are the occupations in demand in poviats and the entire voivodship?**
- **What key qualifications and professional competencies in demand for?**
- **In which industries is the largest and minimum demand for work?**
- **What is the diversification in labor supply between poviats?**

Green jobs and skills: Masovian labour market implications



Study of employment prospects in the green energy sector in Mazovia

- Transition of the high-carbon to low-carbon economy – challenges;
- Potential for the development of green jobs in the region - diagnosis of areas of the economy;
- Greening professions and industries - prospects for Mazovia;
- Regional policy: evaluation of its effectiveness and development opportunities in relation to green jobs;
- Experience of other countries. The voices of experts from Denmark, Sweden and Germany.

Skills mostly needed in 2045?

Using new technologies for the good of social relations

Social skills

Computers replace educators. Social skills the top qualities taught in primary schools

Ability to synthesize knowledge

Relax and teach

Endless self-development

Technological literacy and human qualities

Survival in a hostile environment

Intercultural literacy (in the context of one common global language and prevalent income gaps)

Full-time home-based education

Empathy, creative thinking and communication/ social skills

Interconnectivity of the world

Open-mindedness and critical thinking

Flexibility in the context of sustainable development

Surfing the future of education. What skills, attitudes and knowledge should the educational system aim to develop to address future needs?

Literacy is the competency to make sense of textual sources, that is, also to use textual sources to make plans in life and execute them. **Futures Literacy** is an analogous ability to learn about possible, probable or desirable futures, as they are imagined or constructed across a variety of sources in order to make better-informed decisions in the present.

Futures Literacy

3 visions of future education in 2045

The Universal University

- free of charge,
- equally and unlimitedly
- accessible for anyone in the world
- teachers in that scenario will be responsible for validation of learning progress
- exists in decentralized world
- development of a “YouTube” like platform;

Learn and share

- education became more practical and problem-based
- individual learning path that best fits her/his talents, interests and predispositions
- small classes
- establishment of
- new core curriculum in Poland
- formation of “equality guardian”
- professional development of teachers

Skills for the future

- teaching critical thinking and developing practical skills that could be used in everyday life
- dramatic worldwide changes and necessary adaptations (weather)
- In 2045 the future is still very uncertain and education system needs to prepare for unknown.



Smart City University aims to increase UAE's digital workforce

Dubai 10X initiative project set to boost digitally skilled talent in the UAE to 10% by 2020



The Smart City University, a blockchain-powered decentralised learning platform has been launched by the Smart Dubai Office to support the development of digital skills in the UAE.



*“If we do not change the way we teach,
30 years from now we’ll be in trouble.*

*The things we teach our children are
things from the past 200 years - it’s
knowledge-based.*

*And we cannot teach our kids to
compete with machines,
they are smarter.”*

Jack Ma

Thank You!

Remigiusz Lesiuk

Inspektor w Zespole ds. Badań i Analiz

Wydział Mazowieckiego Obserwatorium Rynku Pracy

Wojewódzki Urząd Pracy w Warszawie

tel. 22 578 44 46

r.lesiuk@wup.mazowsze.pl

Smart Working and Organisation: Managerial skills to Lead and Manage cultural change

Patrizio Di Nicola

Exeter, 10th September 2018

Hi-tec at workplace

- Nowadays, as a result of the evolution of Information and Communications Technology (ICT), we are living in a time of radical change in the world of work.
- Technology implies the need for an evolution of the skills of managers.
- If skills do not evolve, the risk could be a strong loss of the human workforce in favour of machines, A.I., algorithm.

Telework is only a part of the solution

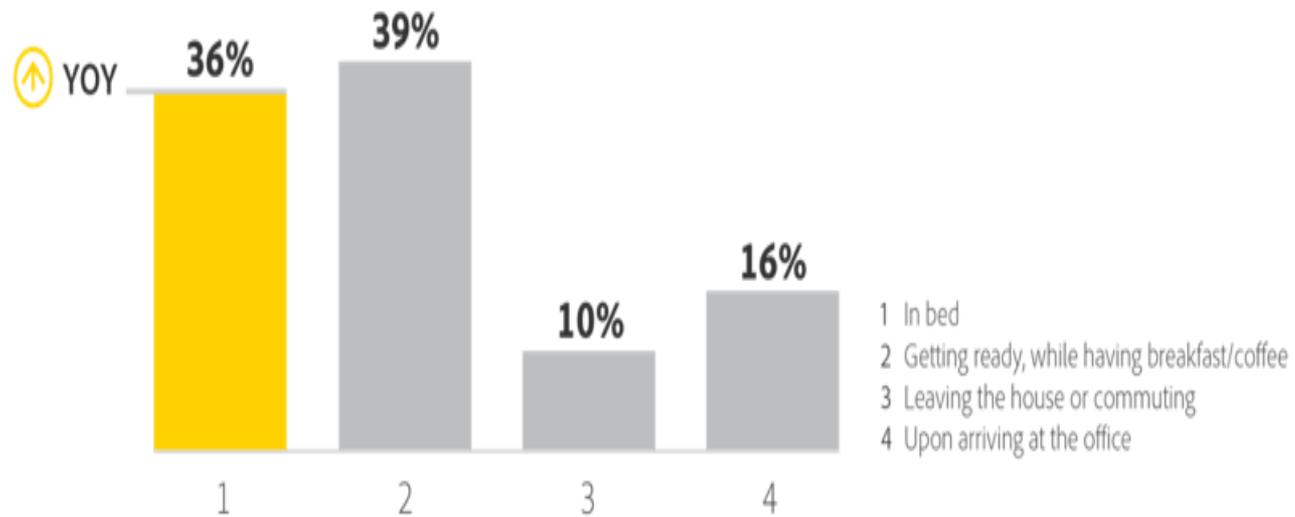
- Telework originally meant work done entirely at home or at so-called telecentres, but today the worker is able to accomplish tasks from anywhere
- Telework evolved slower than expected due to various factors, primarily the social need for people to meet with others
- Since the 1970s, open spaces were introduced, though not always with a positives results. In fact, on the one hand, the decrease in barriers increases connectivity and helps the transfer of knowledge. On the other hand, job satisfaction can reduce.
- The solution crossing Telework and Open Space Offices is Smart Working, It can involve teleworking but it does not end with it

«Non territorial» Office

- “Non-territorial” office is a space designed without walls and permanent posts in order to improve and increase the sharing of problems and the exchange of experiences within the group
- In 1985, some scholars introduced the concept of “activity-setting”: individual workstation is not suitable for work performance because people need access to quiet spaces, shared equipment, different sized meeting rooms and teleconferencing facilities.
- the *Activity-based Working Model* was described by Myerson et. al (2010), the offices are redesigned according to the “three B model”: Brick, Byte, and Behaviour, also known as the “3 P Model”: Place, Platform, People.

Email overload?

49% OF MILLENNIALS (18-34) SAY THEY CHECK EMAIL WHILE **STILL IN BED**.



Case Studies

- Three large Italian companies interested in implementing Smart Working Models
- In all three firms, collaborative work is perceived as very frequent. However, people claim to have the need for some types of spaces that are currently lacking or not present.
- Mobile technological equipment should be increased and be functional for the different types of work done;
- It is requested to work on managerial behaviours to facilitate an organisational culture based on the Smart Model to facilitate change.

What managers should do (and learn)

- Management must favour the creation of a work environment based on trust and not on control
- Perpetuation of authoritarian leadership styles, based on control and micro-management, do not increase worker responsibility and trust and can become the source of failure for any Smart Working Model
- Evaluation of people based on goals, results and responsibility and not according to the hours they spend in the office

**...Thanks
for
attention...**



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Russian
Science
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Approaches to Creation of Integrated Model of Professional Skills Measurement and its Application to Socially Vulnerable Groups

Viacheslav Bobkov, Professor, Doctor of Economics, Head of the Laboratory of the Problems of the Level of Life and the Quality of Life, Institute of Socio-Economic Studies of Population, Russian Academy of Sciences (ISESP RAS)

bobkovvn@mail.ru

Vadim Kvachev, Ph.D. in Sociology, Sr. Lecturer at Plekhanov Russian University of Economics

kvachevvg@mail.ru

National system of qualifications in Russia



The European System of Labour Skills Monitoring



The European System of Competencies for Citizens (DigComp) emphasises the following competency fields:

- **Information:** searching for information about products and services, getting information from the websites of government bodies, reading or downloading online-news/newspapers/magazines, copying or pasting files and documents etc.;
- **Communication:** sending or receiving letters, making voice or video calls over the internet, participating in social networks, sending messages to websites and chats and downloading content on websites;
- **Creating digital content:** creating websites or blogs, writing computer programmes using special programming languages, using instruments for copying and pasting in order to duplicate or transfer information in the document, creating electronic presentations (slides) including video, sound, images, or diagrams using special programmes and using basic arithmetical formulas in electronic tables;
- **Security:** using software or security instruments for protecting personal computers and data as well as updating such software;
- **Problem-solving:** connecting and installing new software, installing or replacing operating systems, passing online courses, purchasing products or services over the internet, online sales, searching for jobs over the internet, online banking and meeting people online.

The American System of Labour Skills Monitoring



- Professional information network O*NET OnLine was developed to collect information on more than a thousand professional occupations. This network was built based on the Standard Occupational Classification (SOC). Every worker is classified as a representative of one of 867 professions. To facilitate classification, detailed professions are gathered into 459 broad professional groups, 98 small groups and 23 basic groups.
- Competencies:
 - Cognitive competency;
 - Personal competency;
 - Interpersonal competency.

The system of skills monitoring presented at the World Economic Forum (2016)



- Modern skills and competencies:
 - **Abilities:**
 - Cognitive abilities: cognitive flexibility, creativity, logical reasoning, problem sensitivity, mathematical reasoning, visualisation;
 - Physical abilities: physical strength, manual dexterity and precision;
 - **Basic skills:**
 - Content skills: active learning, oral expression, reading comprehension, written expression, ICT literacy;
 - Process skills: active listening, critical thinking, monitoring oneself and others;
 - **Cross-functional skills:**
 - Social skills;
 - Systems skills;
 - Complex problem solving skills;
 - Resource management skills;
 - Technical skills.

Integrated approach to professional skills measurement

- Instrument for the employer to articulate requirements to workers;
- Instrument for the employee to define his skills;
- Instrument to analyze labour market.



Socially vulnerable groups

- Young people;
- Elderly people;
- Women after a maternity leave;
- Disabled people;
- Migrants.



Thank you for your attention!





European Network on Regional Labour Market Monitoring



14th Annual Meeting of the European Network on Regional Labour Market Monitoring (EN RLMM)

September-October, 2019

Presented by Vyacheslav Bobkov (Dr. of
Economics, Professor), Vadim Kvachev (Ph.D. in
Sociology)

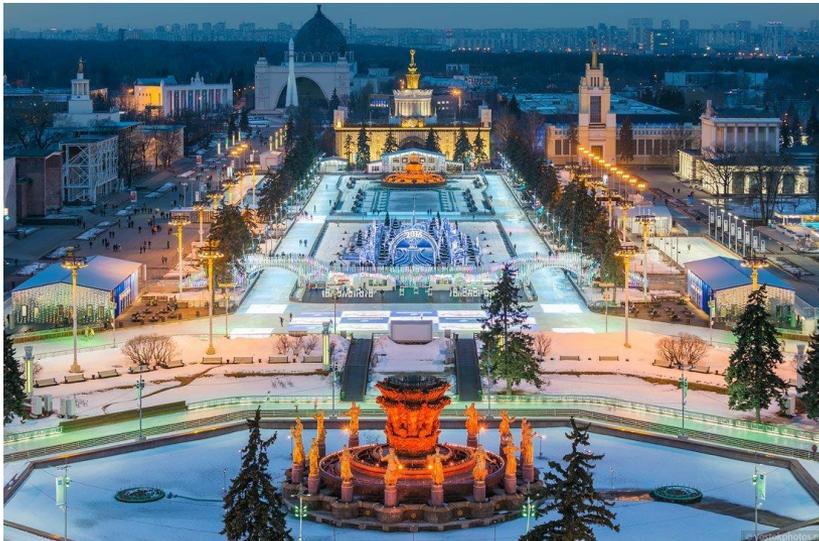
Moscow, Russia

- Capital of Russian Federation
- About 12 000 000 inhabitants
- Political, economical, cultural and scientific center of Russia



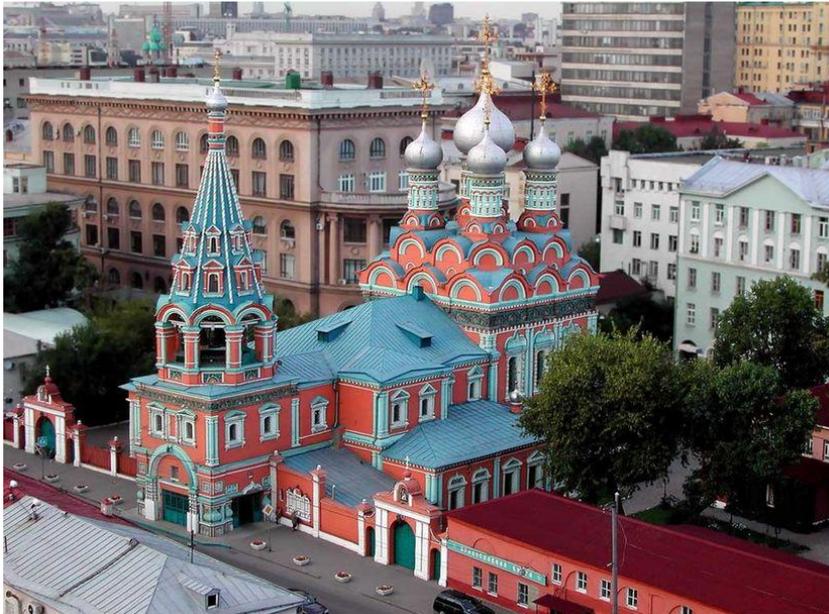
Major attractions of Moscow

- Bolshoi theatre
- VDNKh complex
- Luzhniki Stadium



Major attractions of Moscow

- Moskva river
- Moscow old churches
- Zaryadye park



Russian Academy of Sciences (RAS)



- RAS is a central national Russian scientific institution.
- It consists of 1008 institutions and other units with 125 000 employees and 47 000 scientists.
- It was founded in 1724 by Emperor Peter the Great.



Institute of Socio-Economic Studies of Population, Russian Academy of Sciences



- The ISESP RAS was founded in 1988.
- The research work of the Institute is focused on the following 7 areas:
 - Fundamental research on the issues of population well-being and quality of human capital;
 - Investigation of demographic processes and population health;
 - Development of theoretical and methodological basis for socio-economic measurements and improvement of methodology for analysis and projections of population well-being and quality of life;
 - Study of distributive relations;
 - Theoretical and empirical studies of the impact of social indicators on demographic dynamics and economic growth;
 - Fundamental and empirical studies of socio-economic inequality by regions and population groups;
 - Conceptual foundations of social state and effective social policy.
- In the past five years ISESP researchers published over 1000 works, including 160 monographs, textbooks, reference books, atlases, some of which are presented in full on the website for a free reading by all those who take interest.
- [Web site](#)

EN RLMM-2019 Annual Meeting Topic:

**«Assessing Employment and Skills
Needs in Informal Economies:
Approaches and Insights from
Regional and Local Labour Market
Monitoring»**

Assessing employment and skills in:

- Gig economy
- Private and household services
- Subsistence economy
- Self-employment



European Network on Regional Labour Market Monitoring



THANK YOU FOR YOUR ATTENTION!

Presented by

Vyacheslav Bobkov (Dr. of Economics, Professor)

bobkovvn@mail.ru

Vadim Kvachev (Ph.D. in Sociology)

kvachevvg@mail.ru

DECODING THE LOGICS AND PRACTICES OF NETWORKS: CROSS-CUTTING COMPETENCIES AND SOFT SKILLS IN DIGITAL PROFESSIONS

Renato Fontana
Carmine Piscopo
Erika Nemmo

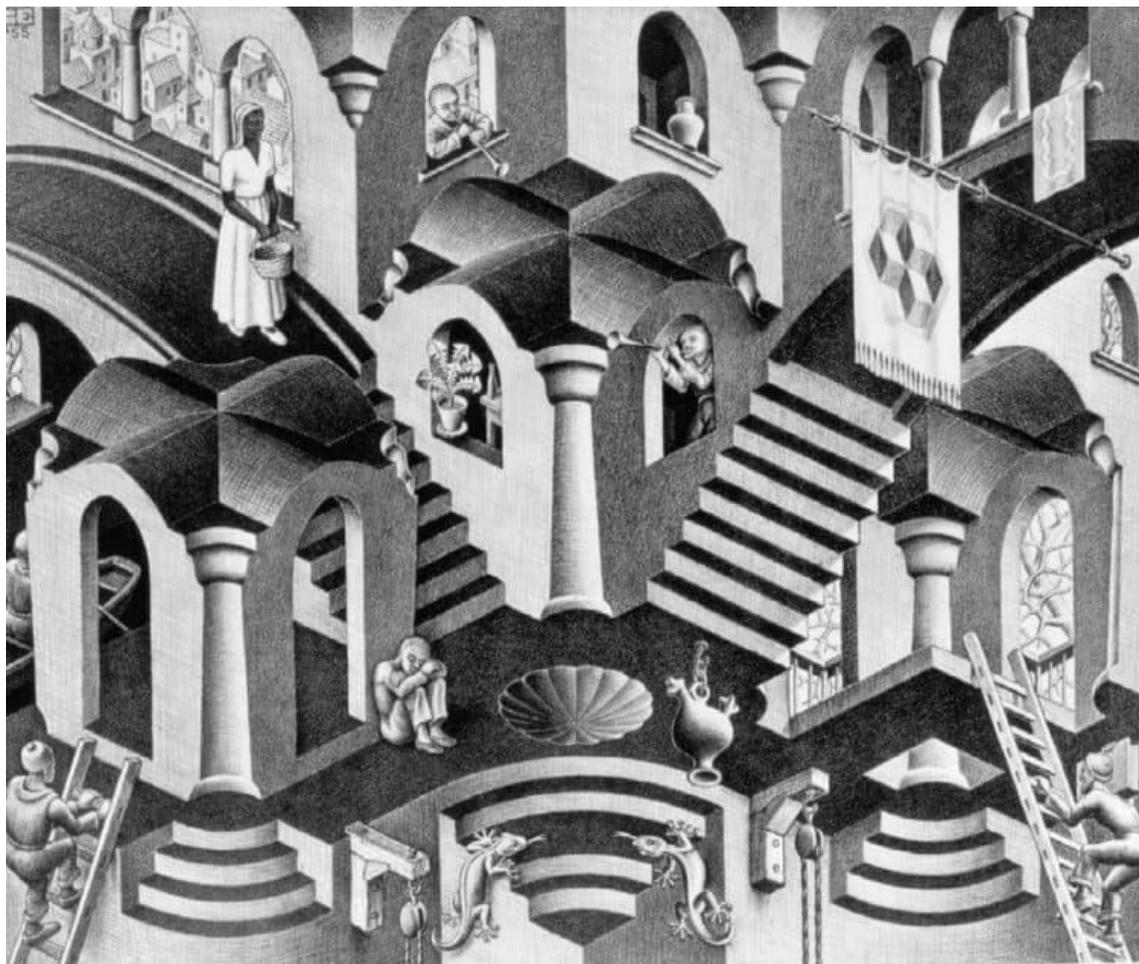


DIPARTIMENTO
DI COMUNICAZIONE
E RICERCA SOCIALE

SAPIENZA
UNIVERSITÀ DI ROMA



THE DIGITAL SOCIETY HAS DEEPLY CHANGED OUR WAY OF PERCEIVING, LIVING AND RELATING



ICT has become part of our daily life, permeating places and “non-places” of our existence, radically and cross-cuttingly changing the **working contents** and approaches of almost all **professions**.

1. how skills change and grow
2. understanding the consequences of the ongoing changes in terms of social stratification inside the composite aggregate that we call the labour market.

REFLECTING ON:

1. Technical-professional skills;
2. Cross-cutting a-contextual skills;
3. Socio-relational skills.

The purchase of a product often means moving into a new world “full of opportunities” but also becoming part of a “community of intents and values”

1. Technical-professional skills are less important in the ambit of the activities carried out in an organised context

2. On the Web, tasks are gradually being transferred to machines, while the skills that count are the ones that go beyond the “technicalities” and look at the need to sell to a potential user/client the product of one’s intelligence such as goods, services, knowledge, innovation, culture, ideology

3. The socio-relational skills are the most important as they get the consumer hooked



DIGITAL TECHNOLOGY AS A SOCIO-RELATIONAL PRACTICE

Today, the digital divide is no longer linked simply to access but also to the skills and opportunities that technology can generate. The issue is no longer geographic (between rich and poor countries) or technical (related to the availability of lines and connections), but cultural and educational.

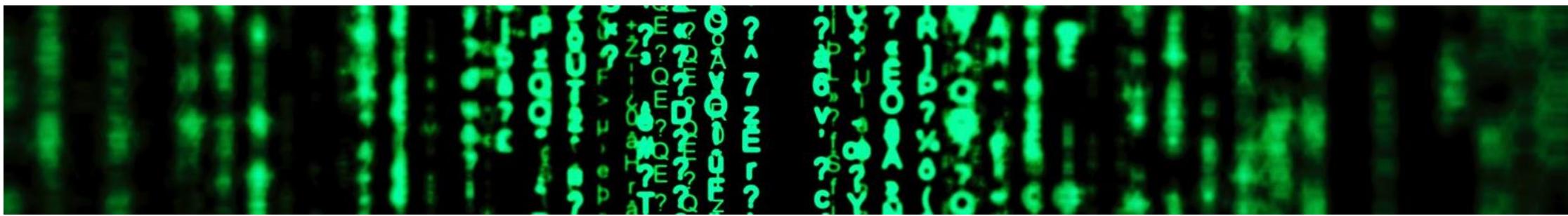
“In an age of unprecedented opportunities for digital commerce interactions, social and political engagement, and lifelong and life wide learning and collaboration, the digitally literate citizen must be an active and ever-vigilant participant, constantly evaluating those opportunities for their benefits and their downsides ”
(Meyers et al. 2013).



ICT PROFESSIONS RESPONSIBILITY

the technical diffusion caused by leisure and economic opportunities was quicker than the diffusion of the socio-educational knowledge related to digital media usage

This brief examination of ICT digital technologies are useful for framing the paper's subject from a socio-centric perspective in which ICT cannot and should not be confined to technically-specialised knowledge. It is fundamental to **start considering ICT professions** not only from the point of view of productivity, but also in terms of the **relationship with and responsibility towards consumers.**





ICT PROFESSIONALS AND FAST TECHNOLOGICAL DEVELOPMENT

On the one hand, we can observe the **rapid obsolescence of specialised skills** caused in part by the continuous innovation of products and services; on the other hand, we can notice the **ever-increasing relevance of socio-relational aspects** known as soft digital skills.

A recent study by Capgemini Digital Transformation Institute (2017) observes three particularly interesting phenomena:

- 1.The digital talent gap is widening:** every second surveyed organisation acknowledged that the digital gap is widening. Moreover, over half (54%) of organisations agreed that the digital talent gap is hampering their transformation programmes and that their organisation has lost competitive advantage due to a shortage of digital talent;
- 2.Fears of skills redundancy could drive attrition:** overall, 29% of employees believed that their skill set was redundant or would be in the next one to two years, while more than a third (38%) believed their skill set would be redundant in the next four to five years.
- 3.The talent gap in soft digital skills is more pronounced than in hard digital skills:** the report identified that people with experience in soft digital skills, such as customer-centricity and a passion for learning were most in-demand as these skills were considered increasingly important characteristics of a well-rounded digital professional.



THE “DIGITAL MAKER” AS THE BRIDGE BETWEEN THE ABSTRACTION OF DIGITAL IMAGINATION AND THE NEW CONSUMER OF THE FUTURE.



What we are observing in this period of technological development is the need enterprises have to provide reliable services and products. To be made, sold and used, these products need **complex professional profiles that never existed before**. **Technical-computer science skills are only one part of the requisites because socio-relational skills have an increasingly essential role.**

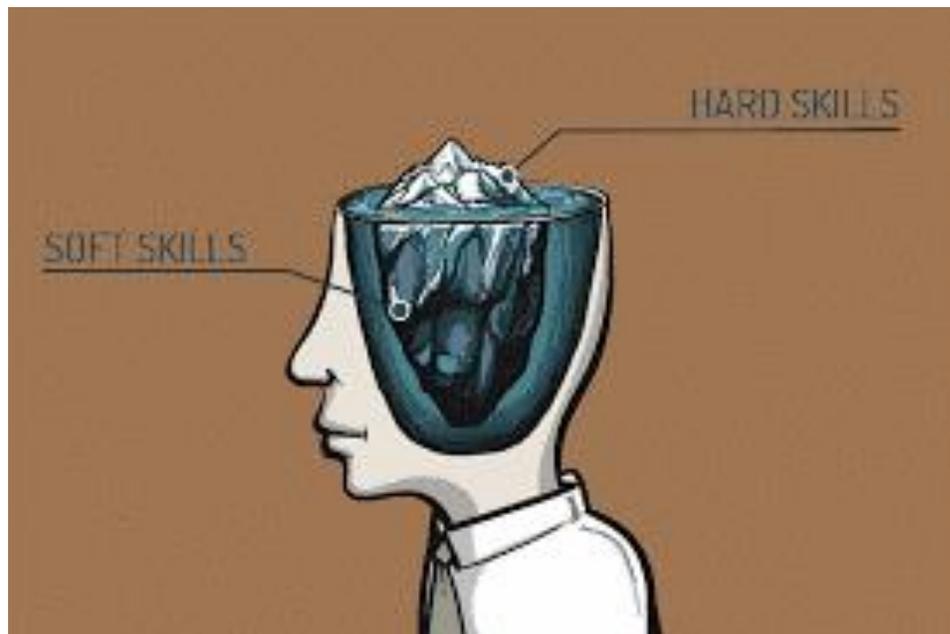
It is in this framework that the figure of the digital maker is born, not only as a result of the work flexibility that characterises our age, but also as a professional figure inserted into the process of ICT production growth in terms of creativity and quality. These digital makers are practically the bridge between the abstraction of digital imagination and the new consumer of the future.



ICT, SKILLS & DIGITAL PROFESSIONS

The birth of new ICT professions characterised by a considerable “**volatility**” of **technically-specialised skills** and by a **variety of cross-cutting skills** typical of “**knowledge professions**”.

ICT workers are a particularly interesting target of analysis for at least two reasons:



1. They are professionals who we imagine can fully incarnate the paradoxes of the knowledge society since **they are both “producers” and, at the same time, “products” of the New Economy**. Using the words of Hannah Arendt (1958), ICT workers are *homines fabri*: they create the world of mankind
2. Their profession has an easily recognisable, technically-specialised nature, but at the same time, it is “new” in the labour market and, in our eyes, **does not have a strong connotation in terms of...**
cross-cutting and socio-relational skills

CROSS-CUTTING AND SOCIO-RELATIONAL SKILLS

1

The ability to diagnose, diagnose one's skills and attitudes; diagnose problems;



2

The ability to relate, communicate, work in team and negotiate;



3

The ability to face problems, strengthen self-learning processes and find solutions.



Definition by ISFOL - Institute for the Development of Vocational Training for Workers



A RESEARCH ON DIGITAL MAKERS (KNOWLEDGE WORKERS)

The considerations that follow are based on **research carried out by five Italian universities**. It lasted three years and was financed by the Italian Ministry of Education, University and Research at the PRIN – Projects of Relevant National Interest.

AIM

The main question [...] on which our reflection is based is if there is and to what extent a connection between pre and post-industrial society, or – more modestly – **what are the similarities and the differences between the conventional craftsman and the digital maker**, to provide a profile significant from the sociological point of view to the many workers who work in close contact with the new technologies and in particular with the ICTs (*Information & Communication Technologies*)

MAIN FEATURES

- The research made it possible to interview **40 ITC professionals** (mainly computer scientists and graphic designers), of whom 95% worked in organised contexts (especially small and medium sized enterprises);
- The interviews developed a **corpus of around 400 pages**. Here it is possible to make interesting conclusions based on the theme of cross-cutting skills necessary for professions characterised by “cognitive dexterity”.

WHO ARE THE DIGITAL MAKERS?

They are sitting at a desk. Their toolbox is a computer. Their work consists of creating virtual objects. They deal with the speed of innovation, the time and space of globalisation (or the absence thereof) and the culture of personalised consumption. They find meaning in their job in the possibility of being creative, the capability of making something useful for others and the satisfaction of having built a good quality product.



“In my opinion, a craftsman is somebody who works using tools, as we do, if we have to make a comparison, on one side there is a hammer, an electric saw [...] on the other side, there is a mouse, a computer, there are programmes” (interviewee).

WHAT KIND OF SOFT SKILLS DOES THE DIGITAL MAKER USE?

Moving from the premise that a skill is distinctive of a profession only when it is a factor that allows employees to perform the profession itself (and not just to facilitate it), an analytical reading of the interviews allowed us to identify three core skills in the ICT profiles:

PASSION

Possessing passion and quality-oriented attitudes



COMMUNICATION

the ability to communicate and work in team

LEARNING

the ability to learn how to learn from the Internet



PASSION AND QUALITY-ORIENTED ATTITUDES

The attention to quality that characterises both the traditional craftsman and the digital maker is not connected to the efficaciousness with which they answer the customer's requests or the efficiency of the production process, but is linked to factors related to one's deepest professional identity.

the craftsman “cares that the work itself is well done. [...] his work is not simply a way to obtain another order. [...] The craftsman is the representative figure of a specific human condition: that of being personally engaged in what one does” (Sennett 2008).



A craftsman is intrinsically interested in the quality of the product because it is not simply an object (whether material or immaterial), it is the result of his personality and creativity; it is a sort of extension of his identity.





LEARN HOW TO LEARN FROM THE INTERNET

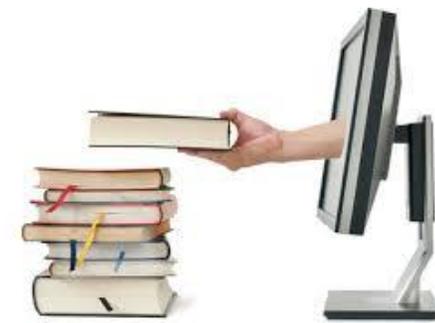
Learning how to learn is one of the eight key skills identified by the European Union that all citizens should have for full social and work integration. In the ambit of ICT professions, however, this skill, in addition to being cross-cutting, becomes an enabler as much and even more than specialised technical knowledge;

“The programmer has to continuously update him/herself because the programming languages change and the way of programming changes [...]. You have to keep up with the times. New things are continuously created and you have to use and assimilate them ”. (interviewee)



Learning how to learn in this context acquires a particular connotation because it is the object of a specific modality: “learning how to learn from the Internet”, that is, from what has been defined as our

“widespread master”





THE ABILITY TO COMMUNICATE AND WORK IN TEAM

It is curious to notice how nearly all the workers interviewed seem to be aware of the importance of working in project teams and of keeping a high level of sharing and communication with their colleagues

"in computer science team work is very important. Because certainly, or probably, another person knows what you do not know. If there is this way of working, this exchange of information, in the end we can find a solution to the problem. This is essential also for the creation of new products". (interviewee)

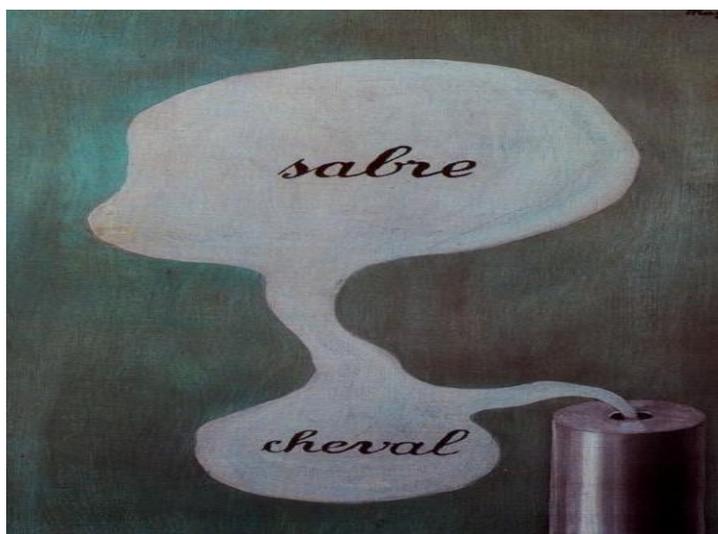


... but the need to respect fast delivery times
reduces the possibility of sharing



TO SUM UP, THE KEY-WORDS ARE: K. E. N.

Knowledge: It is the most important factor on which the economic, industrial and production strategies of modern enterprises in the *sharing economy* are based.



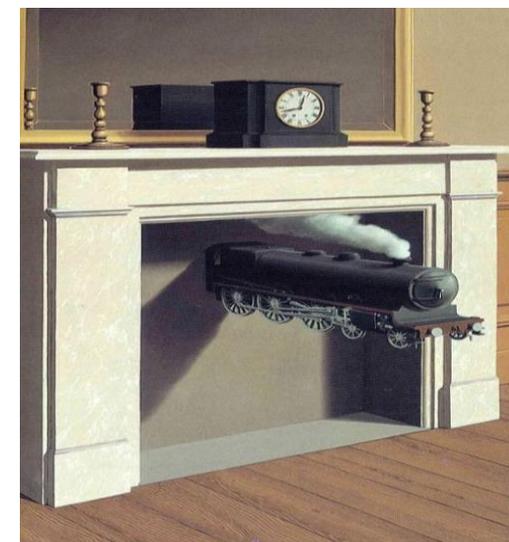
The tree of knowledge, 1929, Rene Magritte

Education: The fact that everybody has access to information does not necessarily mean that there are not *inequalities* when it comes to converting information into knowledge.



The Son of Man, 1946 by Rene Magritte

Network: *None of us is smart as all of us.* It represents the *added value* that comes from team work, which is essential today.



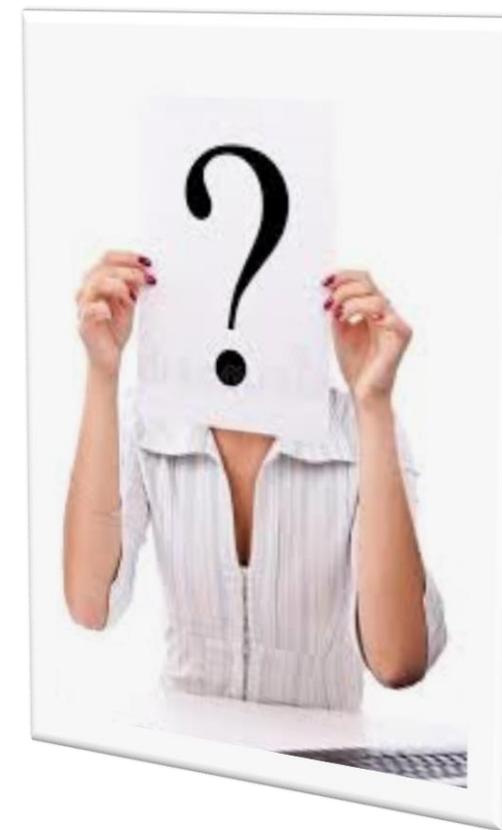
Time Transfixed, 1938 by Rene Magritte

AND WHAT ABOUT ALL THE OTHERS?

We focus our attention on those we have called makers or, more generally, knowledge workers. And what about all the others?

The others are in worse condition. They are excluded from the analysis of the best research projects: We know little about them; their profiles have *evaporated* in the blinding light of the very strong ongoing organisational transformations. They are weak, confusing and extemporaneous profiles for which the current literature shows no interest

The wonderful opportunities for professional growth offered by ICT do not seem to have changed the system of social inequalities typical of the last century.



THANK YOU VERY MUCH FOR YOUR ATTENTION!!

renato.fontana@uniroma1.it

DIPARTIMENTO
DI COMUNICAZIONE
E RICERCA SOCIALE



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The presentation **Skills Intelligence for Labour Market Actors**
by Jiri Branka, Cedefop (Greece) can be viewed at:

<https://prezi.com/view/PXhgaQoCgsIFNJVZO6AF/>

(last accessed on 19 September 2018).



Addressing the future of work and skills OECD Skills for Jobs data

Fabio Manca – Labour Market Economist

Employment, Labour and Social Affairs Directorate

Skills and Employability Division

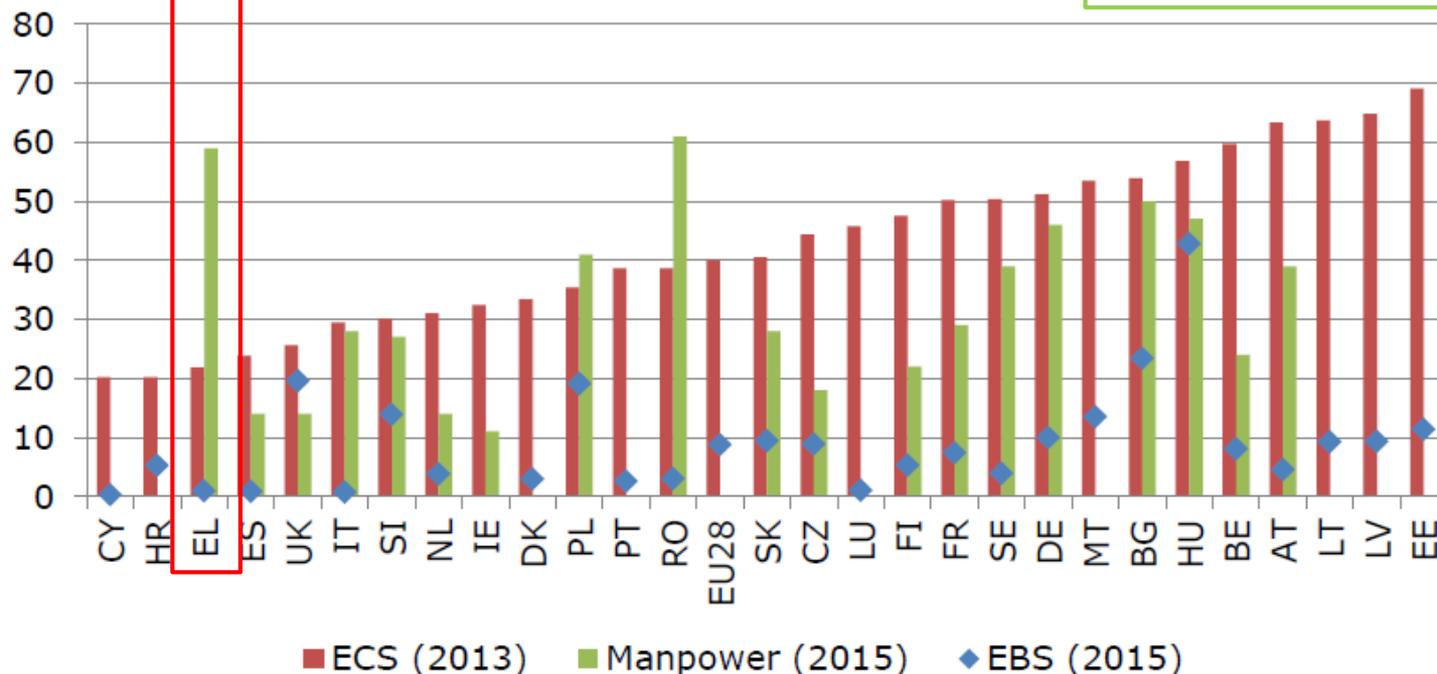


**Information on Skill Needs
and Shortages existed for
some time...but...**



Subjectivity of survey of employers is an important flaw

Subjective/ self-reported information



Notes: Countries sorted by ECS indicator. The European Company Survey (ECS) indicator reflects the share of employers who answer affirmatively to the question "Do you encounter difficulties in finding employees with the required skills?". The Manpower Talent Shortage Survey indicator measures the share of employers responding affirmatively to the question "How much difficulty are you having filling jobs due to lack of available talent?". The European Business Indicator considers the share of employers in the industry reporting that labour shortage is a major factor limiting production [Eurostat variable ei_bsin_q_r2, averaged over 4 quarters of 2015].



OECD Skills for Jobs database

Radically different approach from what is already existing

Objective and comparable information

Wage

Employment

Unemployment

Hours worked

Under-qualification

	Ranking occupations
1	Information and communications technology professionals
2	Science and engineering associate professionals
3	Business and administration associate professionals
4	Health professionals
...	...
...	...
...	...
30	Cleaners and helpers
31	Protective services workers
32	Personal care workers
33	Street and related sales and service workers





OECD Skills for Jobs database

Radically different approach from what is already existing

Objective and comparable information

Wage

Employment

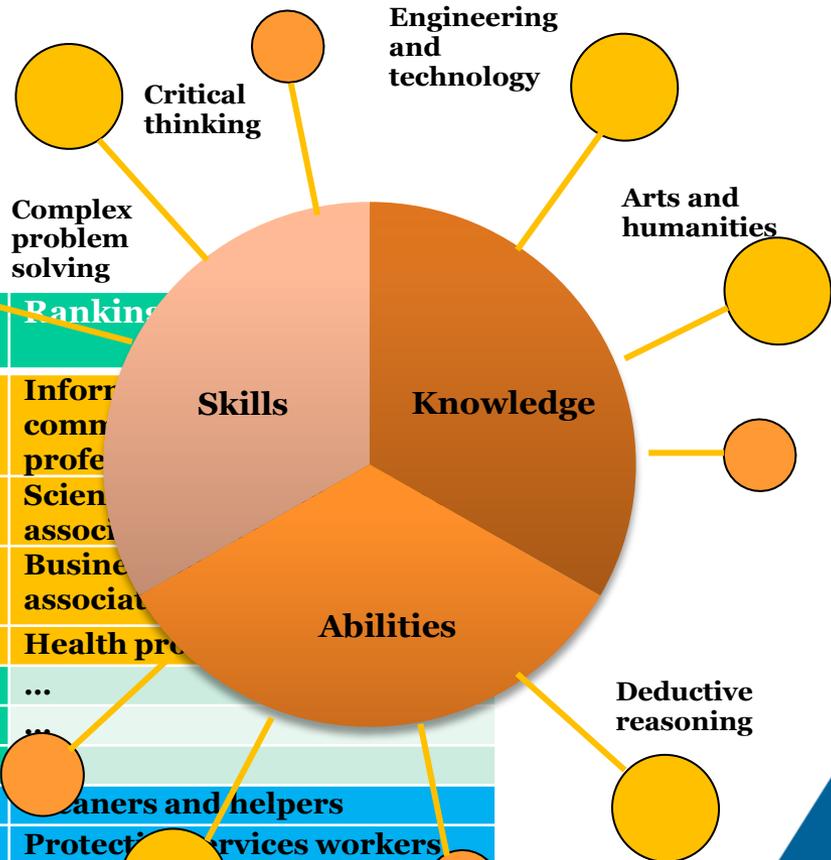
Unemployment

Hours worked

Under-qualification

O*NET

Ranking	
1	Information communication technology professional services workers
2	Scientists and associated professions
3	Business and administrative services workers
4	Health practitioners
...	...
...	...
...	...
30	Cleaners and helpers
31	Protective services workers
32	Personal care workers
33	Street and related sales and service workers



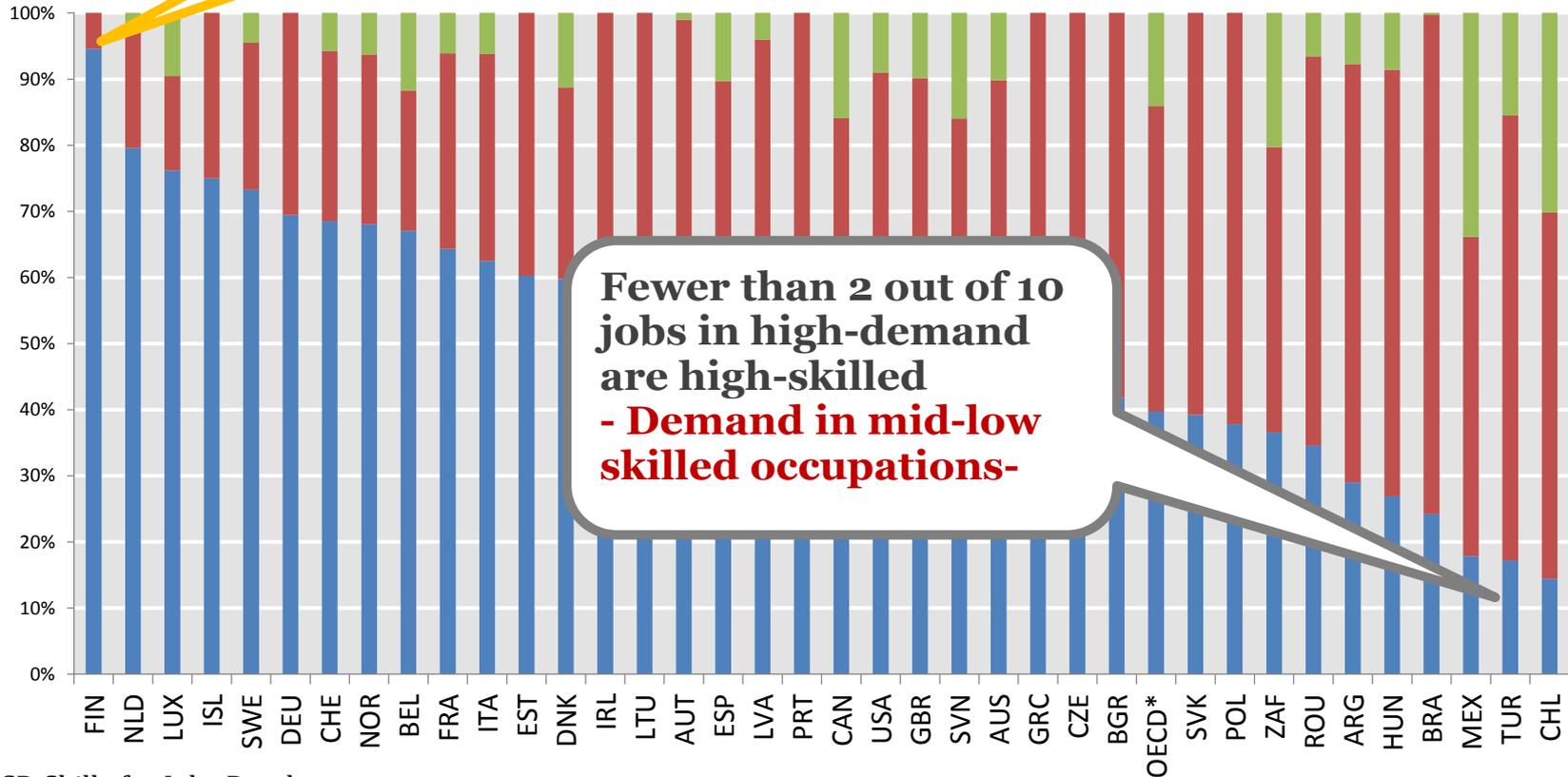


Occupational Shortages

Employment in high-demand that is “high-skilled”

9 out of 10 jobs in high demand are in high-skilled occupations

■ High-skilled ■ Medium-skilled ■ Low-skilled

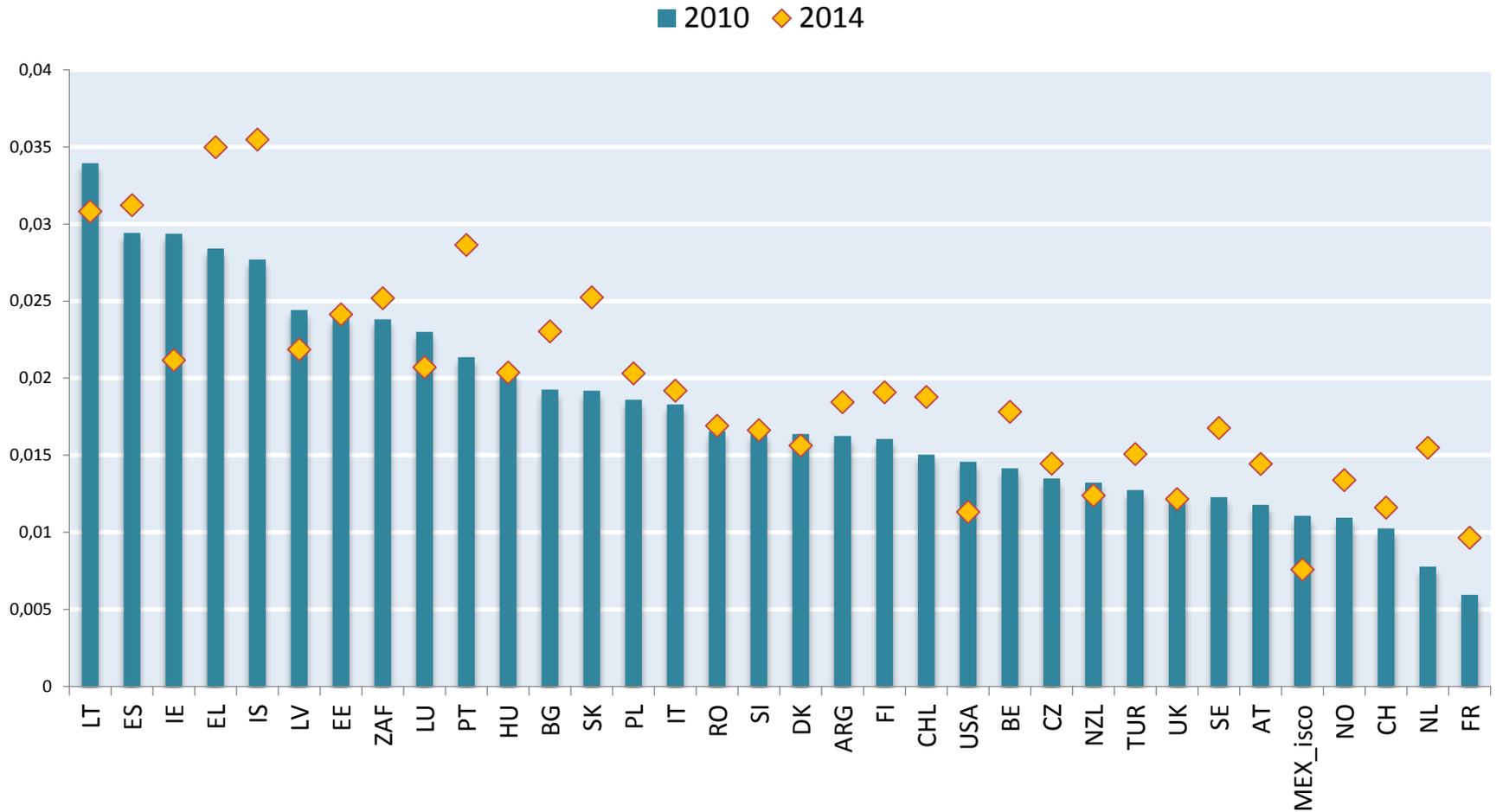


Fewer than 2 out of 10 jobs in high-demand are high-skilled
- Demand in mid-low skilled occupations-





Overall degree of occupational imbalances across countries

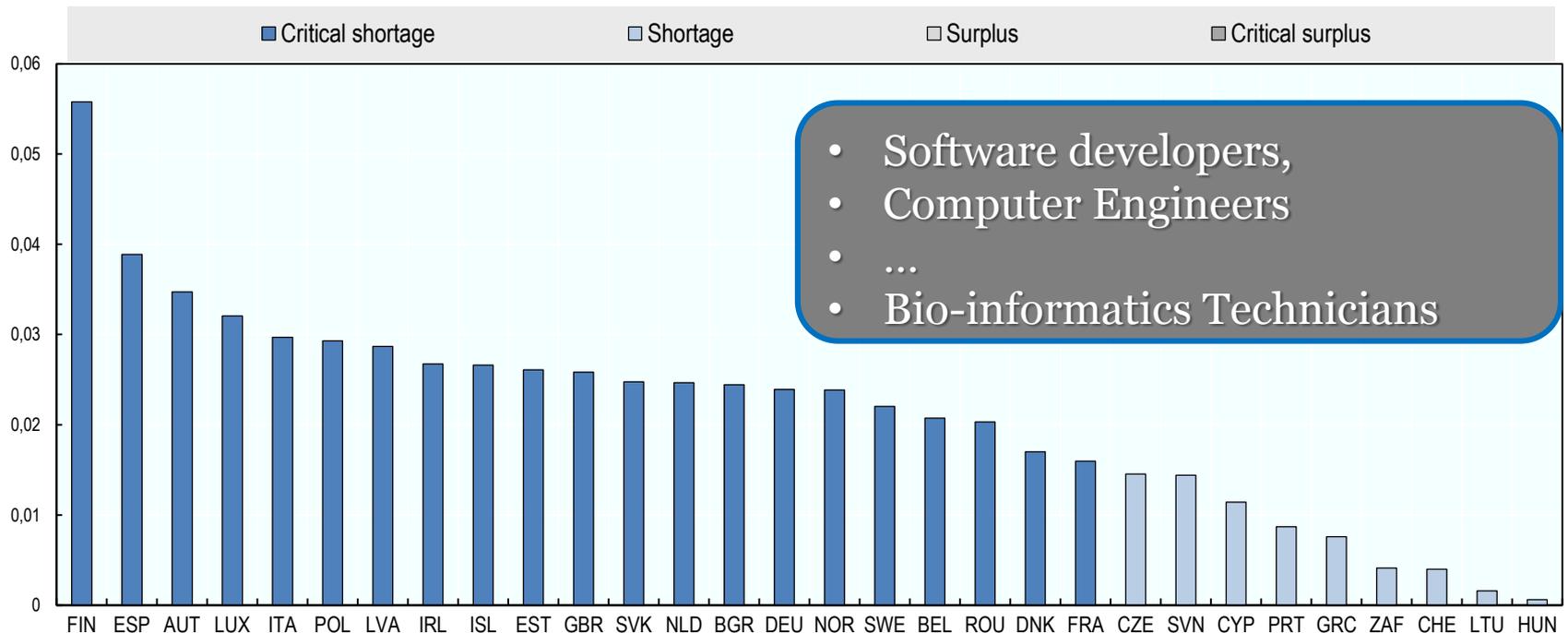




Skill shortages across EU countries

Most **occupations in High-Demand** require a strong command of Computers and Electronics Knowledge

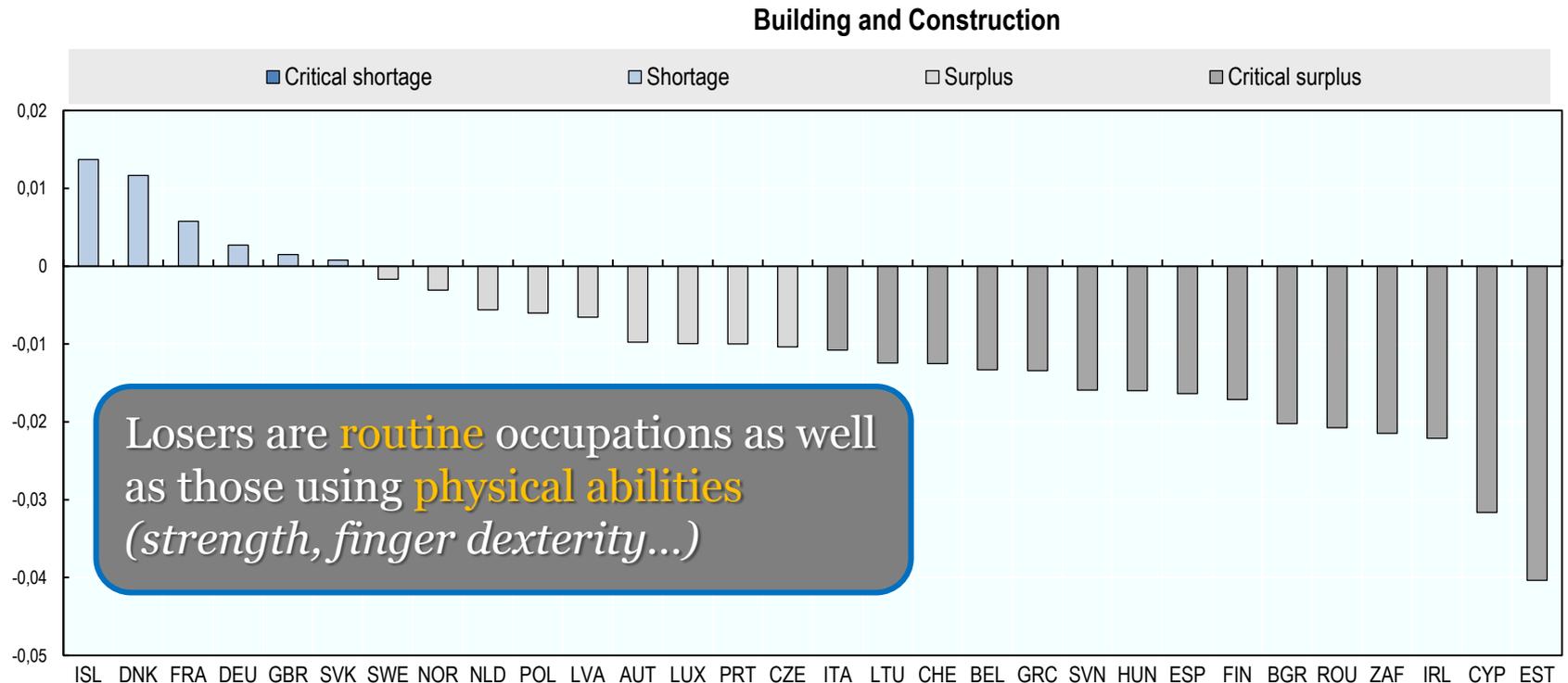
Computers and Electronics





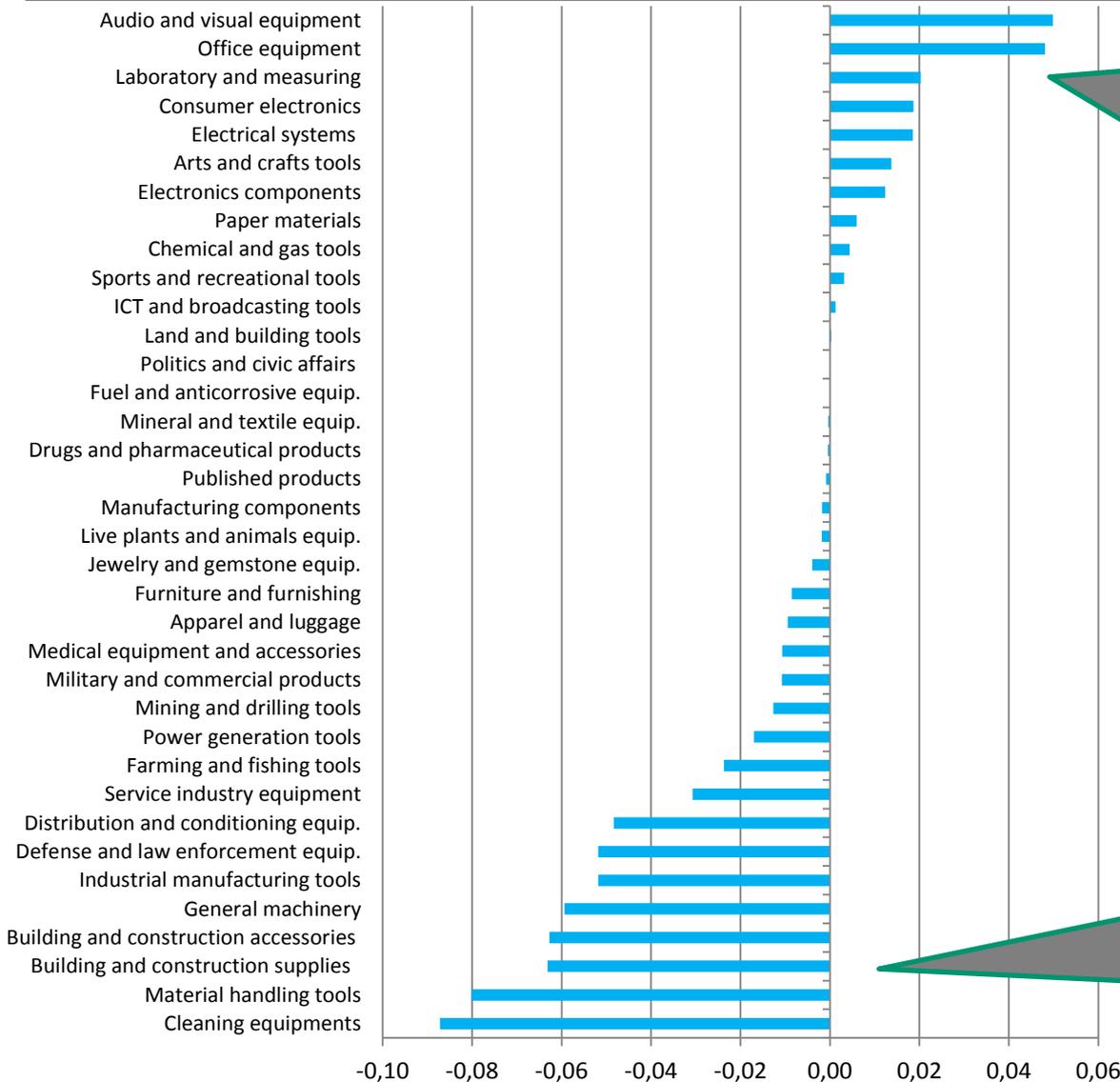
Skill shortages across EU countries

Changes in the labour market are also releasing pressure (demanding less) skills related to more traditional areas such as **Knowledge in Building and Construction**





Demand for the use of tools and technologies (>700 categories)

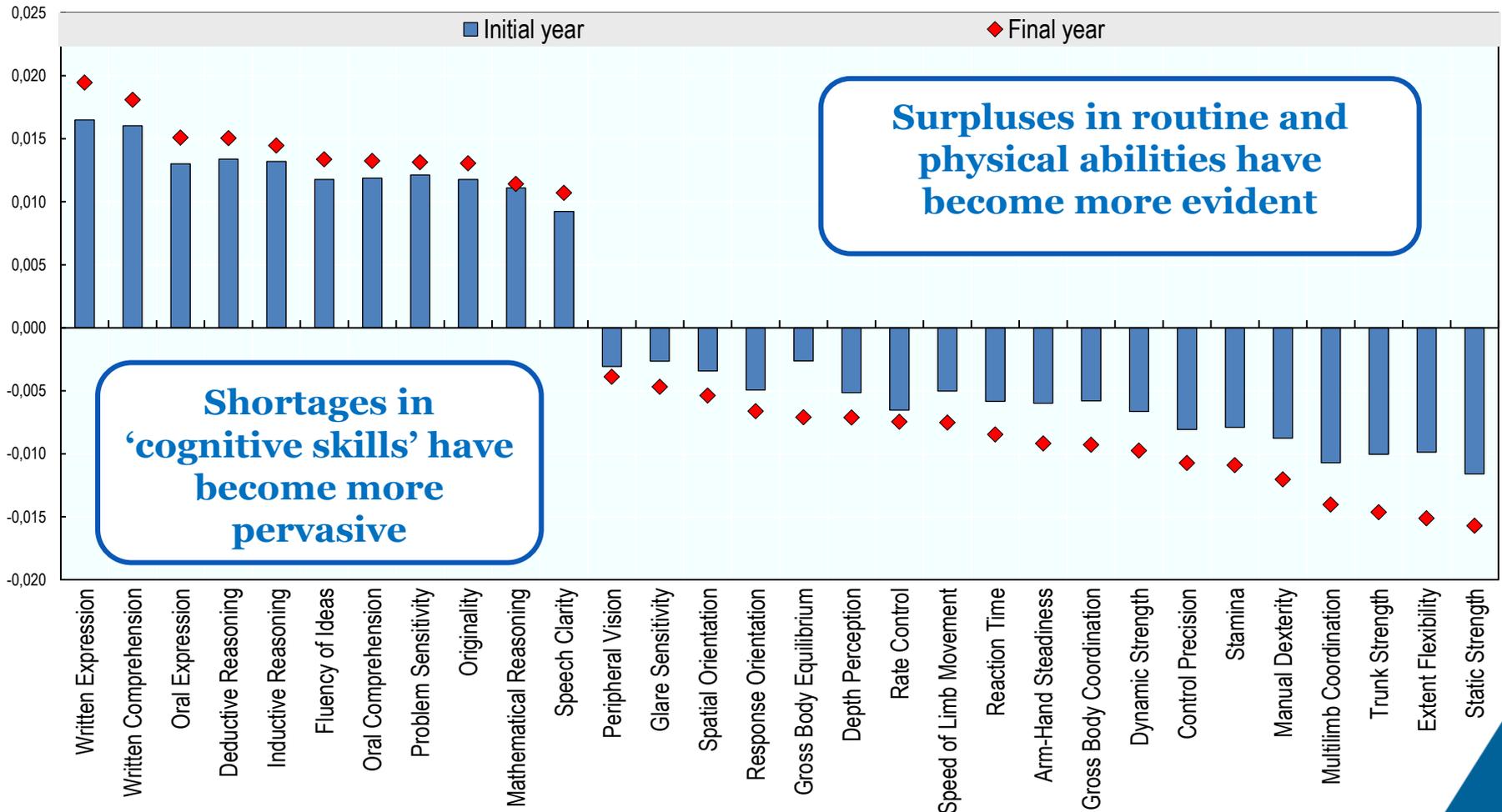


- Audio visual tools (screens, video conferencing, multimedia equip...) + computer electronics
- Office equipment
- Laboratory and measuring tools

- Janitorial equipment
- Heavy construction equipment and tools
- Industrial pumps and compressors
- Textile and fabric machinery

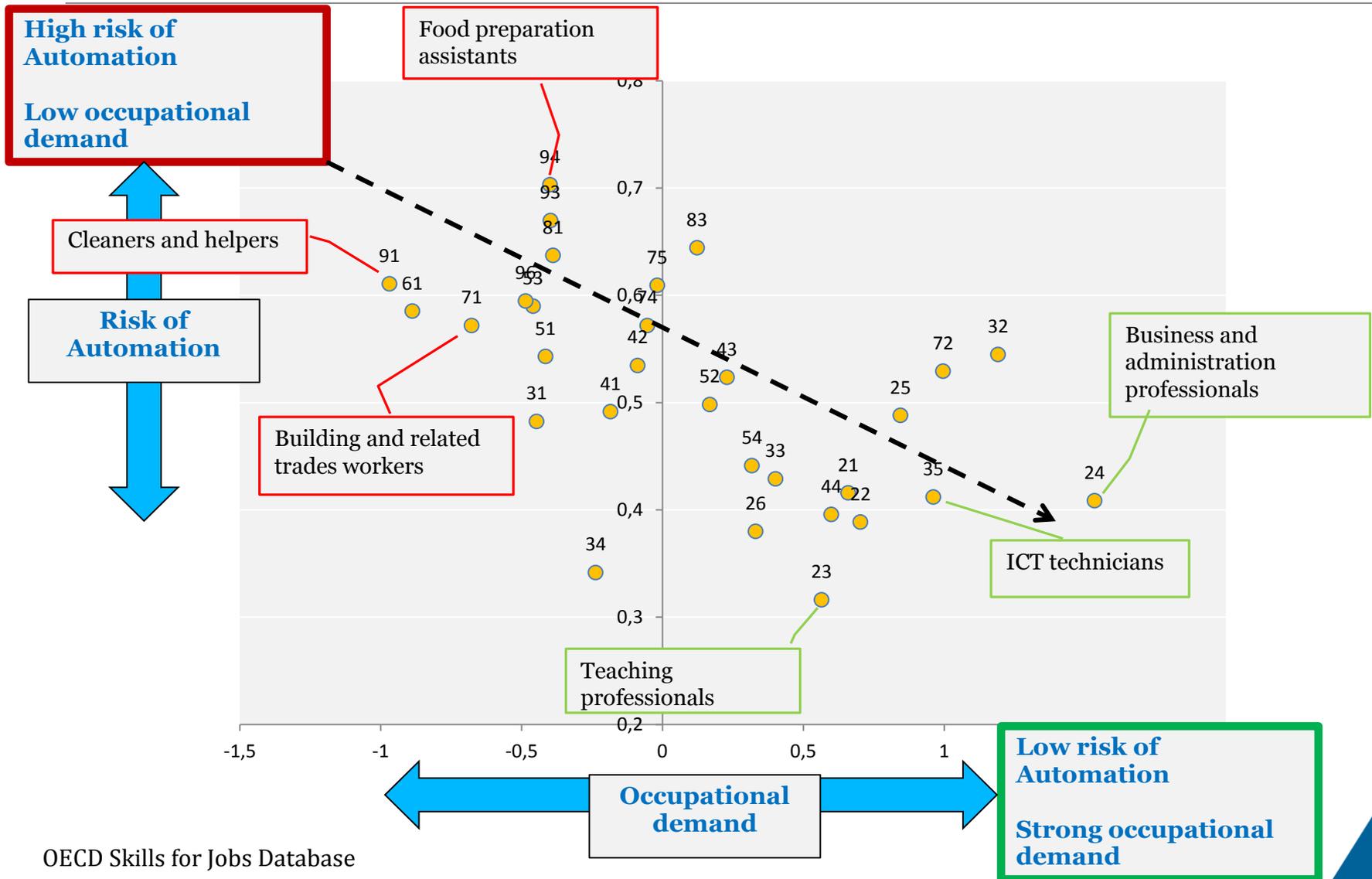


Time Evolution of Shortages and Surpluses



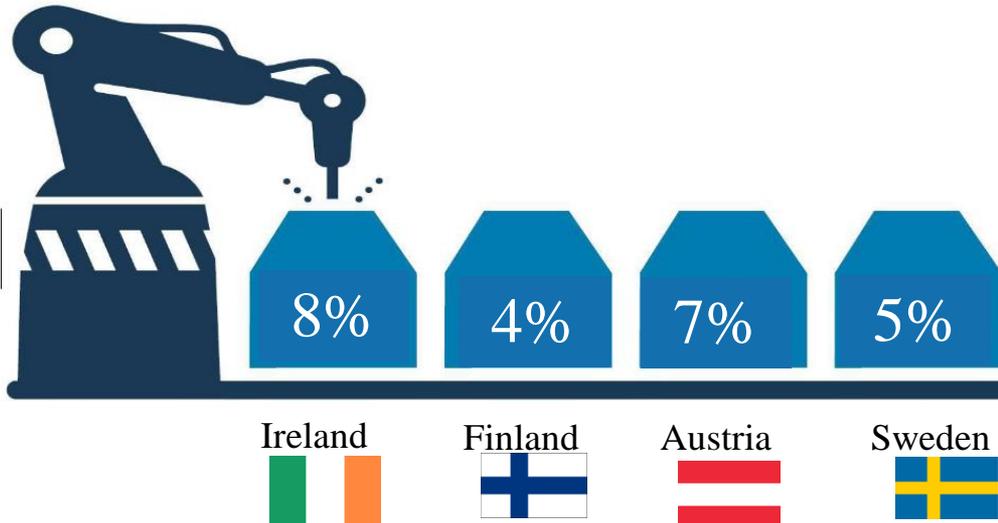
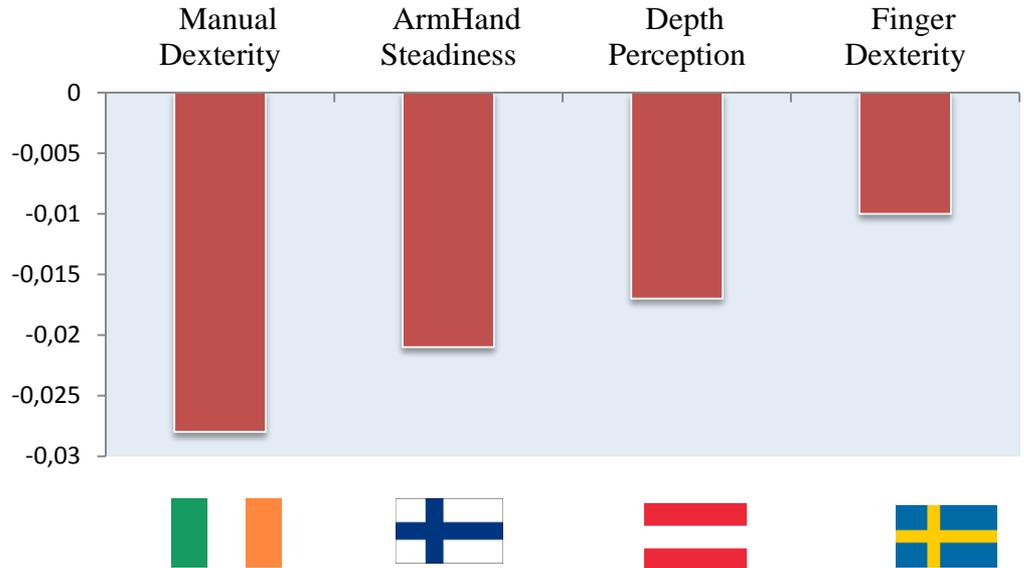


Automation and Occupational Shortage





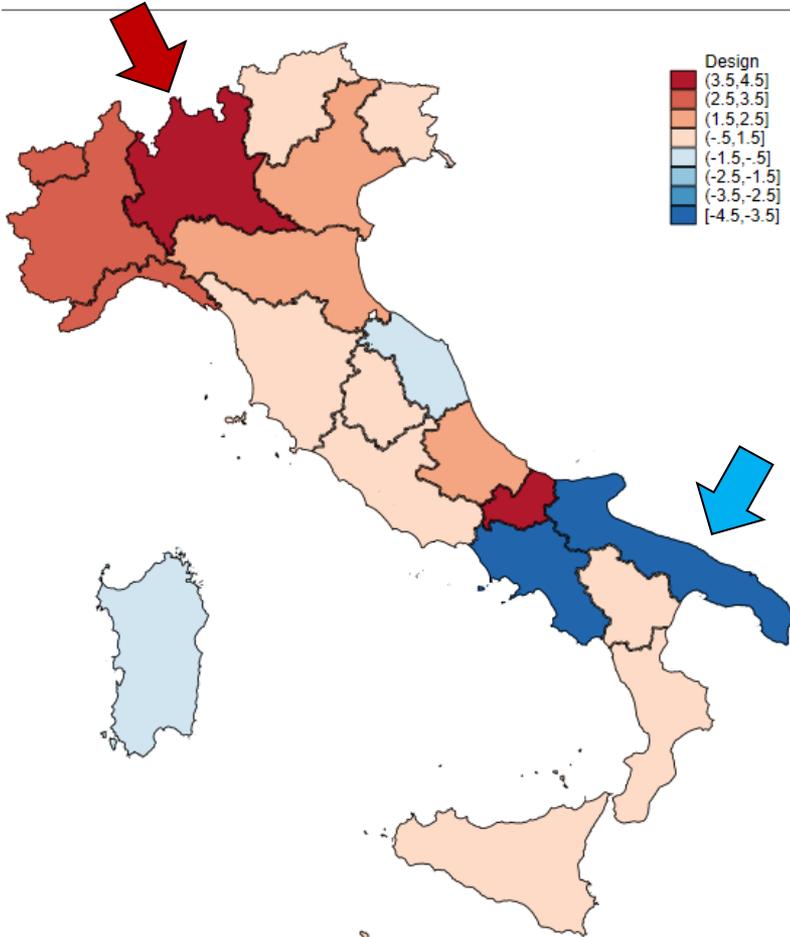
Robotics and skill needs



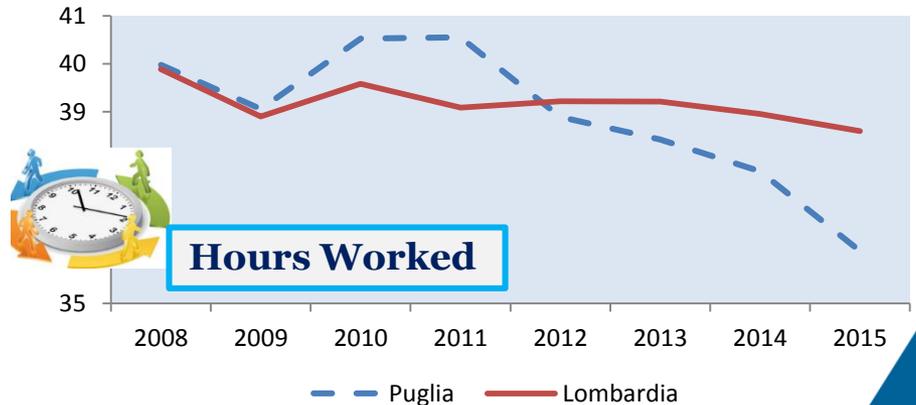
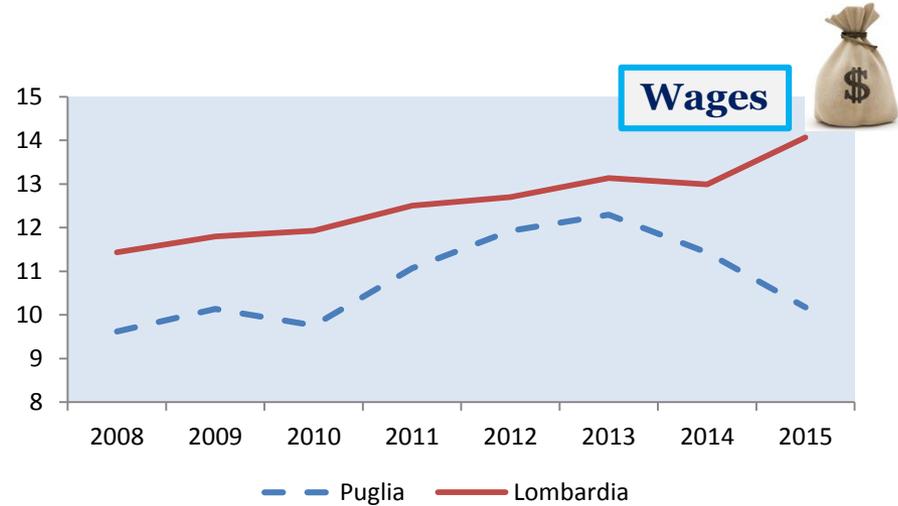
Robotics penetration
(1993-2013, per hour worked)



Regional results: Knowledge of Design



Science and Engineering Professionals





Conclusions

OECD Skills for Jobs is expanding

- *USA, Canada, Brazil, Chile, Peru, Argentina, Mexico, New Zealand, Turkey*
- *Regional disaggregation (when data is available)*
- *Sectoral disaggregation*

OECD Skills for Jobs is for FREE (!)

- *Download the data:*
<http://stats.oecd.org/Index.aspx?QueryId=77642>
- *Download the report (Getting Skills Right: Skills for Jobs Indicators)*
https://www.oecd-ilibrary.org/employment/getting-skills-right-skills-for-jobs-indicators_9789264277878-en

...or simply, take a look at the datavisualisation!

www.oecdskillsforjobsdatabase.org



OECD Skills for Jobs database

www.oecdskillsforjobsdatabase.org

OECD Skills for Jobs

What skills are in demand in your country...
[DISCOVER SKILLS](#)

... and what could be your next occupation
[CHANGE CAREER](#)

YOU ARE LOCATED IN **France**
[Change location ?](#)

Info Press & publications [Twitter](#) [Facebook](#) [LinkedIn](#)

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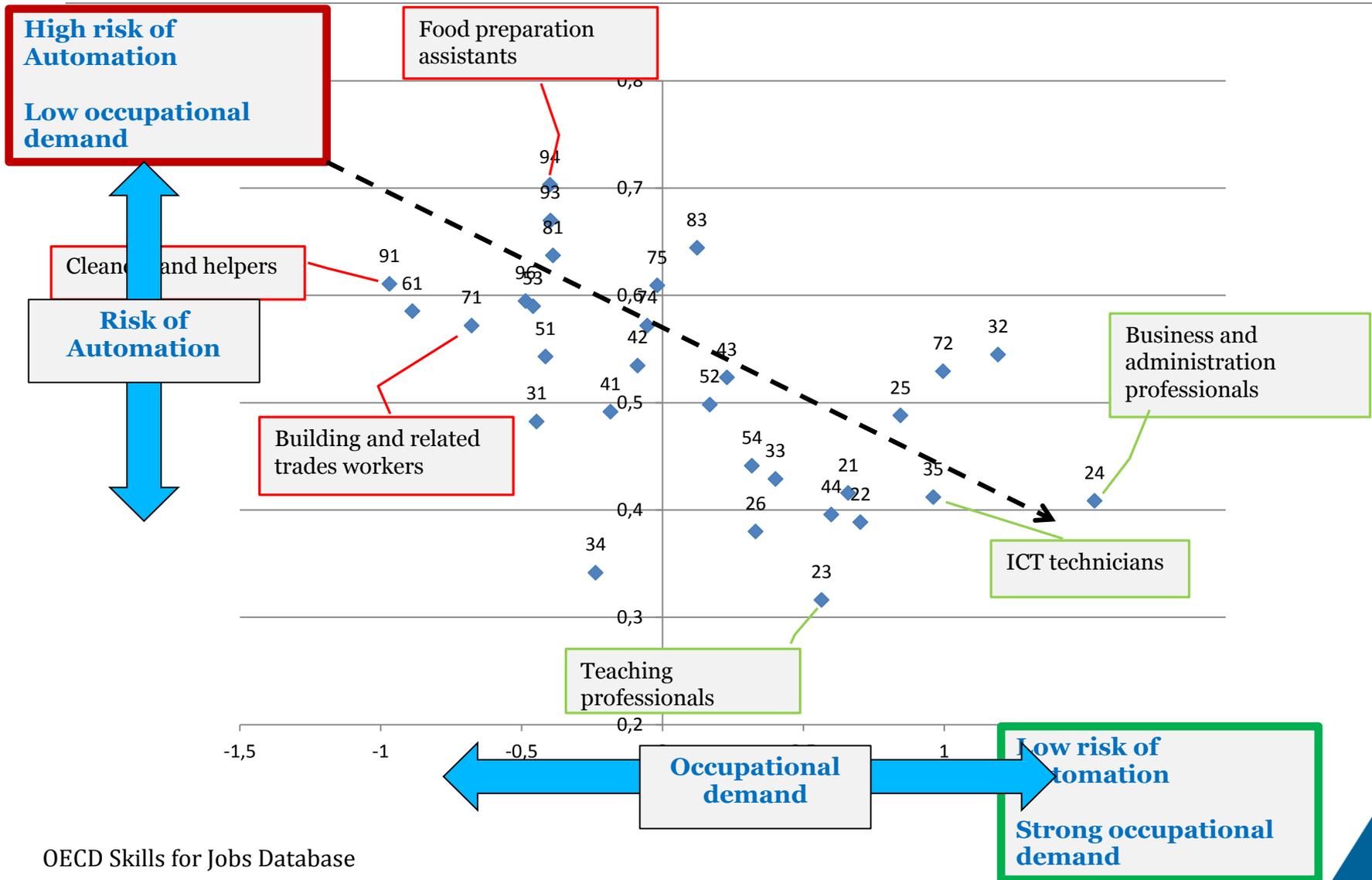


Skill needs and emerging mega-trends





Automation and Occupational Shortage





What is behind the demand for the knowledge of **Psychology**?

Browse by O*NET Data

Knowledge — Psychology Save Table (XLS/CSV)

Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.

Sort by:	Importance ▲	Level	Code	Occupation	
100	98	19-3039.01	Neuropsychologists and Clinical Neuropsychologists	🌟 Bright Outlook	←
100	97	19-3031.03	Counseling Psychologists	🌟	
100	96	19-3031.02	Clinical Psychologists	🌟	
100	88	19-3031.01	School Psychologists	🌟	
99	93	21-1022.00	Healthcare Social Workers	🌟	
99	93	21-1014.00	Mental Health Counselors	🌟	
98	94	29-1066.00	Psychiatrists	🌟	
98	90	19-3032.00	Industrial-Organizational Psychologists		
97	94	29-1141.02	Advanced Practice Psychiatric Nurses	🌟	
97	92	29-1125.01	Art Therapists		
97	91	21-1013.00	Marriage and Family Therapists	🌟	
97	89	21-1011.00	Substance Abuse and Behavioral Disorder Counselors	🌟	
96	93	21-1023.00	Mental Health and Substance Abuse Social Workers	🌟	
96	90	25-1066.00	Psychology Teachers, Postsecondary	🌟	
95	88	29-1125.02	Music Therapists		
95	79	21-1012.00	Educational, Guidance, School, and Vocational Counselors	🌟	
94	89	25-1113.00	Social Work Teachers, Postsecondary	🌟	←
93	81	29-1199.04	Naturopathic Physicians	🌟	
92	79	29-1069.08	Physical Medicine and Rehabilitation Physicians	🌟	
91	88	29-1062.00	Family and General Practitioners	🌟	
91	82	29-1122.00	Occupational Therapists	🌟	
89	86	29-1171.00	Nurse Practitioners	🌟	←
89	70	29-9092.00	Genetic Counselors	🌟	
88	71	21-1021.00	Child, Family, and School Social Workers	🌟	
87	86	29-1125.00	Recreational Therapists		
86	77	17-2112.01	Human Factors Engineers and Ergonomists	🌟	
86	74	21-1093.00	Social and Human Service Assistants	🌟	←
85	78	25-1072.00	Nursing Instructors and Teachers, Postsecondary	🌟	
85	75	29-1161.00	Nurse Midwives	🌟	
84	79	43-4051.03	Patient Representatives	🌟	

🌟 Bright Outlook

[Show all occupations](#)





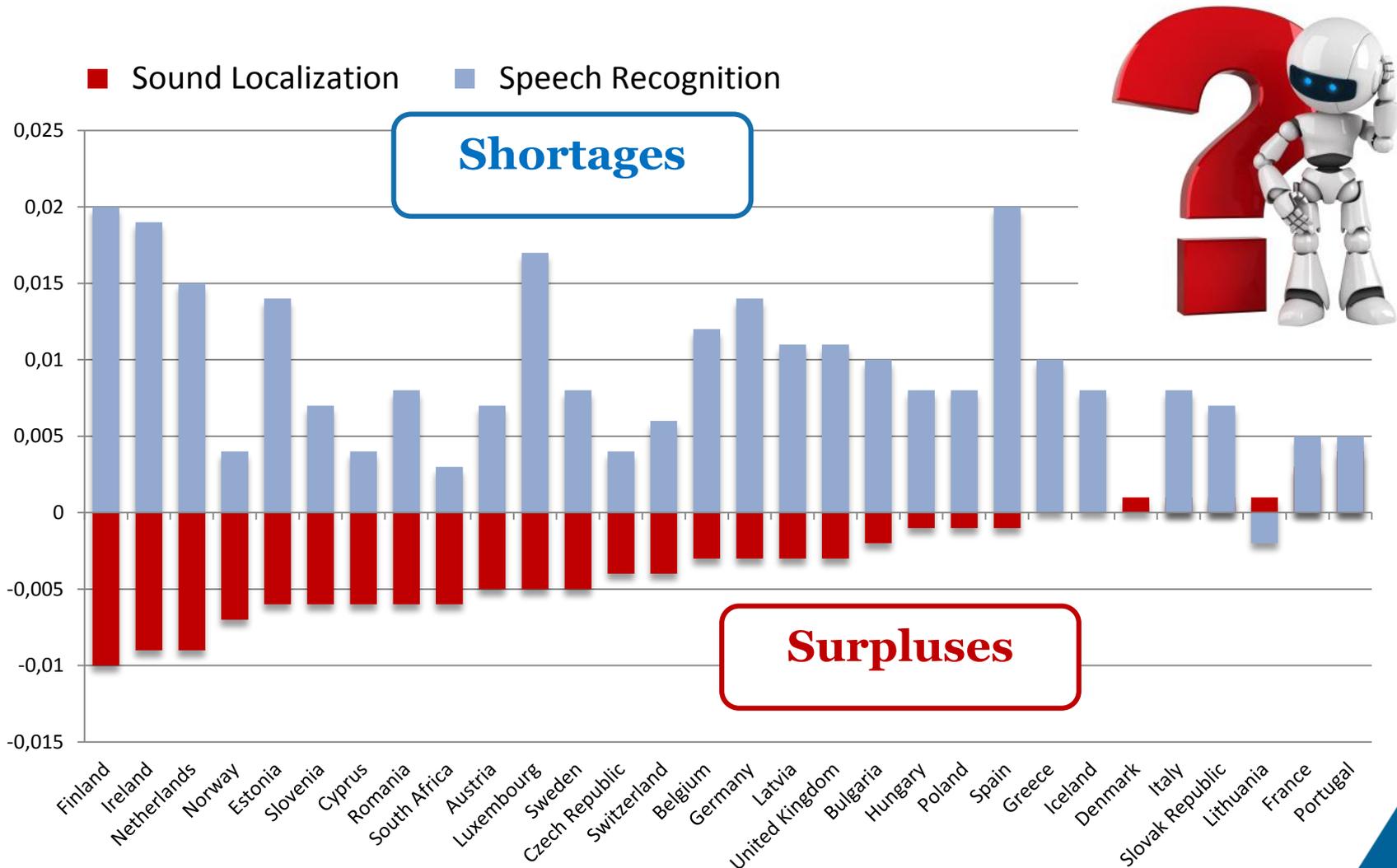
Definitions

Knowledge statements refer to an **organised body of information** usually of a factual or procedural nature which, if applied, makes adequate performance on the job possible. A body of information applied directly to the performance of a function.

- *Skill* statements refer to the **proficiency (manual, verbal or mental) to manipulate data or things**. *Skills* can be readily measured by a performance test where quantity and quality of performance are evaluated, usually within an established time limit. Examples of proficient manipulation of things are skill in typing or skill in operating a vehicle. Examples of proficient manipulation of data are skill in computation using decimals; skill in editing for transposed numbers, etc.
- *Ability* statements refer to the **power to perform an observable activity at the present time**. This means that abilities have been evidenced through activities or behaviours that are similar to those required on the job (e.g., ability to plan and organise work). Abilities are different from aptitudes as the latter only relate to the potential to perform the activity.

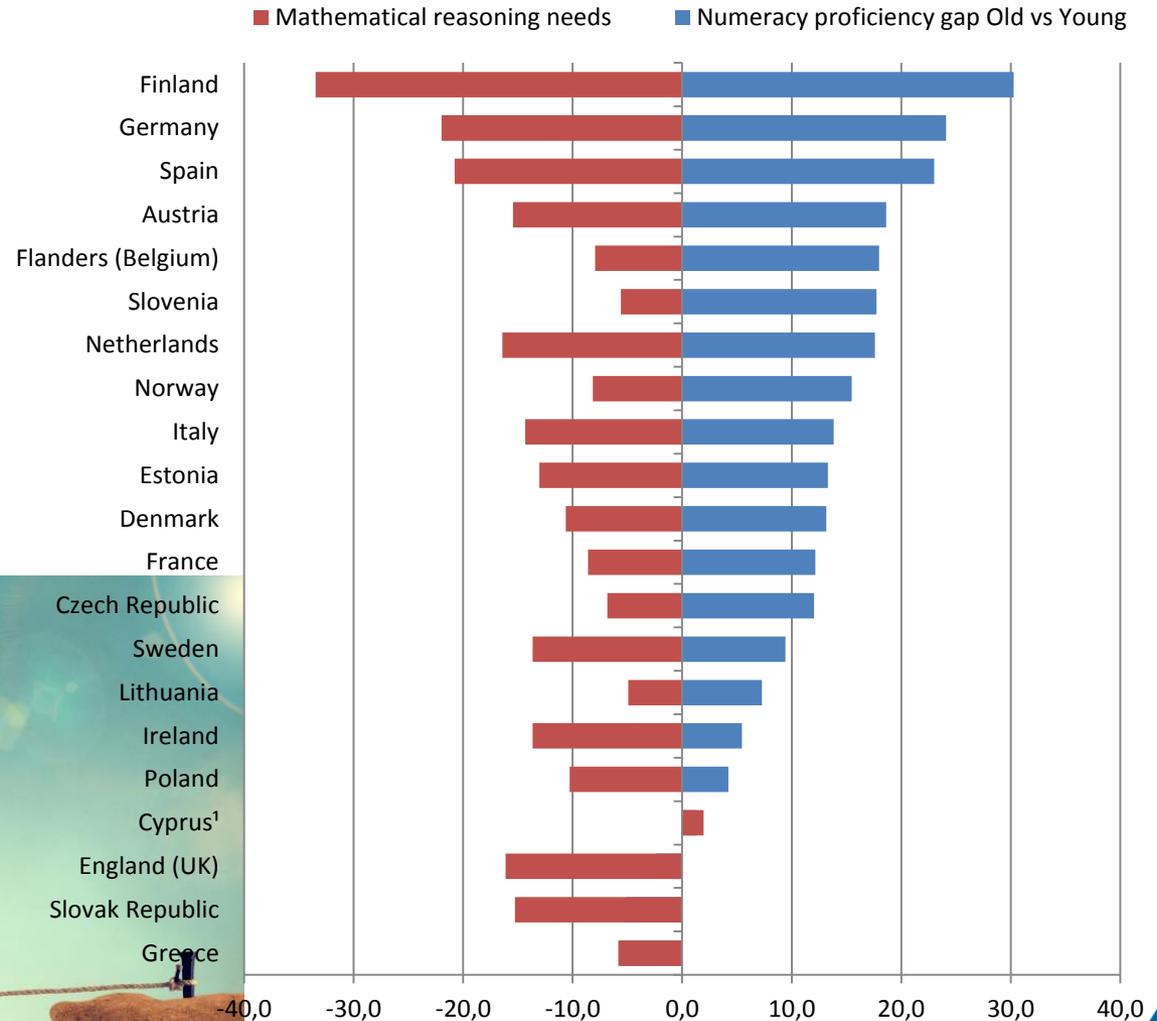


Mega-trends and skill needs





Mega-trends and skill needs





Funded by the
Erasmus+ Programme
of the European Union

Strategies for Upskilling People with Low Qualifications to Improve Their Employability

SKILLS FOR THE FUTURE: LABOUR MARKET, EDUCATION & VET

Eugenia Atin

Exeter, UK · September 11, 2018



UNIVERSITY OF
STIRLING

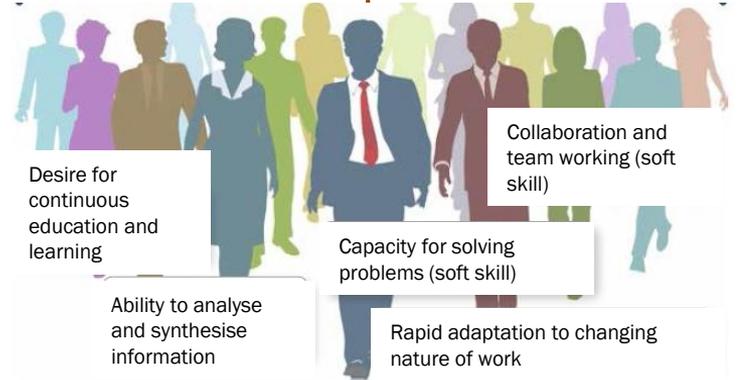


Context

Automation, Digitalization and Artificial Intelligence

Productive processes

Provision of services



Impact on the Labour Market

Disappearance of certain professions carried out mainly by people with low qualifications

Increase in the demand of certain professionals and the appearance of new professions

New difficulties in a Europe with an increasingly aging workforce

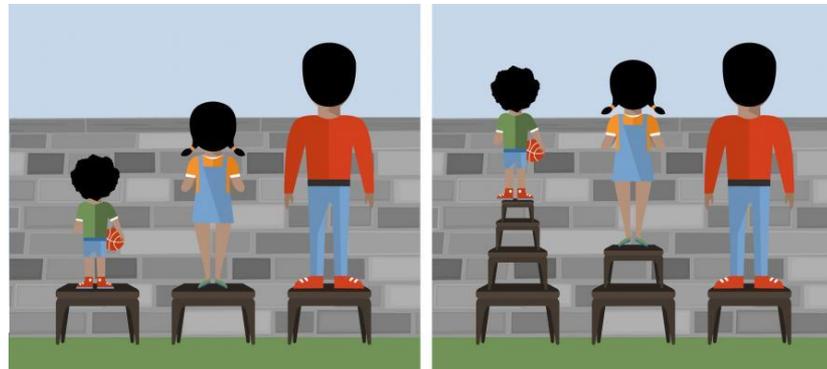
Our project



Persons with low qualification at risk of exclusion

ULTIMATE OBJECTIVE

Improve the employability of people with low qualifications and at risk of exclusion to be active agents in the labour market, increase their social cohesion and achieve a society with less inequalities



Partners

Erasmus + is the European programme in the fields of education, training, youth and sport for the period 2014-2020.

Basque Country



UK



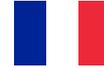
Germany



Czech Republic



France



Italy



PROJECT COORDINATOR:

- PROSPEKTIKER (SPAIN)

PROJECT PARTNERS:

- LANBIDE- BASQUE EMPLOYMENT SERVICE (SPAIN)
- UNIVERSITY OF EXETER- MARCHMONT OBSERVATORY (UNITED KINGDOM)
- IWAK UNIVERSITY OF FRANKFURT - INSTITUTE FOR ECONOMICS, EMPLOYMENT AND CULTURE (GERMANY)
- NARODNÍ VZDĚLÁVACÍ FOND - NATIONAL TRAINING FUND (CZECH REPUBLIC)
- UNIVERSITY OF STIRLING (SCOTLAND)
- UNIVERSITY OF MILAN BICOCCA (ITALY)
- CEREQ - CENTER FOR STUDIES AND RESEARCH ON QUALIFICATIONS (FRANCE)

How?

1. Identifying re-qualification strategies based on job opportunities derived from:

- The digitalization of the economy, the aging of the population
- Replacement needs resulting from the replacement of workers due to future retirements

2. Making the resulting information a tool to be used in decision-making regarding employment and vocational training policies.

Project Phase 1 (2017)

QUANTITATIVE ANALYSIS

1 - CHARACTERIZATION OF THE POPULATION WITH LOW QUALIFICATION

Sources

- Labour Force Survey
- Contract records

Selection of sector and target group

2 - IDENTIFICATION OF THE ECONOMIC SECTOR OF INTEREST

Sources

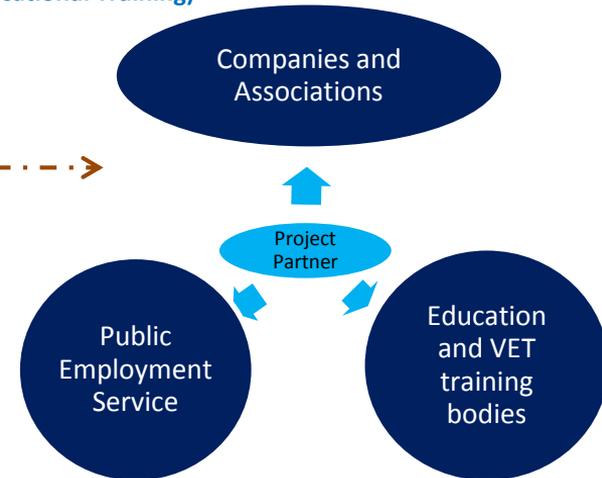
- CEDEFOP (European Center for Vocational Training)
- SKILLS PANORAMA
- NATIONAL

QUALITATIVE ANALYSIS

INTERVIEWS

- Companies that hire personnel to work in the selected sector
- Associations that work with the specific collective selected
- Vocational training centers that offer training to work in the selected sector
- Public employment services executing agents of employment policies

Report by regions with their diagnosis of the situation, their sector of interest, obstacles and good practices detected in the structure of the group with low qualifications



Selected Sectors

SELECTED SECTOR AND REASONS FOR THAT APPROACH		
BASQUE COUNTRY	SOCIAL CARE	<ul style="list-style-type: none"> The significance of the sector and its positive evolution the last few years; The positive projections for the coming years, due to both expansion demand and replacement needs; The suitability of the sector for low skilled people, since it already hosts an important number of jobs related to this group of people and continues to be one of the most important sectors in the inclusion to the labour market .
CZECH REPUBLIC	MANUFACTURING	<ul style="list-style-type: none"> It is a sector with the largest share in employment and of strategic importance with positive evolution the last few years; It is a sector currently employing the second highest share of people with low education level and the sector with the highest number of low skilled people in total and is expected to employ low skilled in the future as well; Although it is expected to decline over the period 2015-2025 (change by -1,5 %) it has one of the highest expected replacement demand.
FRANCE	LOGISTICS AND METALLURGY	<ul style="list-style-type: none"> The mobilization of "low skilled" workers remains substantial. National Strategy focuses on "human capital development" by improving the readability of jobs and training and simplifying qualification paths. There is a generational challenge. Activities, sectors and trades, called "sensitive", in the sense that low-skilled employment is important and is under serious threat, particularly as a result of the digital transition. New technology could be both a source of job losses and also an opportunity for new products and jobs The establishment of these sector over a region structures the local economy is to the point of becoming a territorial issue
HESSE	LOGISTICS (TRANSPORT AND STORAGE SECTOR)	<ul style="list-style-type: none"> It is one of the four sectors employing the most people, the overall employment situation is good and it is still growing . The share of low-skilled employment in the transport and storage sector is significant (about 19.3% of workers). It is increasingly difficult to find skilled workers and to retain them in a sustainable manner . Due to this, the further qualification of low-skilled people remains an important approach to meeting the labour force demand.
LOMBARDY REGION	MANUFACTURING	<ul style="list-style-type: none"> This sector is already suffering transformations for instance Industry 4.0 and the gig economy and the risk of the polarization of employment Technical and specialist skills will continue to be needed, but to be adapted to a constantly evolving technological context will require constant investment in training and updating to avoid their rapid obsolescence.
SCOTLAND	EARLY LEARNING AND CARE SECTOR	<ul style="list-style-type: none"> Significant policy-driven expansions currently being implemented and appears to be planned on inclusive principles and aims to offer opportunities for disadvantaged and excluded groups of individuals; Positive labour market projections for the coming years, due to both expansion and replacement demands; Likely suitability for employment of low skilled people, as it requires a variety of diverse roles: managerial, professional and support roles. More difficult to be easily replaced by automation; It offers opportunity for innovation and a cultural change can be transformed into a more diverse and desirable context to work in.
SOUTH WEST ENGLAND	CONSTRUCTION	<ul style="list-style-type: none"> It has been a significant source of economic growth over the last years and it is expected that this will continue. It is expected to generate new employment opportunities over the next 10 years and big job opportunities to replace those leaving (more than one-third of the workforce in the region is currently aged 50 and over) One-fifth (21%) of the workforce has low skills –higher share than other sectors. Ensuring that the sector attracts and retains sufficient numbers of suitably qualified workers will be a significant challenge underpinning the region's wider economic development objectives.

Infographics

SOUTH WEST UK Construction Sector

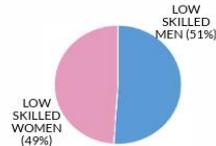


CHOSEN TARGET:
Low Skilled Workers in Constructions

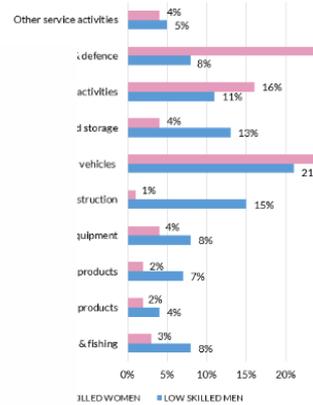


South West total population: 5,443,186
Low skilled people: 561,063 (10,3%)

- ▶ % of unemployed low skilled people on total low skilled people = 6.9%
- ▶ % of unemployed low skilled people on active low skilled people = 20.4%



Distribution of Low Skilled people by Sectors and Gender



A sector of opportunities

The construction sector offers abundant employment opportunities for people with no or low level qualifications working in occupations such as ground workers, general operatives (including electricians' mates, trainee carpenters), steel and concrete frame fixers and concrete pourers.

PROJECTIONS in CONSTRUCTION!
In the next years the creation of **121,000 jobs** is expected for expansion and replacement demand



MAIN BARRIERS

in the sector to increase the participation of the low-skilled in the labour market and in training



BAD IMAGE of the SECTOR

Negative perceptions of the industry among potential recruits



NO RESOURCES for TRAINING

Lack of resources within further education to support learners with low skills and retrain adults



SALARY

Low pay for apprentices unattractive to adults

powered by

Project Phase 2 (Jan- Jun 2018)

WORK GROUPS

Agents involved come together to

- * Discuss concerns, problems to face, possible measures to be put in place to improve the educational offer and adapt it to the needs presented by the economical leaders of the sector
- * Improve the way to approach the target group



TOOLKIT - TOOL BOX

Reports by regions

- Conclusions drawn from the triple helix groups
- Recommendations
- Concrete strategies that should be developed
- Best practices to carry out to requalify the group taking advantage of the opportunities offered by the selected sector

Accessible to all interested agents



How to guides

- Strategic approaches to increase the attractiveness of the sector for the low skilled people
- Strategic approaches to help adapt public aid and programmes to greater participation by low-skilled people in the sectors
- Policymakers: Supporting the long term unemployed back into work
- Skills Utilisation and strategic approaches to drive up employer demand for low skilled and disadvantaged groups
- Complex approach to increase the employability of socially excluded low skilled people
- Career guidance information tool
- New competences and new skills brought by the technological change
- Support low-skilled workers in training to cover the need of the industry
- Strategic approaches to increase the digital skills level of the low skilled people
- Strategic approaches to improve the existing training offer for low skilled people
- Strategic approaches to improve recruitment, training and on-boarding
- Strategic approaches to improve employee retention and training
- Overcoming the perceived low status of a sector and increasing its attractiveness to the low-qualified people
- Developing a strategic action plan for skills among low qualified people
- Strategic approaches to adapt training to low-skilled workers in the strategic sectors
- Strategic approaches to adapt training in the sector for the low-skilled unemployed



Project Phase 3 (Jun- Dec 2018)



Funded by the
Erasmus+ Programme
of the European Union



Co-funded by the
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of the European Union



EUROPEAN STRATEGY - REPLAY-VET Strengthening Key Competencies of Low- Skilled People in Vocational Education and Training to Cover Future Replacement Positions

DRAFT - 10 Sept 2018

SUMMARY

Outline of report

This report highlights lessons and recommendations from the REPLAY-VET project on improving participation of low-skilled groups of workers. These include reducing barriers to vocational training, improving attractiveness of jobs, careers, professionalization and labour conditions of the sectors in which low-skilled/low-qualification people work.

The project considered opportunities and constraints related to professional training and qualifications for low-skilled groups across the EU and across a range of sectors.

Key Themes

Effective use of labour market information & intelligence

Greater use of national and regional labour market indicators can help guide the development of targeted EU-wide training programmes and domestic & cross-border recruitment efforts.

Improving the attractiveness of the sectors to workers

New ways of attracting and training new recruits and those working in other sectors is important for less attractive sectors with high labour demand and socio-economic potential.

Collaboration and Cooperation

Collaboration between regional actors and private or not-for-profit employers can help re-brand an unattractive sector and make lasting changes to working models and labour conditions.

Communicating career progression opportunities clearly

National sector-wide recruitment campaigns need to better communicate the long-term career progression opportunities, as well as on short-term working terms and conditions.

Realising and utilising the value of soft skills, human interactions and social intelligence for professional development

An important step in addressing and satisfying demands for a well-qualified workforce is recognizing the value of soft skills human interactions and social intelligence.

Diversity in the workplace, heterogeneous approaches to selection, recruitment and training

Employers, educational institutions and training providers need to provide training, and routes into training, that are tailored and suited to diverse sets of workers with varying skills, living conditions, levels of responsibilities and engagement, including the low-skilled and disadvantaged.

**New reports to help
policymakers to focus their
efforts on successful strategies to
benefit those with low skills
levels**

Key themes

- Effective use of labour market information & intelligence
- Improving the attractiveness of the sectors to workers
- Collaboration and Cooperation
- Communicating career progression opportunities clearly
- Realising and utilising the value of soft skills, human interactions and social intelligence for professional development
- Diversity in the workplace, heterogeneous approaches to selection, recruitment and training

Key recommendations

- Encourage a greater use of labour market information and intelligence
- Better adaption of training and skills development programmes to the different circumstances of low-skilled people
- Increase the effectiveness of skills acquisition amongst low-skilled people entering or already in the sector
- Improve the attractiveness of sectors with employment opportunities and develop and communicate clearly the long-term career opportunities and pathways that it offers

Toolkit

www.replayvet.eu

Occupational Kit with guides and recommendations for policy makers, VET providers, sectorial agents, career advisors and other stakeholders.

CONTEXT



SECTORS



THEMES



EU RECOMMENDATIONS



Funded by the
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Thank you very much
for your attention
e.atin@prospektiker.es

SKILLS FOR THE FUTURE: LABOUR MARKET, EDUCATION & VET

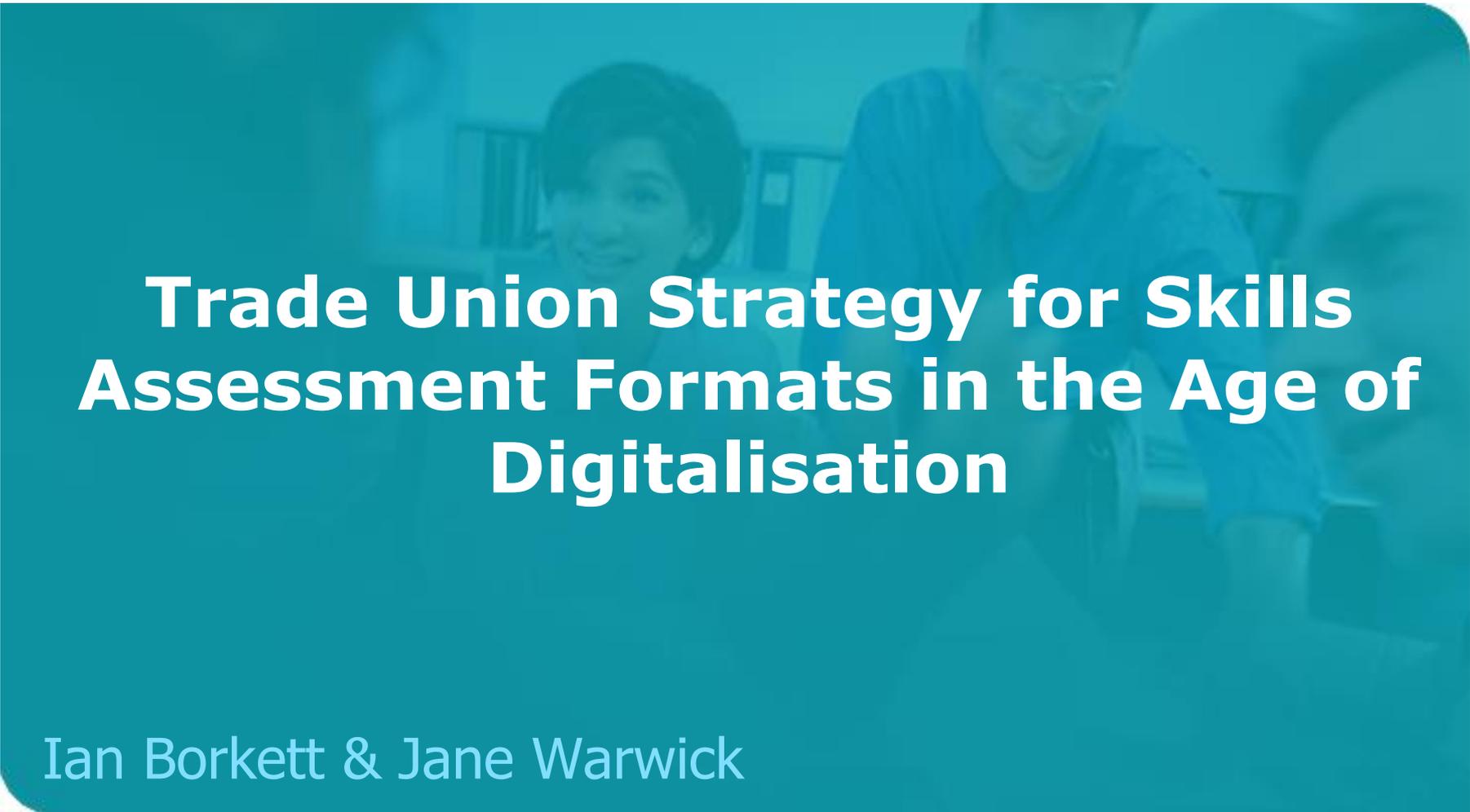
Eugenia Atin

Exeter, UK · September 11, 2018



UNIVERSITY OF
STIRLING





**Trade Union Strategy for Skills
Assessment Formats in the Age of
Digitalisation**

Ian Borkett & Jane Warwick

Content

- **Setting the scene**
- **Rainbow Years Mid-life Skills Review project**
- **Value My Skills online skills assessment tool**
- **Ambitions and expectations**

Setting the scene

- Predicted European labour force will decrease by an average of two million every year up until 2030
- Solutions need to be found to make work more sustainable for older workers
- 17.3 million or 18.2% of older people (aged 65 and over) in the EU remain at risk of poverty or social exclusion
- People aged 50+ exiting the labour market find it more difficult to re-enter

Why are unions involved?

- Individuals need options and the skills to remain in the labour market
- Anticipating the future needs of mid-life workers
- Organisations can benefit significantly from retaining older workers
- Economic and technological impact on older workers
- Age discrimination
- Union Learning Rep role – trusted intermediaries

Rainbow Years Mid-life Skills Review Project

The project aims to:

- Train a network of mid-life skills champions
- Design and deliver an online training course for mid-life skills reviewers
- Develop an online skills assessment tool to support mid-life skills reviews
- Produce digital badges to recognise skills attainment

The challenges ahead

- Engaging hard to reach low skilled workers
- Time-off to undertake mid-life skills reviews
- Re-skilling and high quality Information Advice and Guidance
- Lack of employer buy-in
- Cost of training
- Risk of automation and AI
- Workplace culture barriers

Mid-life Skills Review

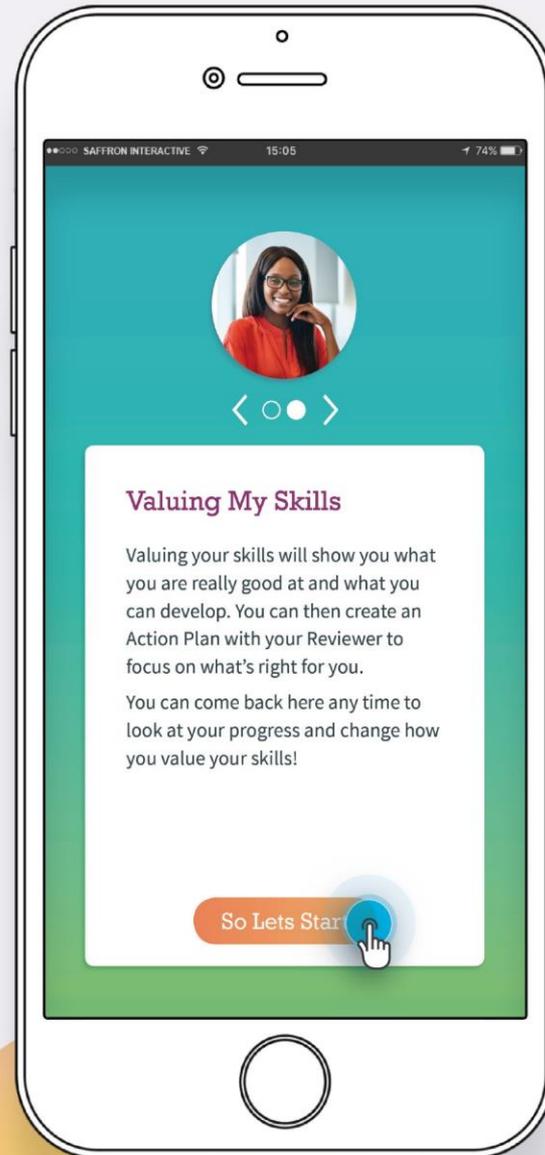
- Aimed at people aged 50+
- Structured meeting to review skills, competences and career options
- Main target are those with low levels of basic skills in literacy, numeracy and digital skills
- Impartial, safe and reflective space
- Skills/career action plan

Meet Anya

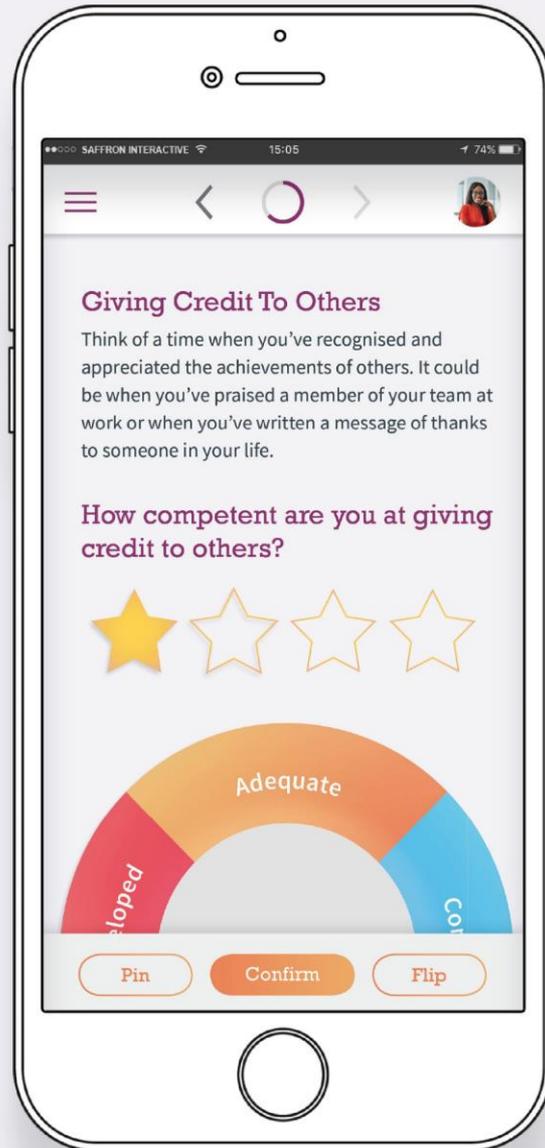
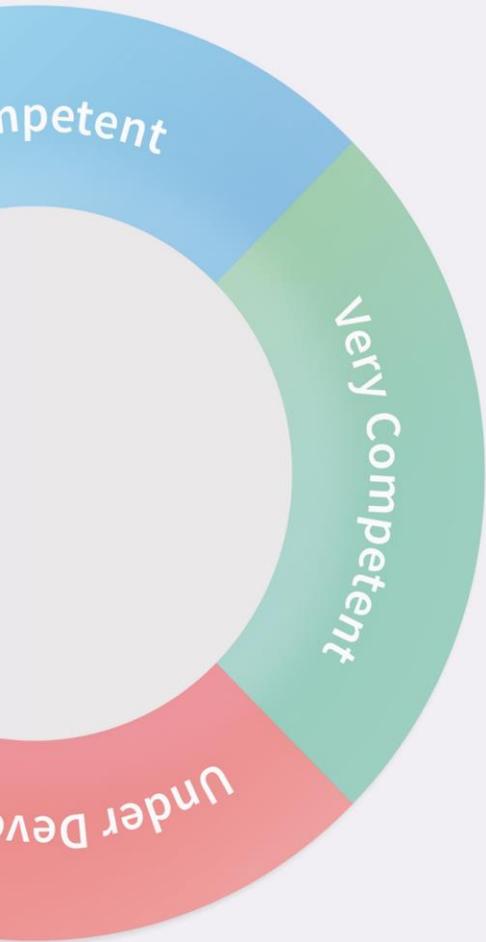
Hi, I'm Anya!

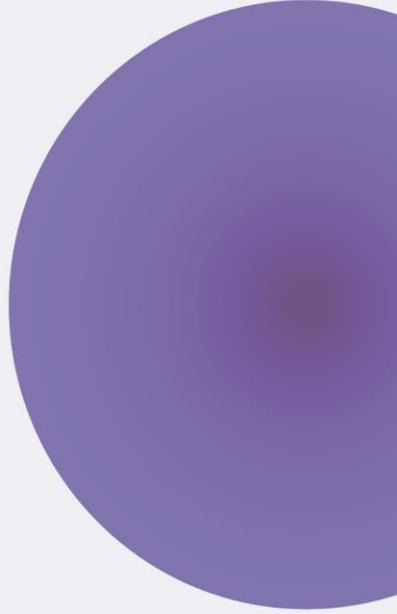
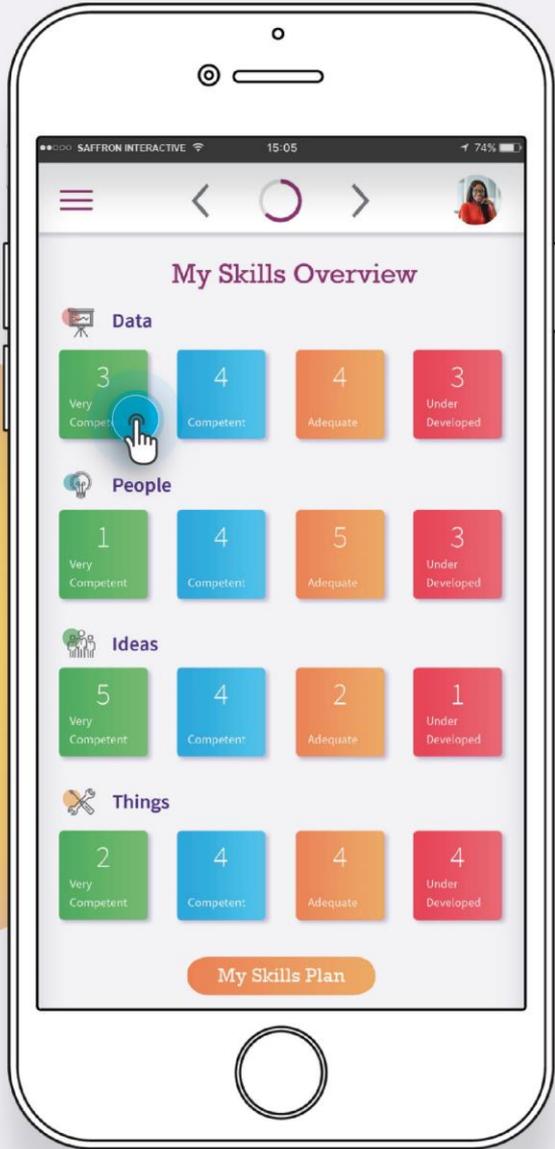
Well done on taking the time to review your skills. You have a lot of experience in and outside of work, so think about all the things you do... and value your skills!

If you get stuck on a question, just click on my picture for some hints and tips. Valuing your skills can give you a clear idea of what paths are open to you for a promotion, a new career or planning your retirement!



So Lets Star





Ambitions and expectations

- **An entitlement to a skills review at 50**
- **Enhanced employability and generic work skills evidenced by digital badges**
- **A new wave of trained mid-life skills reviewers**
- **Mid-life workers become more resilient to labour market changes**
- **Give workers career management skills and confidence to take charge of their working lives**
- **Digitally supported MLSR – key component of any future National Retraining Scheme offer**

Questions?

Ian Borkett e: iborkett@tuc.org.uk

Jane Warwick e: jwarwick@tuc.org.uk

www.unionlearn.org.uk



BIG DATA WORKING GROUP

Eugenia Atin

Silvia Dusi





About the ENRLMM big data working group

Observe the continuous developments in Big Data in the LM

Inform the Members of the Network regularly about the advancements

The Big Data Working Group involves experts from different countries

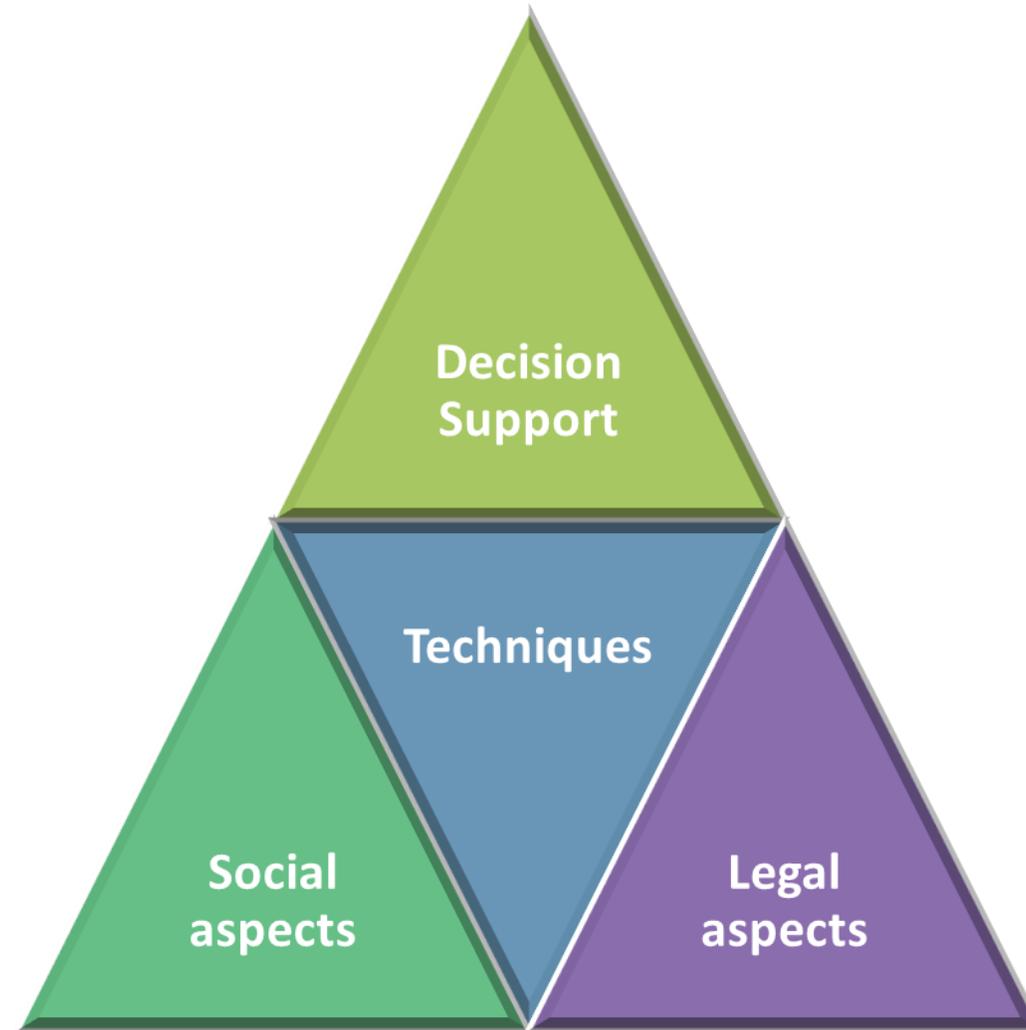
The experts represent data providers for regional labour market monitoring, researchers on the methodological, legal, ethical aspects



Objectives

- To observe
- To exchange information on the state of art in the usage of Big Data.
 - To make developments available to all Network Members
 - To improve skills and knowledge
 - To improve governance
 - To analyse the need of funds
 - To initiate strategic co-operations
 - To provide visibility of the Network

Topics





Research 2018

Improve our understanding of the digitalisation processes in European labour markets.

How is the increasing available Big Data is used in labour market monitoring?

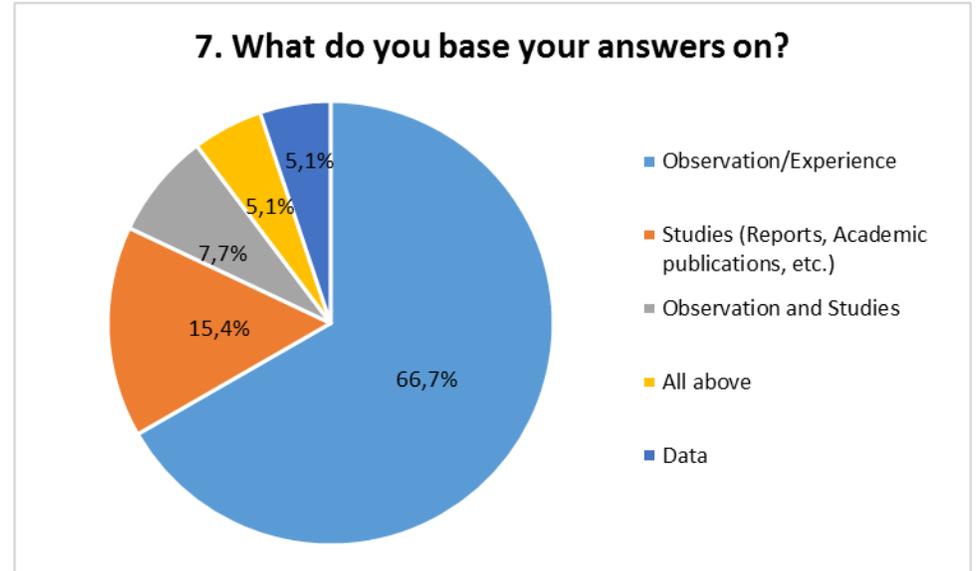
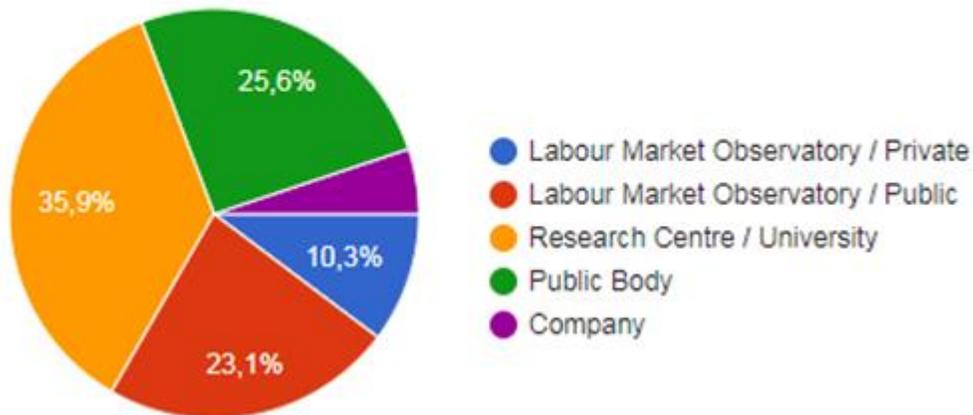
Survey exploring the perceived impact of digitalisation on the labour markets and observatories in European regions and localities.

We approached labour market experts who have an overview of the developments in the labour market in general and the trends related to the work of labour market observatories in particular.

The questionnaire

We interviewed 39 experts of the Labour Market

1. In which kind of organization do you work?



In the question over their knowledge base for answering the questionnaire the major part of the respondents said that it consists in Observation and Experience, and other on Studies

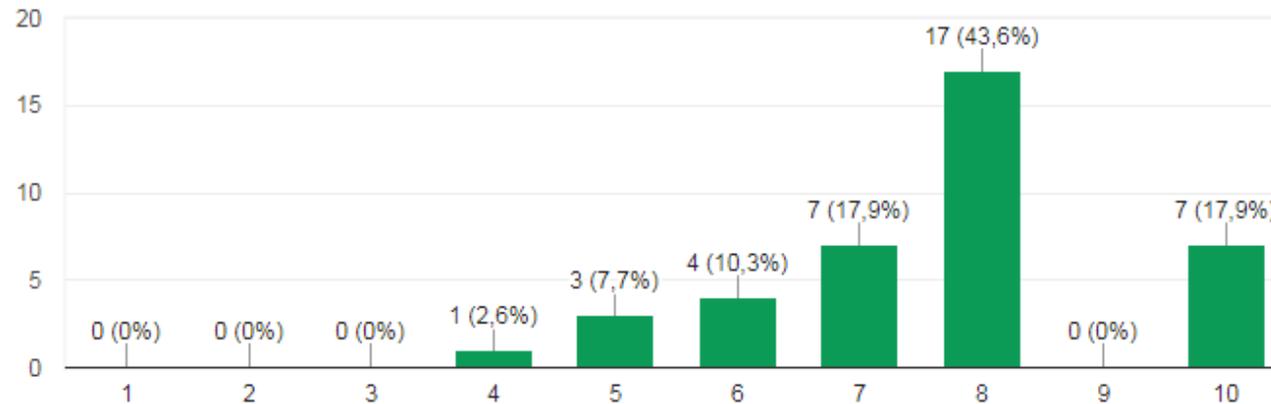


The impact of digitalization

The impact of digitalization is considered to be very significant (on a scale from 1 to 10 the 61,5% valued it as equal or higher 8, while the 89,7% gave a vote equal or over 6).

3. How would you grade the impact of digitalization in terms of importance on the occupations (1= none; 10= huge impact)?

39 risposte





4. On a scale from 1 to 10 how would you grade the impact of digitalization on the Occupational Areas?

Occupational area	Average score
ICT	8,9
Marketing & Communication Sales	8,23
Design, production and Logistics	8,1
Administration and Finance	7,79
Management	6,84
Human Resources	6,48
Procurement	7,36

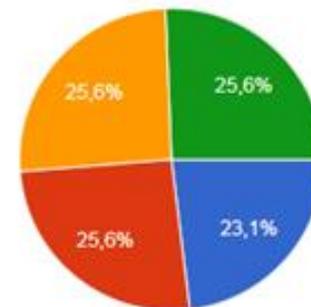
What kind of digital skills?

Among the umbrella term of «digital skills» we can distinct 4 different groups characterized as:

- **Applied and Management Skills** = ability to use tools and software to manage both operational and decisional processes
- **ICT Techniques Skill**= very specialized on solutions, platforms and programming languages
- **Basic Skill** = for everyday use of basic IT tools
- **Information Brokerage Skill** = for the use of IT tools aimed at corporate communication

There is not one group that proves to be more relevant, they are equally important in the opinion of the respondents.

5. In your opinion, which category of ICT skills is gaining more importance for the labour market?



- Information Brokerage Skills, as the ability to use ICT tools and platforms for data exchange and communication...
- Basic Information Skills, as the ability to use some ICT specific applications for supporting the individual professional...
- Applied/Management Informatics Skills refer to tools and software used...
- ICT technical skills refer to solutions, platforms and programming languages...



6. On a scale from 1 to 10 how would you grade the impact of each ICT skills category on the Occupational area of:

	Information Brokerage Skills	Basic Information Skills	Applied/Management Informatics Skills	ICT technical skills
MANAGEMENT	6,89	7,33	7,53	5,65
PROCUREMENT	7,02	7,17	6,81	5,92
ICT	7,94	7,76	8	8,94
DESIGN, PRODUCTION & LOGISTICS	7,33	7,71	7,81	7,48
HUMAN RESOURCES	7,12	7,61	7,2	5,53
ADMINISTRATION & FINANCE	6,84	8,07	7,82	6,53
MARKETING & COMMUNICATION / SALES	8,1	7,48	6,97	6,64



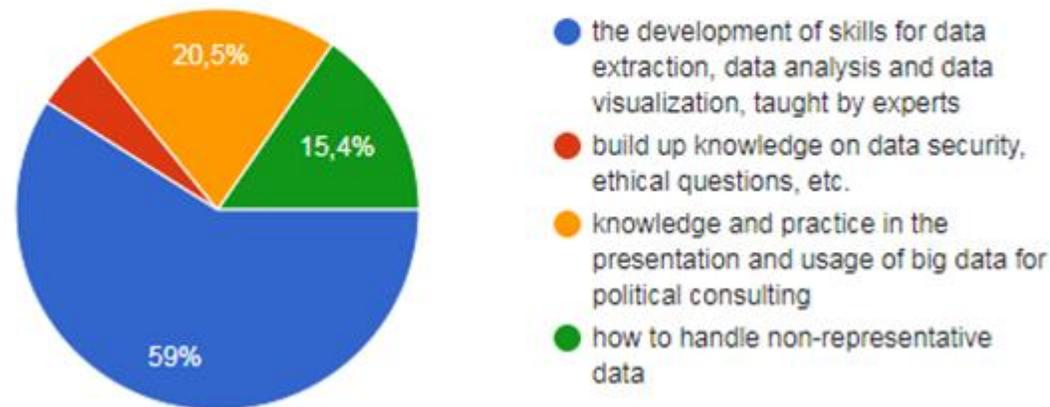
8. On a scale from 1 to 10 how would you grade the impact digitalization on your work within your regional or local labour market observatory?

Areas	
Data generation/extraction, data analysis, access to data, etc.	8,23
Skills of your employees in terms of technical skills for data extraction, for data analysis, for data visualization, interdisciplinary work	7,61
Infrastructure of your observatory like operating data-warehouse	6,94
Needs and demands of your customers or users in terms of types of data (request for big data from different sources) data formats, communication channels, time to deliver, etc.	6,73
Business model of your observatory and state of competition with other LMI providers	6,36

What support is needed?

10. Which type of support does your observatory need ?

39 risposte



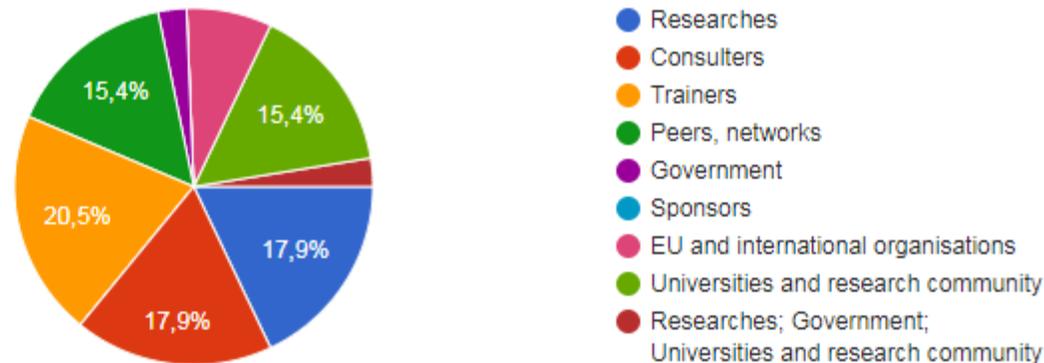
The major support needed in the opinion of the respondents is the development of skills for data extraction, analysis and visualization in forms of courses led by experts, followed by the necessity of gaining knowledge and practice in presenting and use big data to provide consultancy to policy makers.

Where the support should come from?

It is not clear where the support should come from, there is not a unique expectation about it

11. From who are you expecting support on this topic?

39 risposte

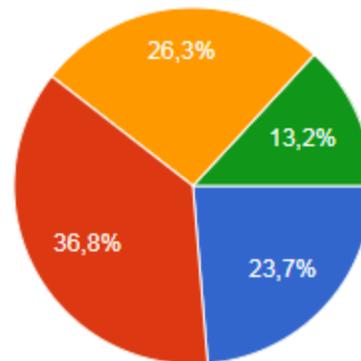


The expected challenges

The respondents indicate the budget as the main obstacle they will have to overcome followed by a problem regarding the human resources: the actual employees could not be ready to adapt themselves to new topics of investigations or to learn and apply new methodologies.

12. What challenges do you think you will have to face?

38 risposte

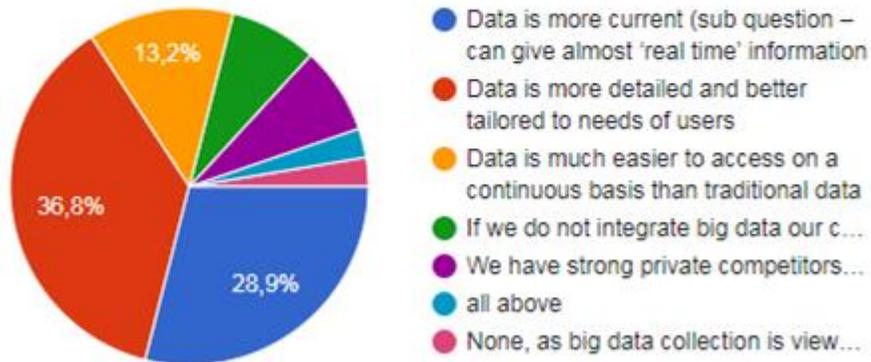


- Not adequate offers for support
- Too limited budget
- No readiness of the employees for adapting to the new topics/ methodologies/needs
- No strategy for further development of the observatory available

What improvements and where?

The advantages brought by BD in the work of the respondents are mainly the fact that data are more current and updated as well as detailed and tailored.

13. What is the relevance of Big Data for your reaserches/results/products?



Topics	
Occupations in general, occupations in IT, occupations in mathematics, IT, sciences and engineering	7,48
Hard skills/soft skills	6,94
(Formal) qualifications	6,37
Branches	6,21
Companies	6,05

The topics mostly impacted by Big Data are Occupations and Skills.



Final remarks

The BIG DATA novelty:

- Relevant
- Detailed, tailored and updated

The TECHNICAL implications:

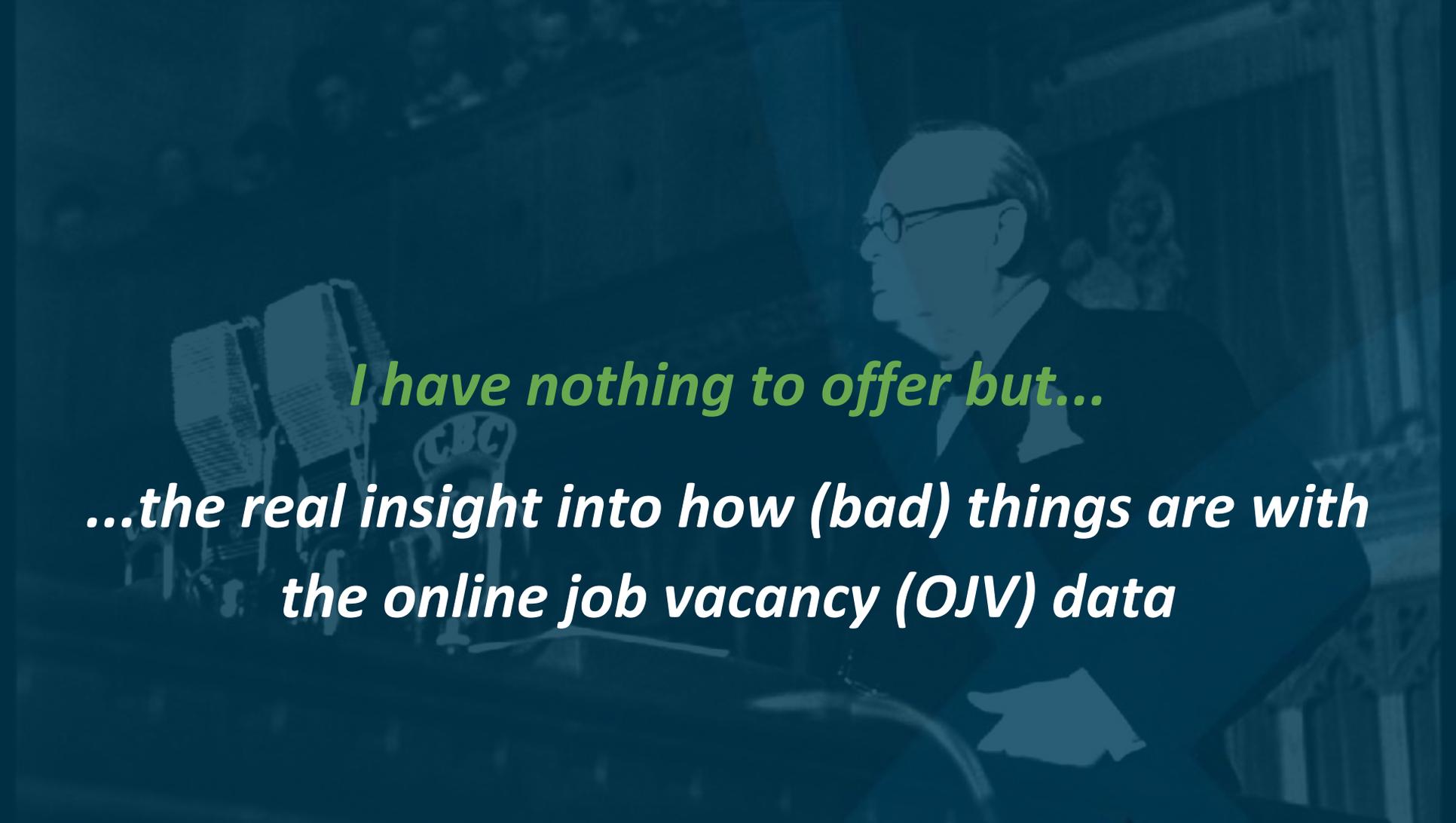
- Improvement of employees' skills
- Availability of tools and adequate budget

The resulting KNOWLEDGE:

- Aimed at supporting policies designed on the users needs

Using Big Data for Monitoring the Labour Market *The Perspective of Statistical Offices*

Frantisek (Fero) Hajnovic
frantisek.hajnovic@ons.gov.uk
Big data team

A man in a dark suit and glasses is speaking at a podium. He is looking to his left. In front of him are several microphones, including one with a CBC logo. The background is slightly blurred, showing what appears to be a news studio or conference room setting. The entire image has a blue tint.

I have nothing to offer but...

*...the real insight into how (bad) things are with
the online job vacancy (OJV) data*

What is this about?

- Work package 1, ESSNet for Big Data

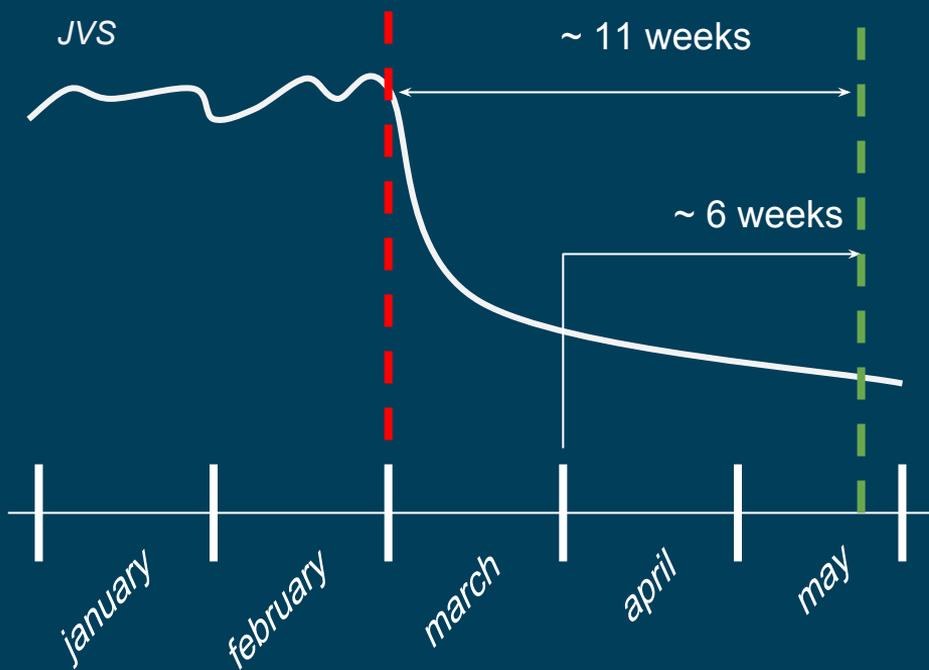


“...which approaches (techniques, methodology etc.) are most suitable to produce statistical estimates in the domain of job vacancies...”

- Basically “how do we use OJV data to improve JV statistics”

Why?

The processing delay



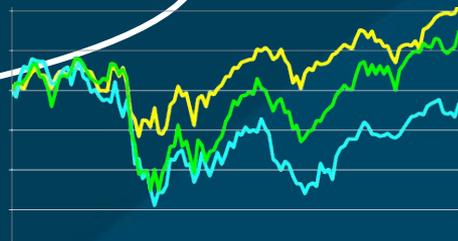
	OJV	JVS
Frequency	Real-time (almost)	Monthly
Industry	✓	✓
Enterprise size	✓	✓
Geography	✓	✗
Skills, job title...	✓	✗
Running cost	⇓	⇓
National totals	✗	✓

Outline

Job vacancy jungle



Nowcasting company counts



Σ

Nowcasting aggregated counts

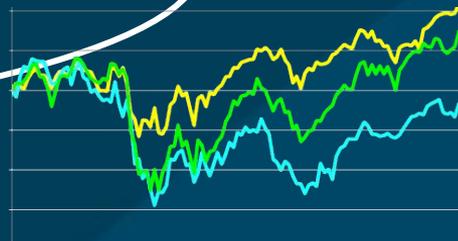
ESSNet outcomes



Job vacancy jungle



Nowcasting
company counts



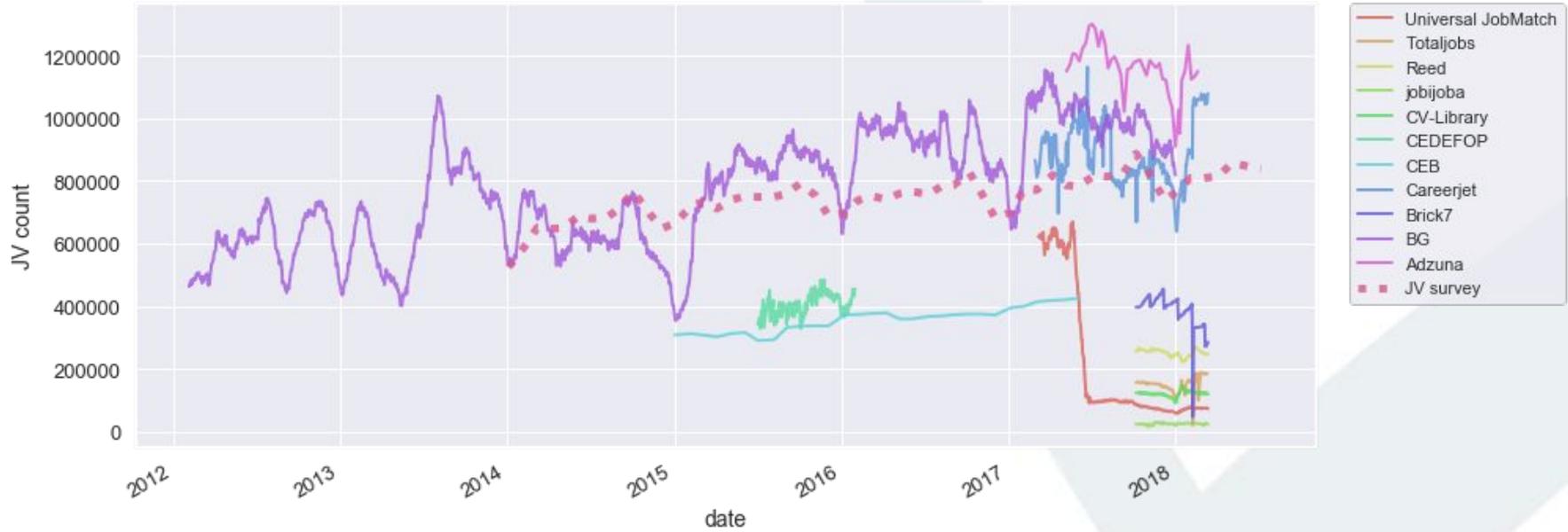
Σ

Nowcasting
aggregated counts

ESSNet outcomes

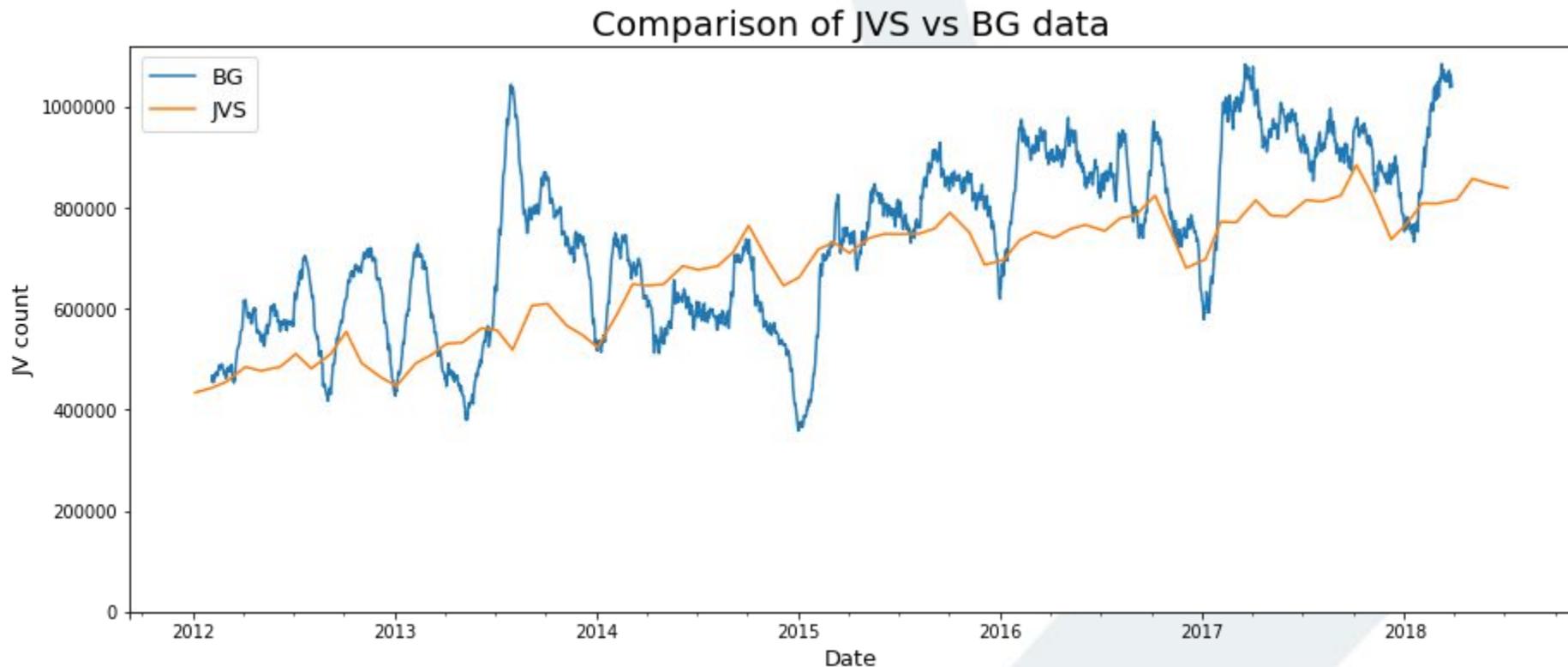


Total JV count by source



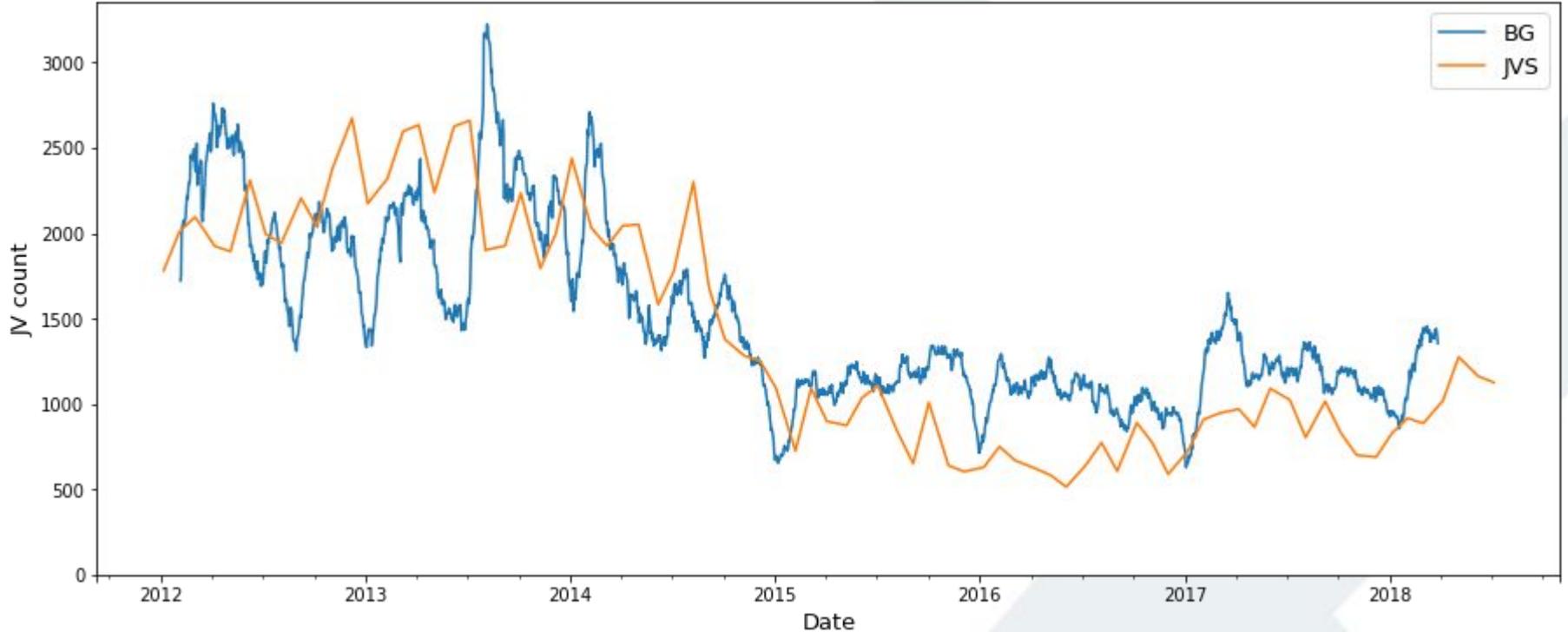
- JVS
- Accessed data (Cedefop, CEB, Burning Glass, Adzuna)
- Scraped data (7 portals)
- (enterprise websites)

Burning Glass vs JVS



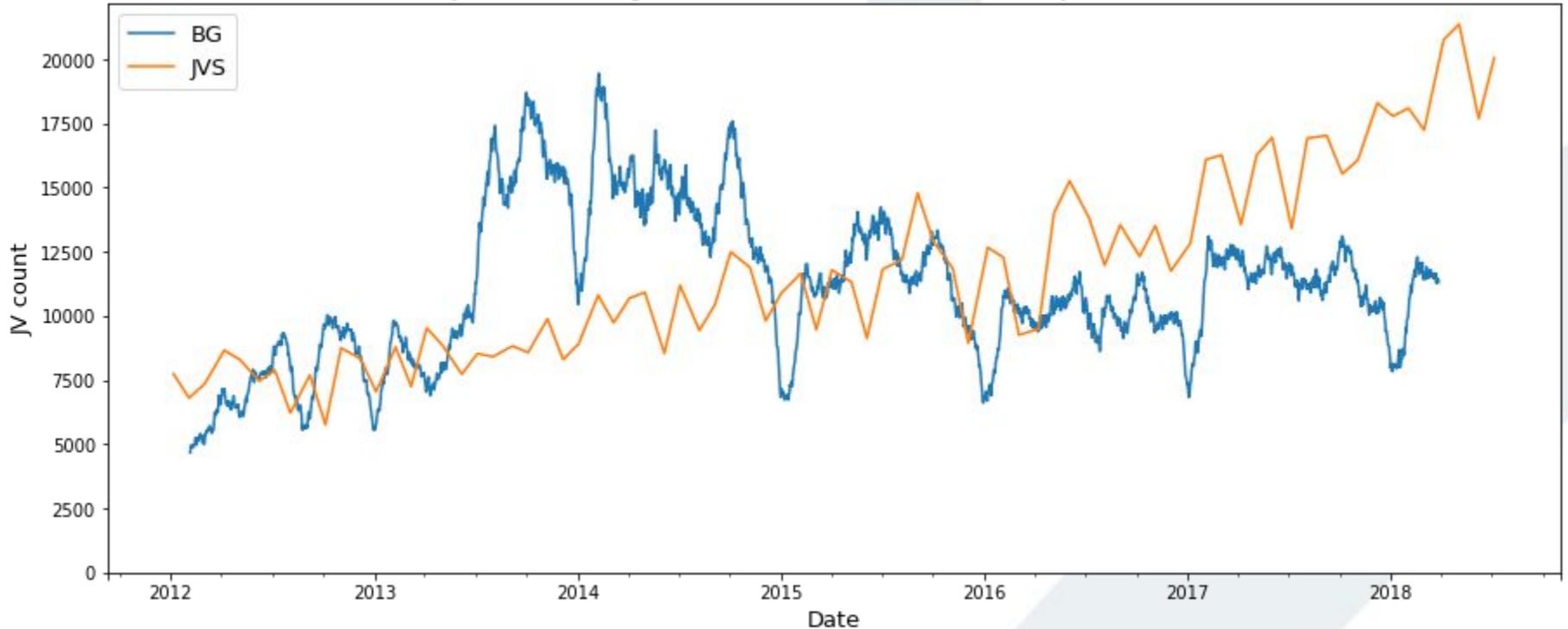
At industry level - SIC B (mining/quarrying ...)

Comparison of JVS vs BG data (SIC = b-mining-quarrying)

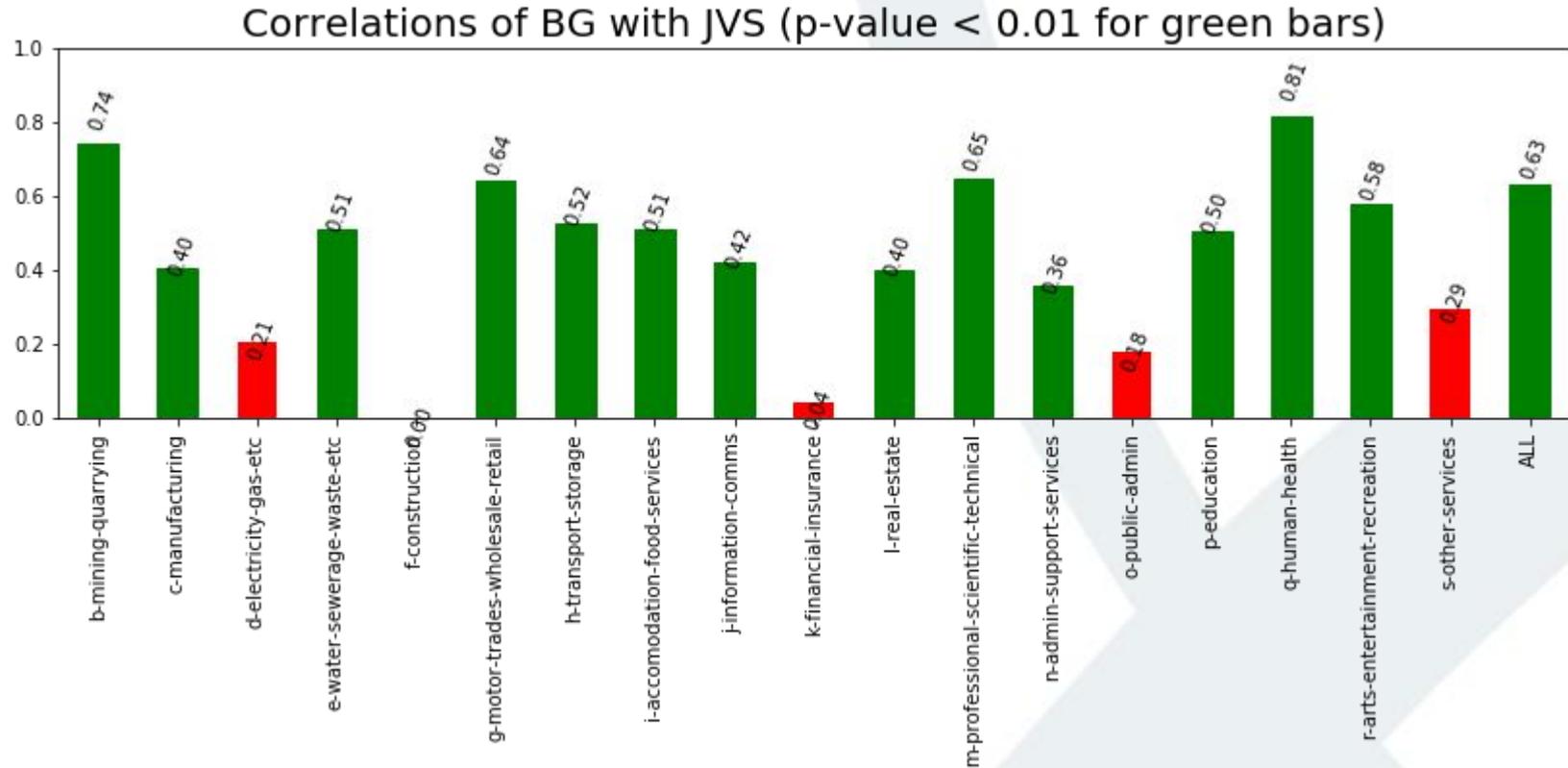


At industry level - SIC O (public/admin ...)

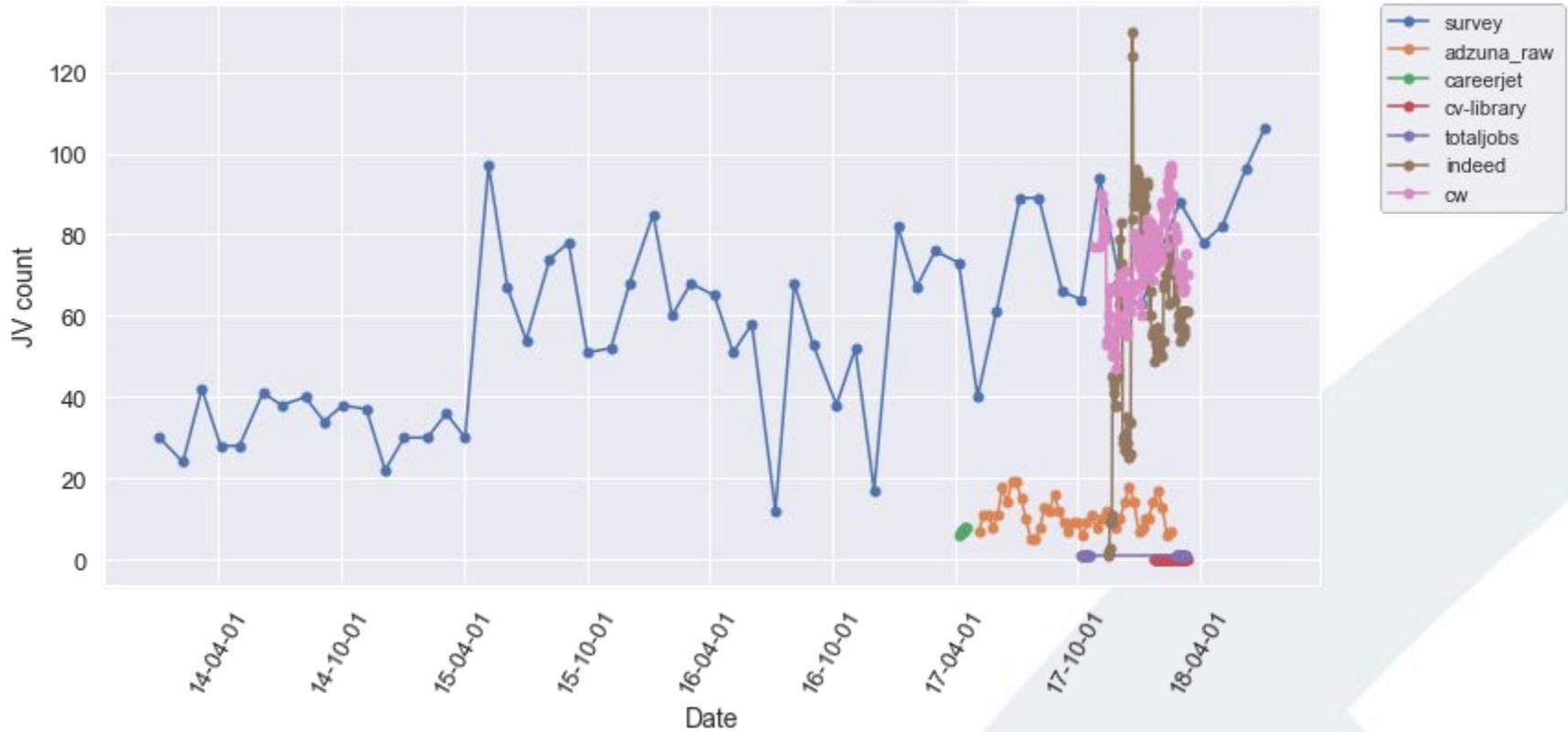
Comparison of JVS vs BG data (SIC = o-public-admin)



Pearson correlations by industry - BG



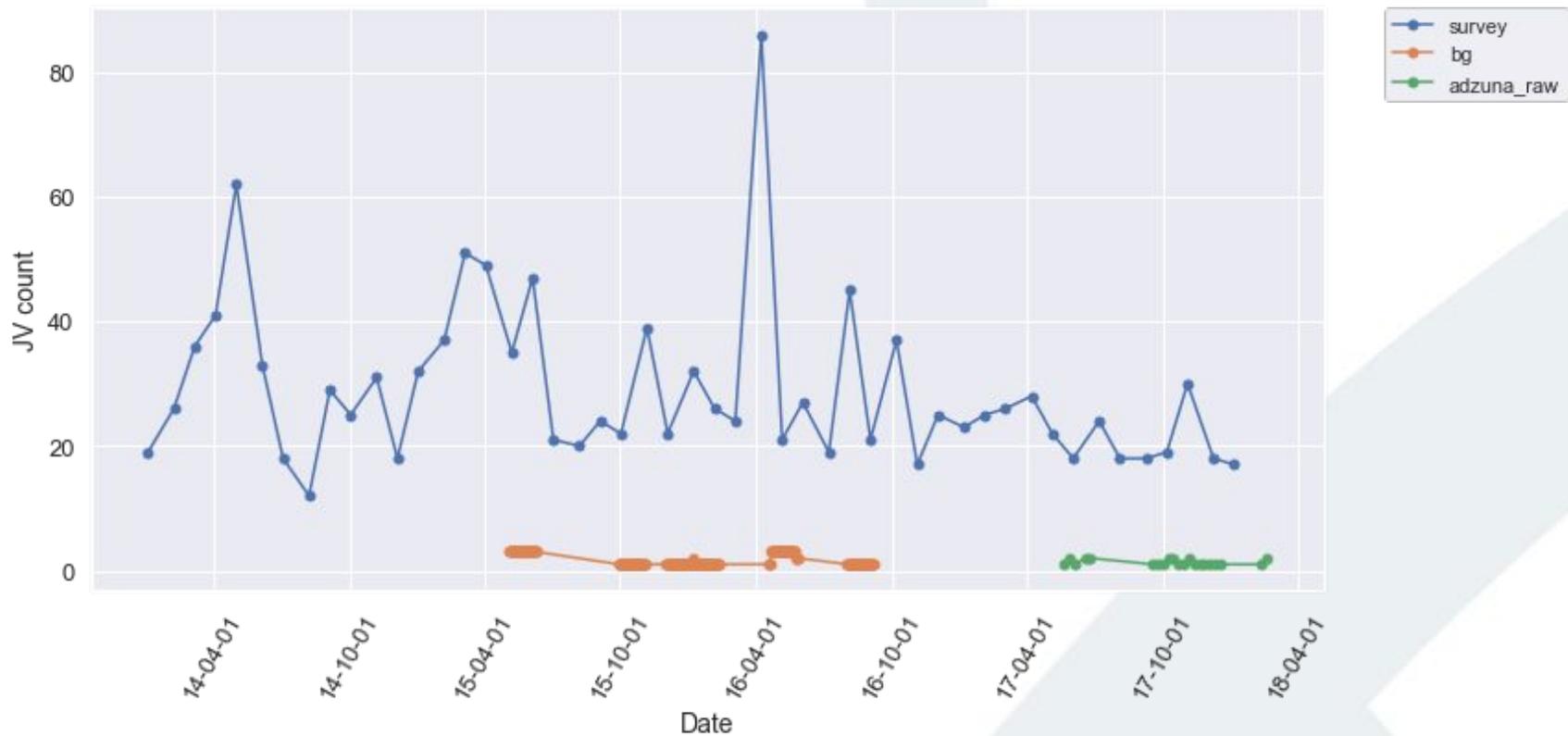
How about at company level? Random company (1)



Random company (2)



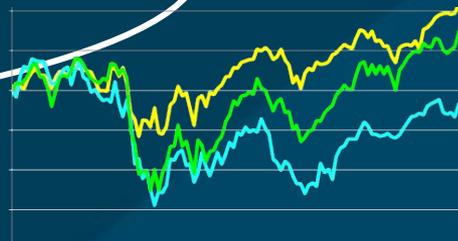
Random company (3)



Job vacancy jungle



Nowcasting
company counts



Σ

Nowcasting
aggregated counts

ESSNet outcomes

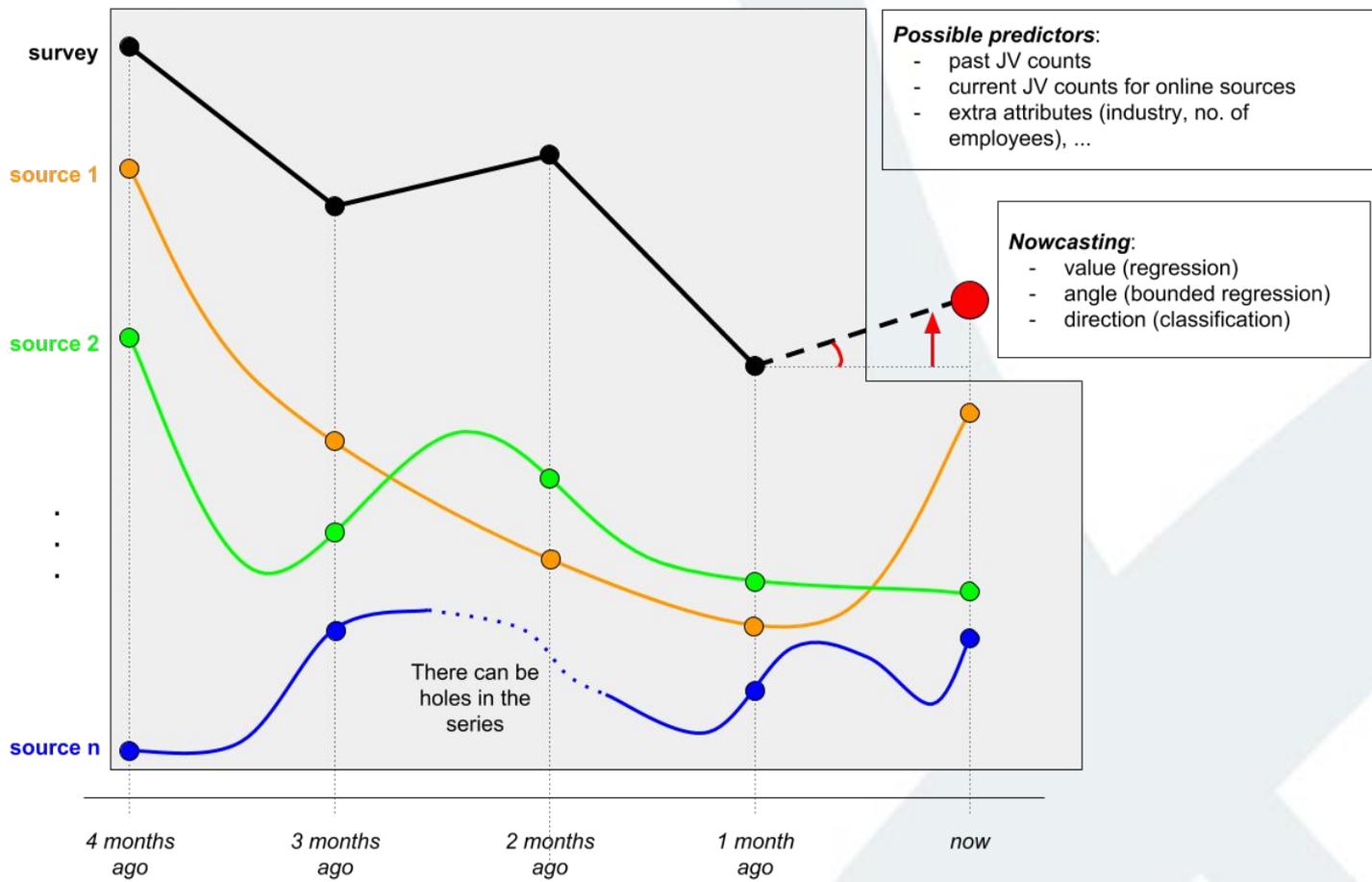


Good Luck

...You're
going to
need it!

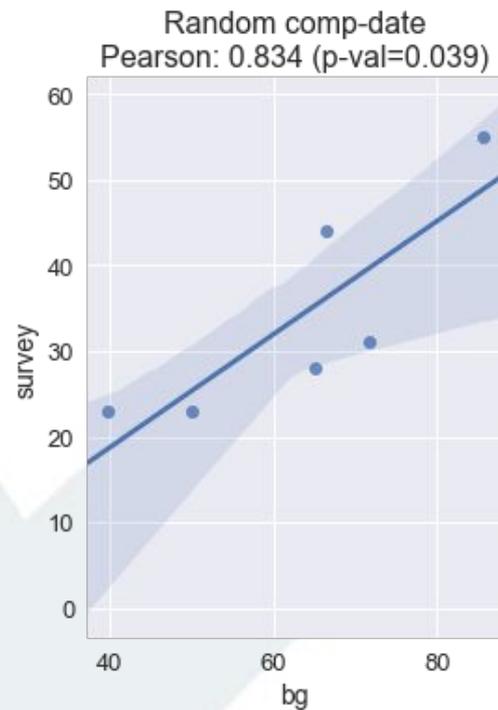
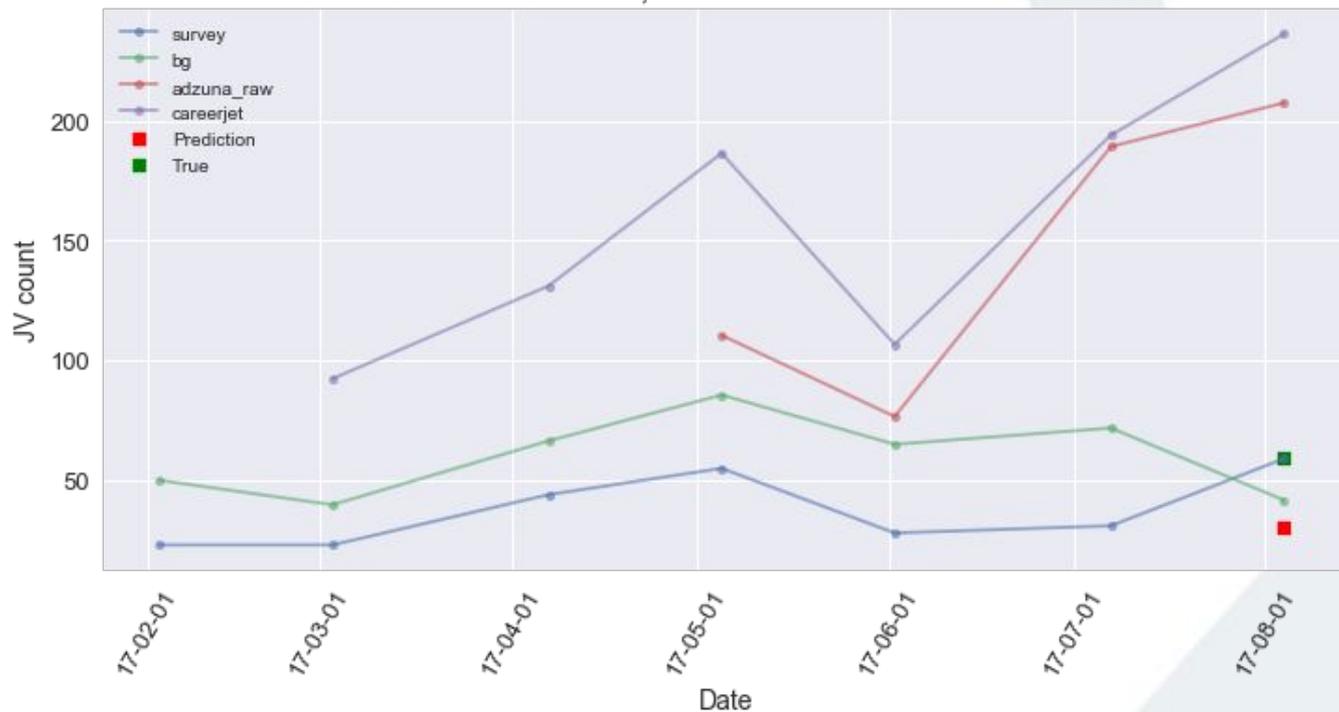


Basic nowcasting idea



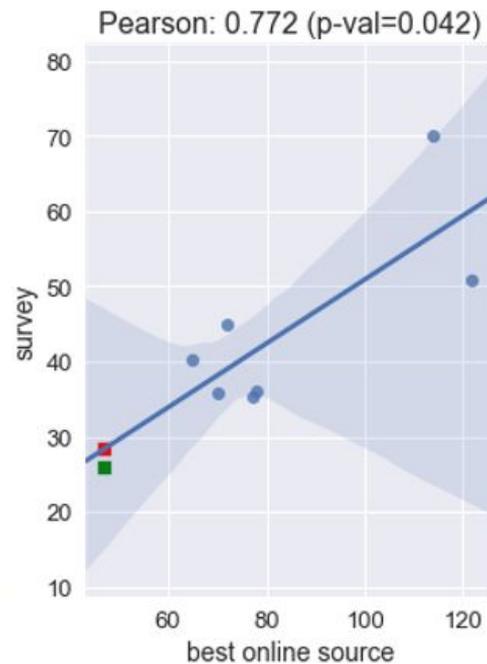
Linear regression idea

***** 17-08-04.
Pred: 30.223470292639668, True: 59.0. Diff = -28.776529707360332



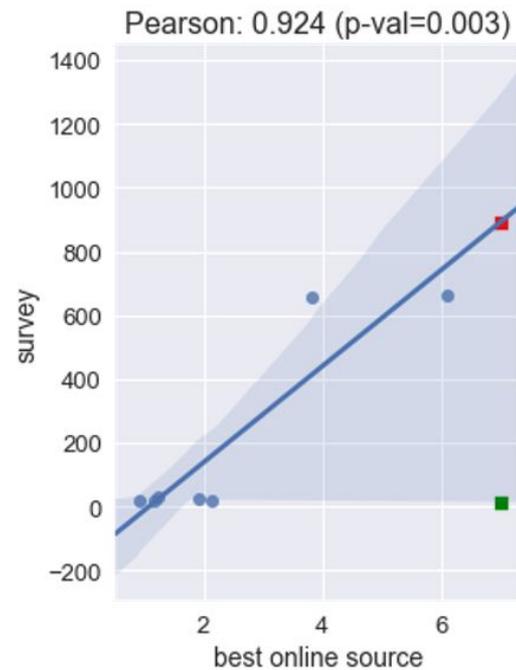
Linear regression - predictions

Pred: 28.361439706556627, True: 26.0. Diff = 2.3614397065566273



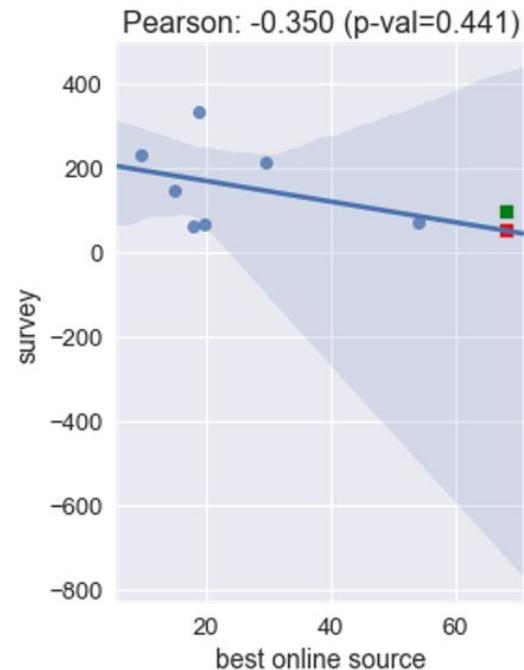
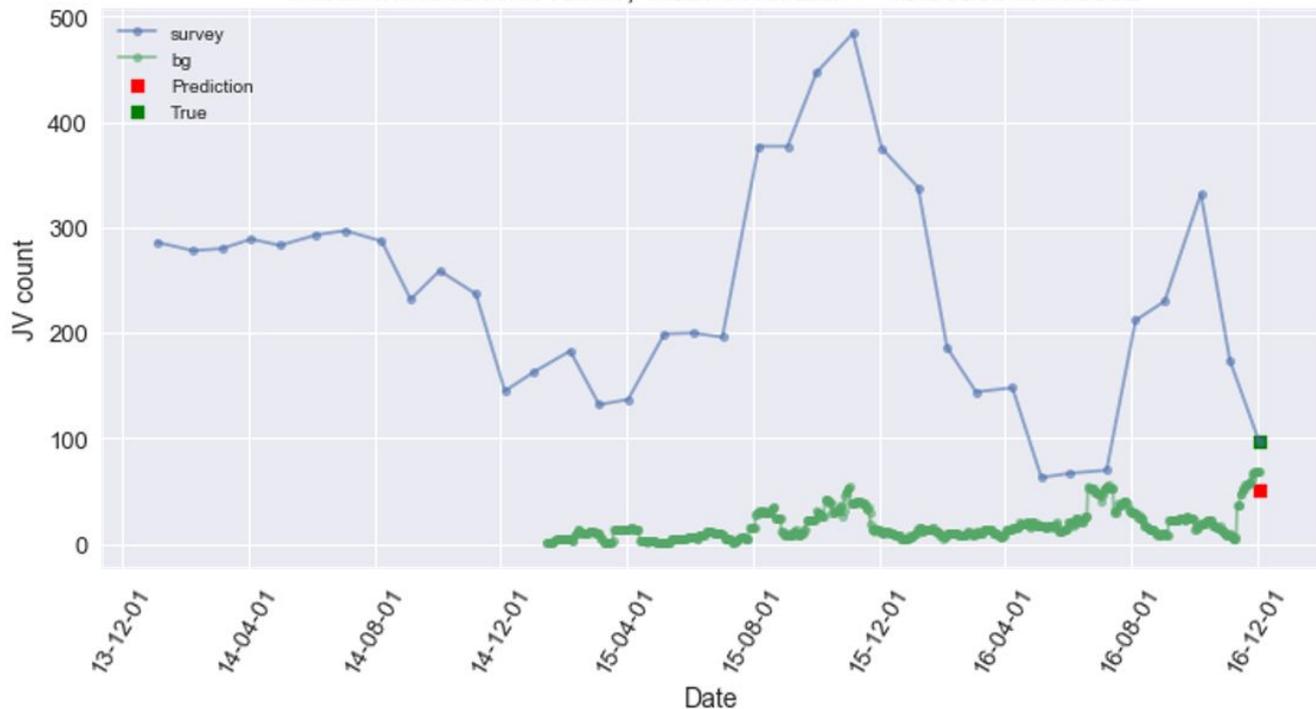
Problematic cases (1)

Pred: 893.2189473684209, True: 15.0. Diff = 878.2189473684209



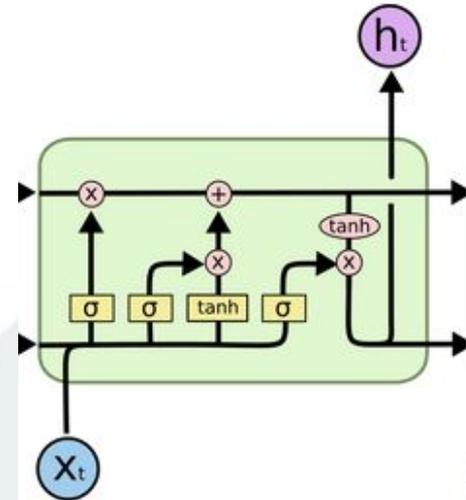
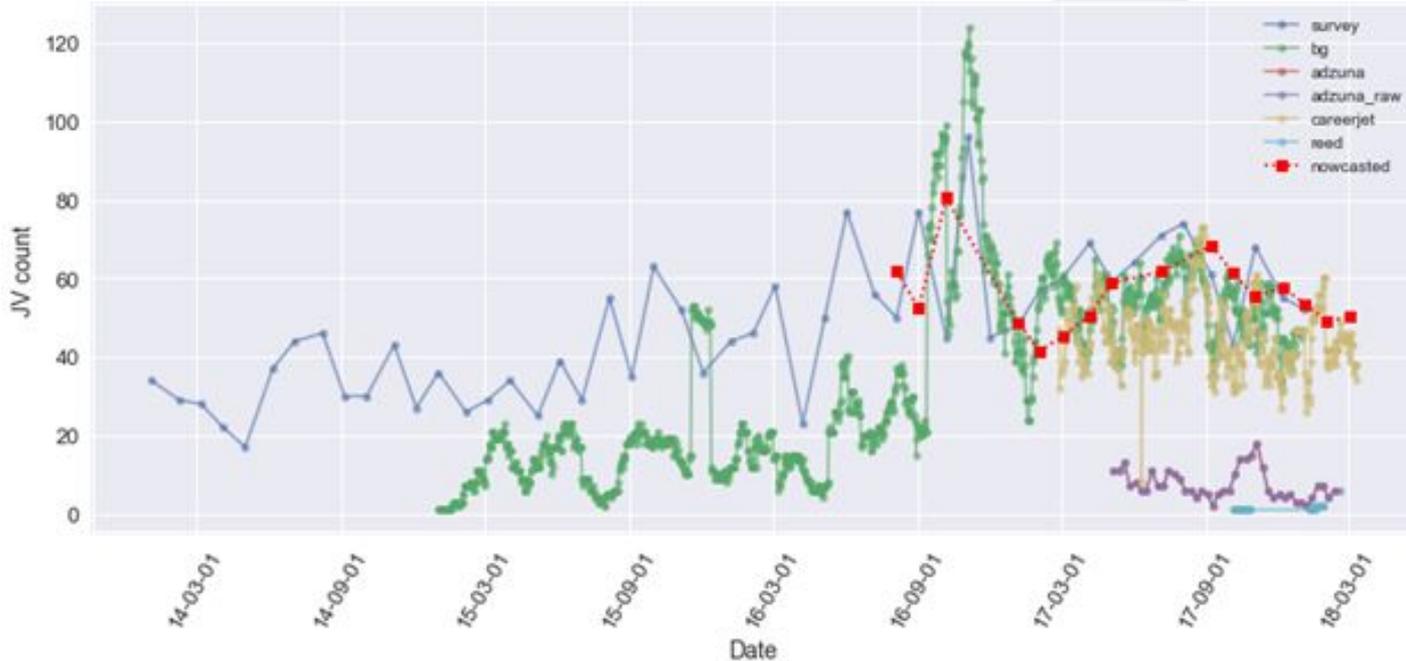
Problematic cases (2)

Pred: 51.4646654110348, True: 98.0. Diff = -46.5353345889652



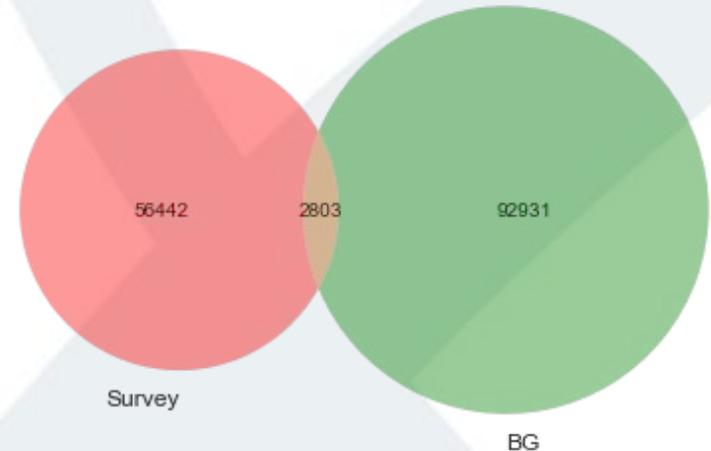
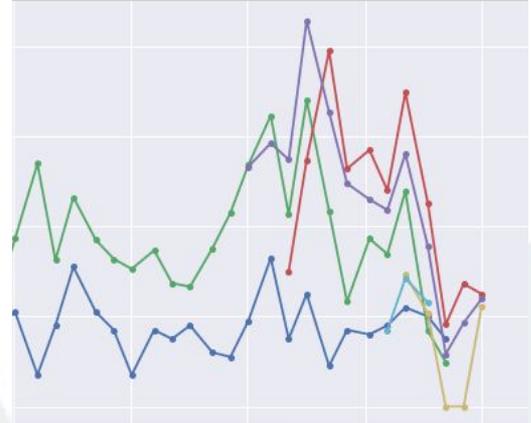
Long short-term memory (LSTM) neural networks

- Learning difficult
 - Confused NN



Nowcasting conclusion - company level

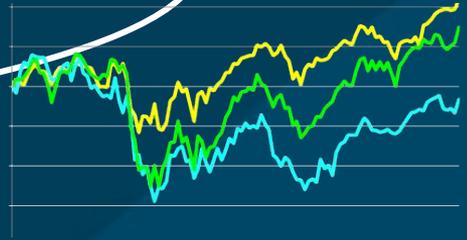
- Time series oscillating too much
- Little overlap in matched companies (+bias)
- Gaps:
 - Agency ads (80%?) - heavy filtering of data
- **Very** difficult, or close to impossible



Job vacancy jungle



Nowcasting
company counts



Σ

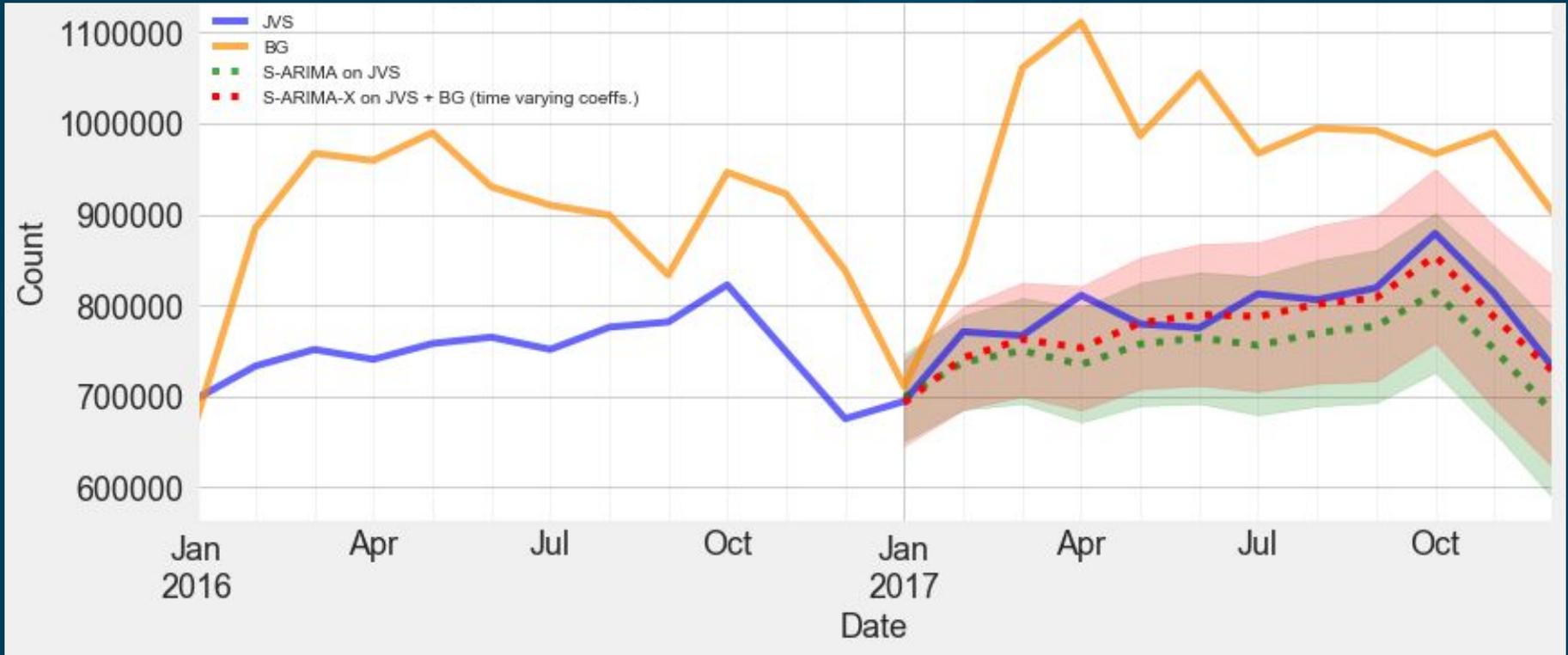
Nowcasting
aggregated counts

ESSNet outcomes



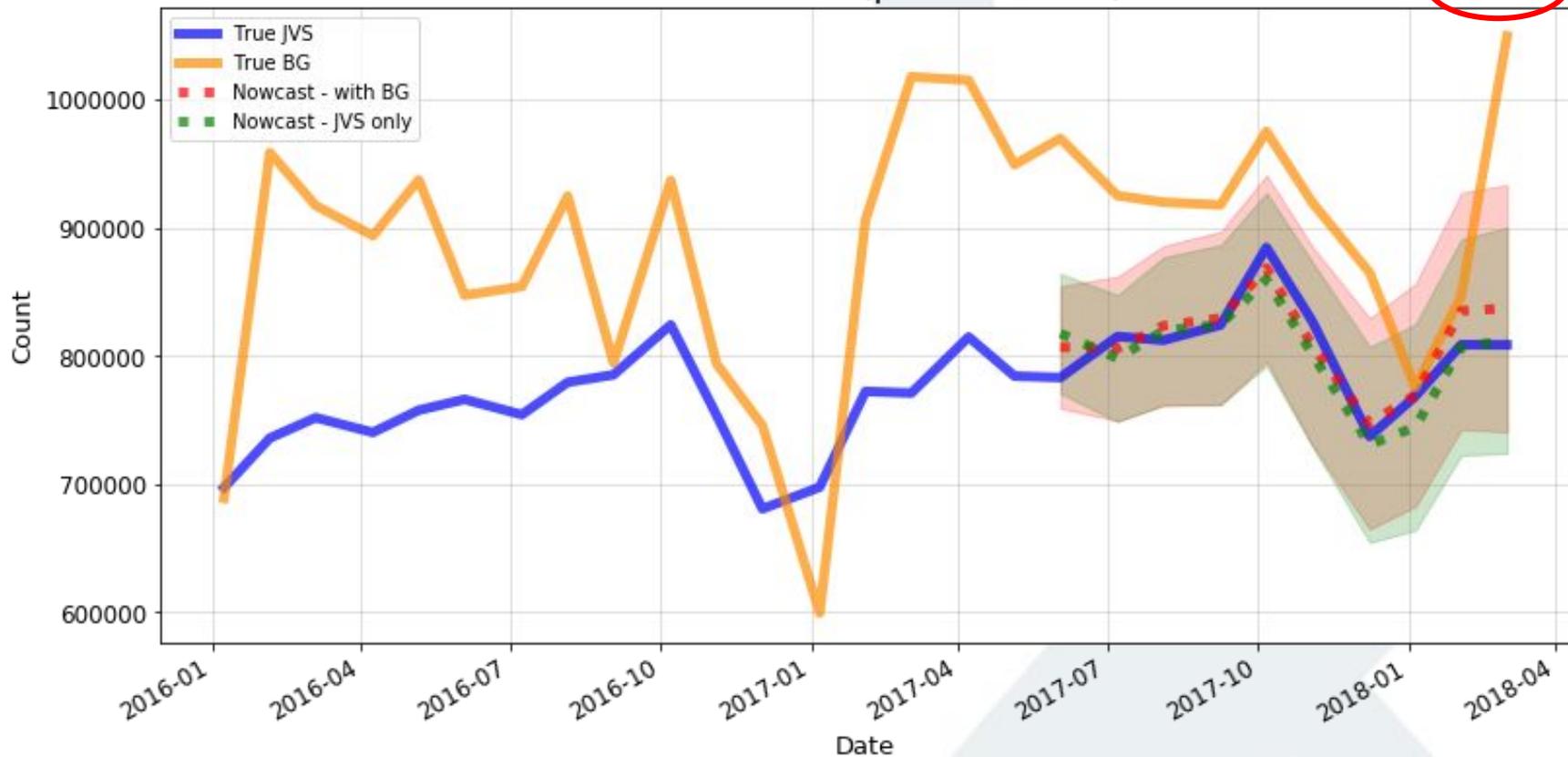
S-ARIMA-X - first model

- 50% reduction in RMSE!



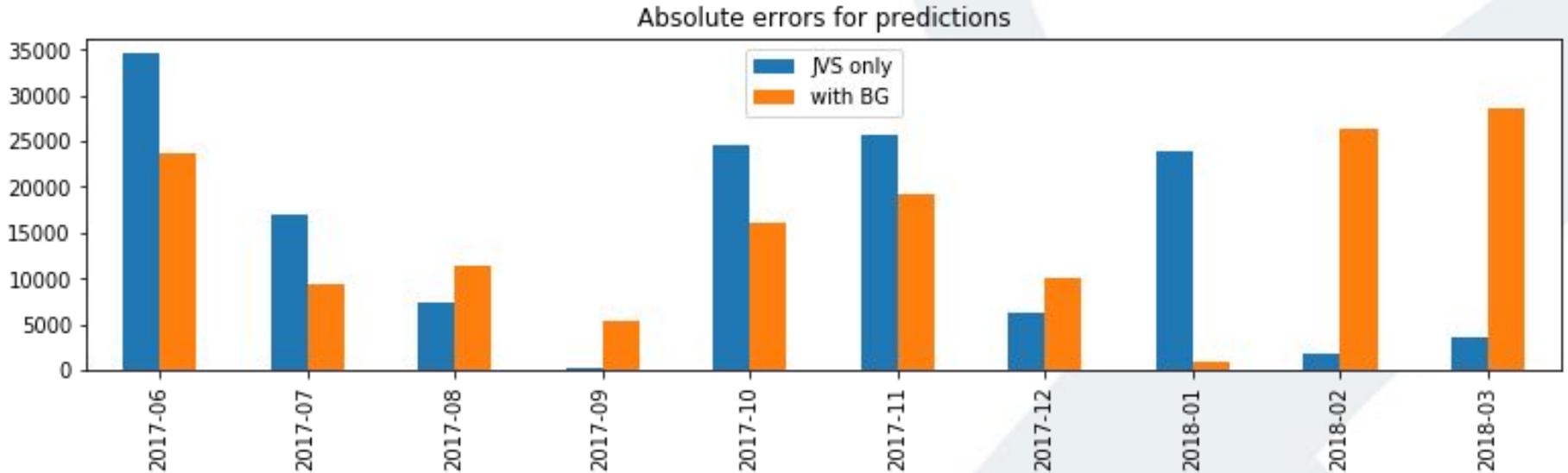
Or not?

S-ARIMA-X forecasts. Correlation: 0.63 (p-val < 0.001). RMSE reduction **5.72%**

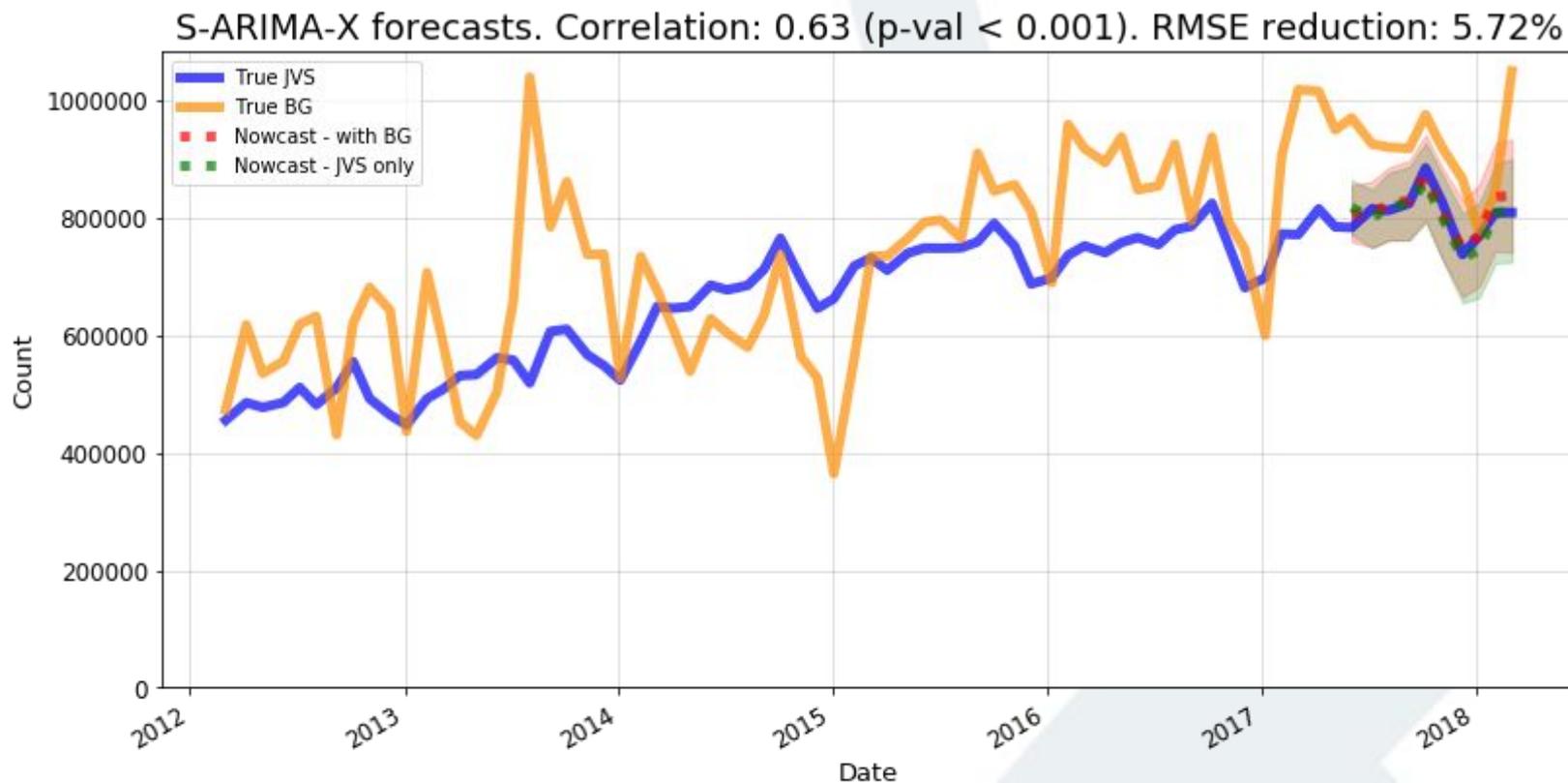


Absolute errors for predictions

- Last two months are the culprits

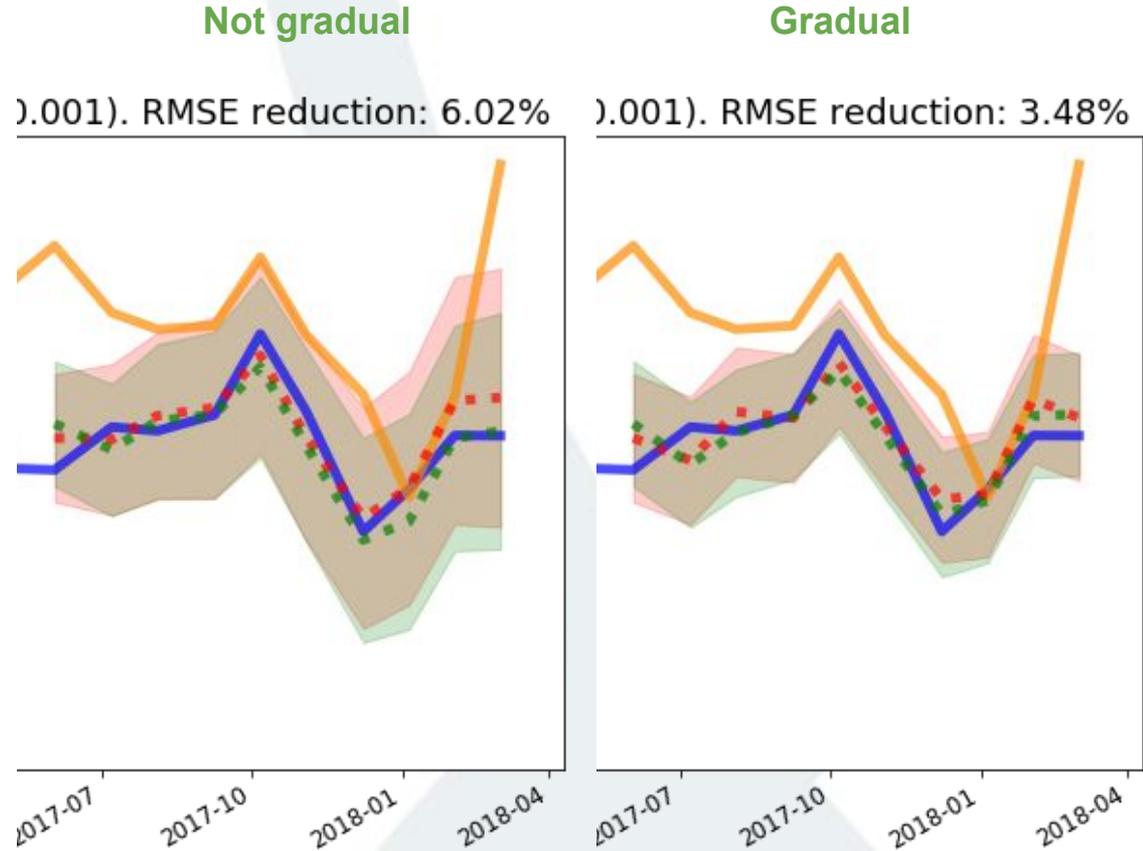


Looks good “from the distance”

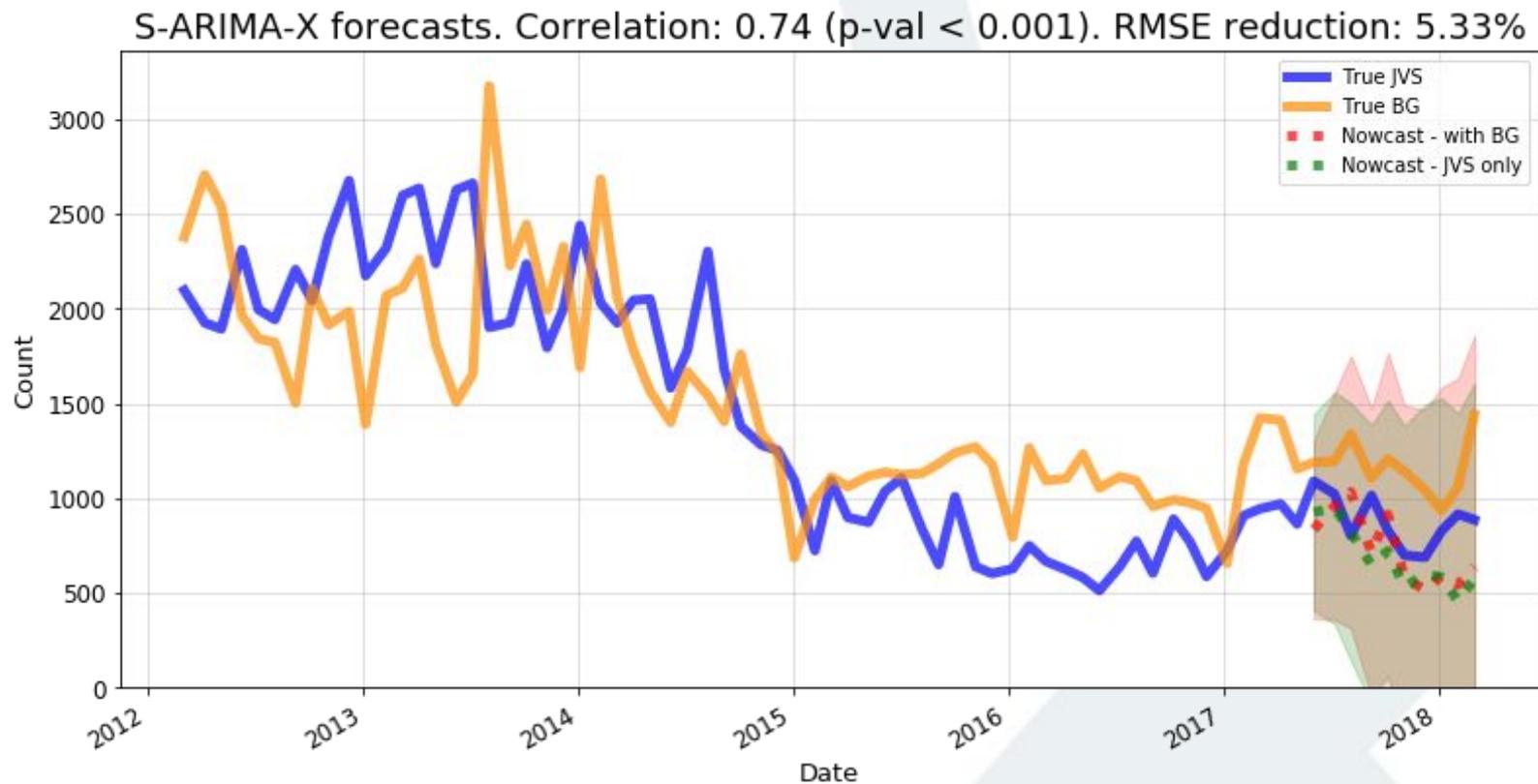


“Gradual” nowcasting

- Repeat:
 - Fit on all data prior to point → predict one month only
- Similar nowcasts, smaller conf. intervals
 - But JVS-only model improved too!

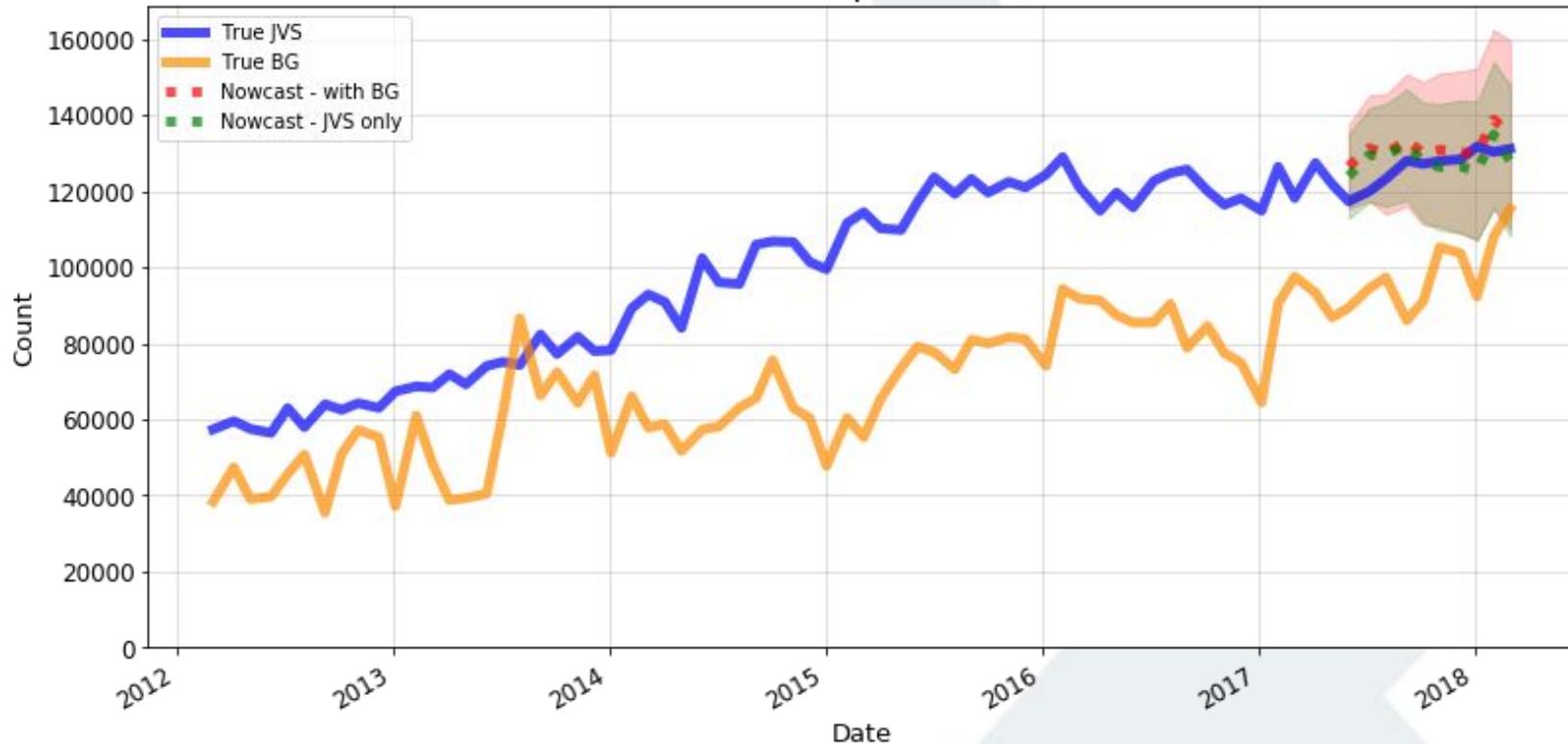


Industry - SIC B (mining/quarrying ...)

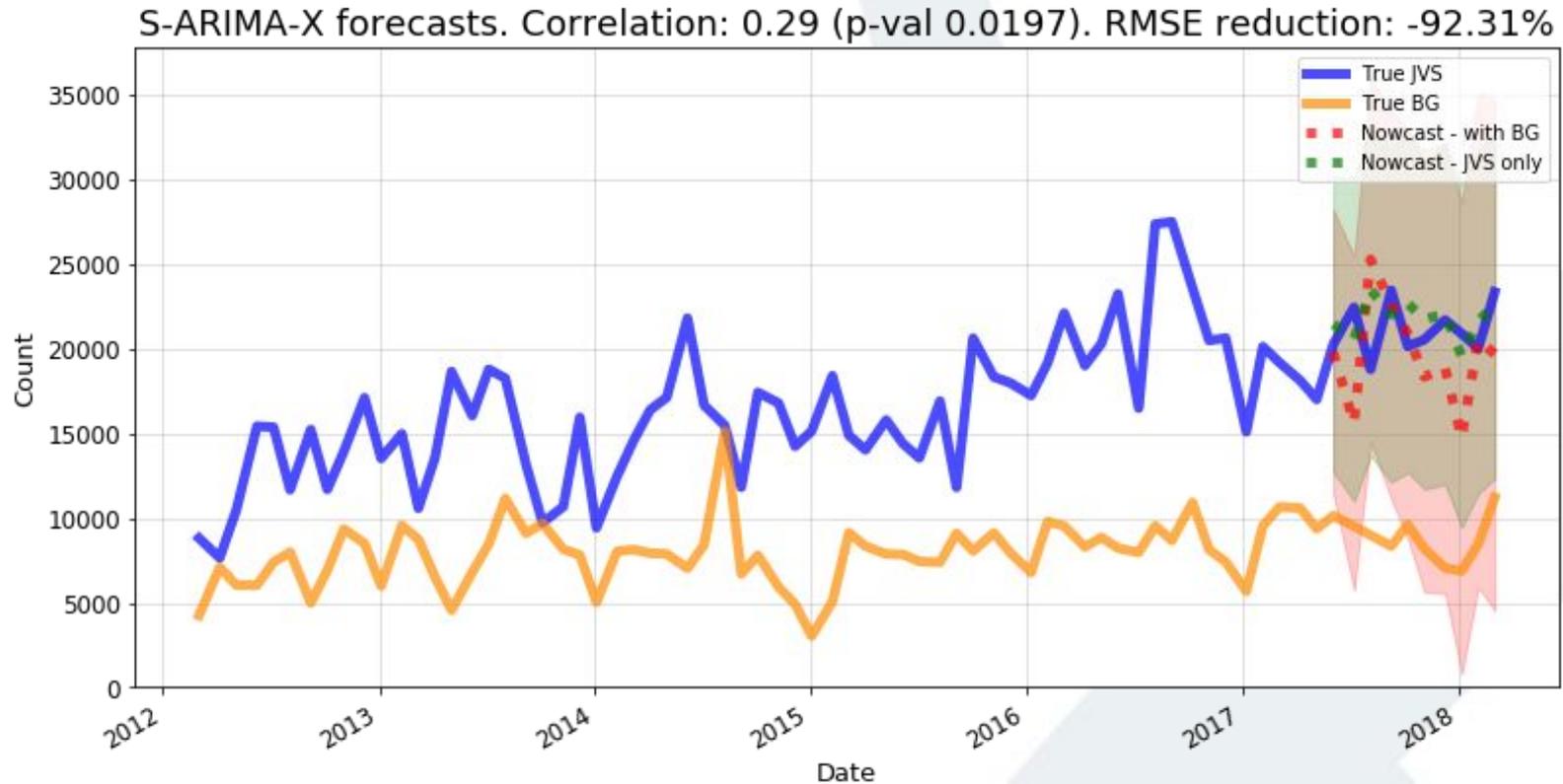


Industry - SIC Q (health ...)

S-ARIMA-X forecasts. Correlation: 0.81 (p-val < 0.001). RMSE reduction: -20.38%

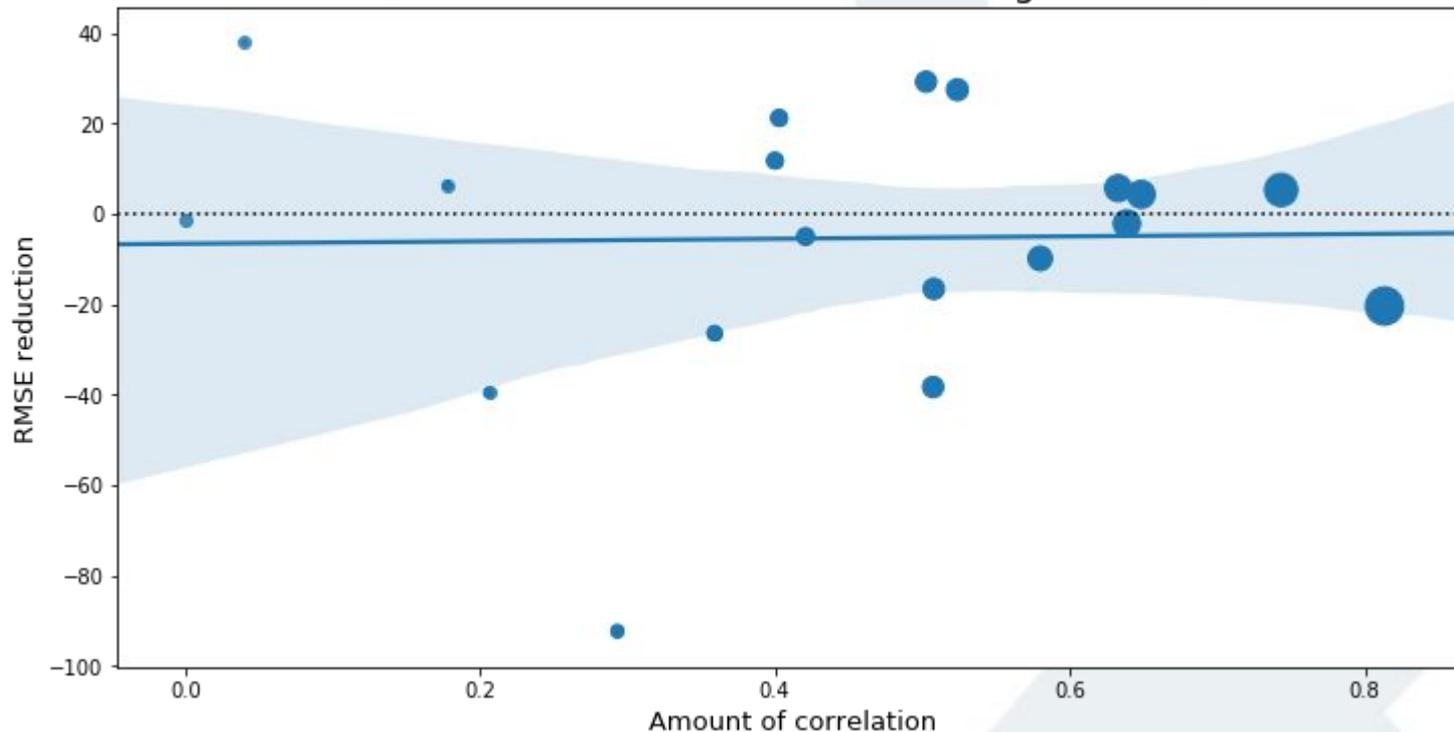


Industry - SIC S (other/services ...)



Correlation vs. RMSE reduction

Amount of correlation (BG - JVS) vs. RMSE reduction when using BG data
(Size of dot indicates correlation significance)



Nowcasting conclusion - aggregated level

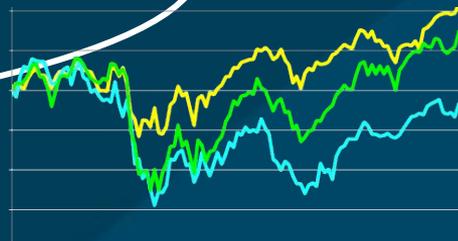
- Possible - need really **good** and **stable** data, **long** (min 5 years) time series, and ideally **multiple** sources
 - Federal employment agency
- Possible improvements (TS expertise, tweaking model)
- Real value for unexpected spikes/drops



Job vacancy jungle



Nowcasting
company counts



Σ

Nowcasting
aggregated counts

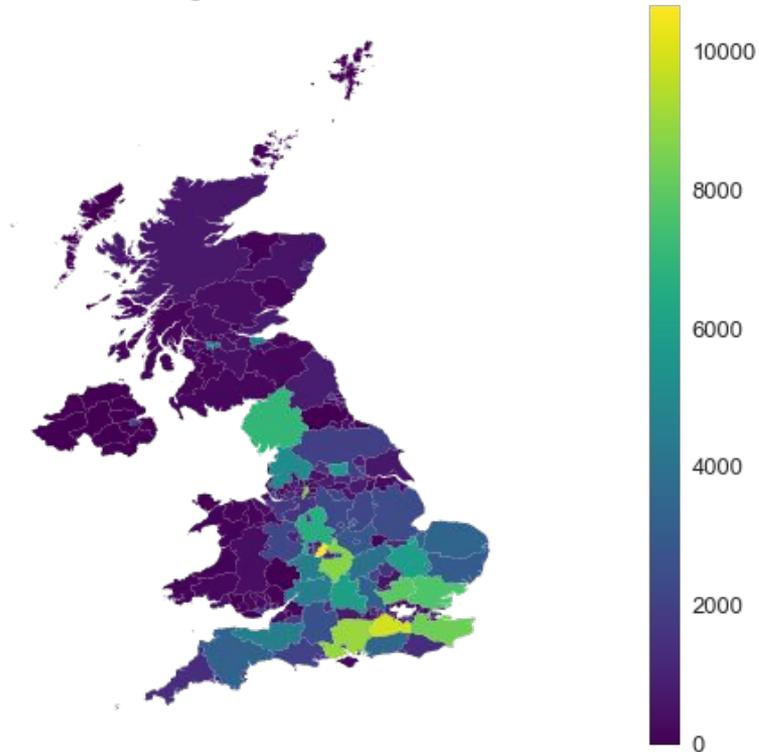
ESSNet outcomes



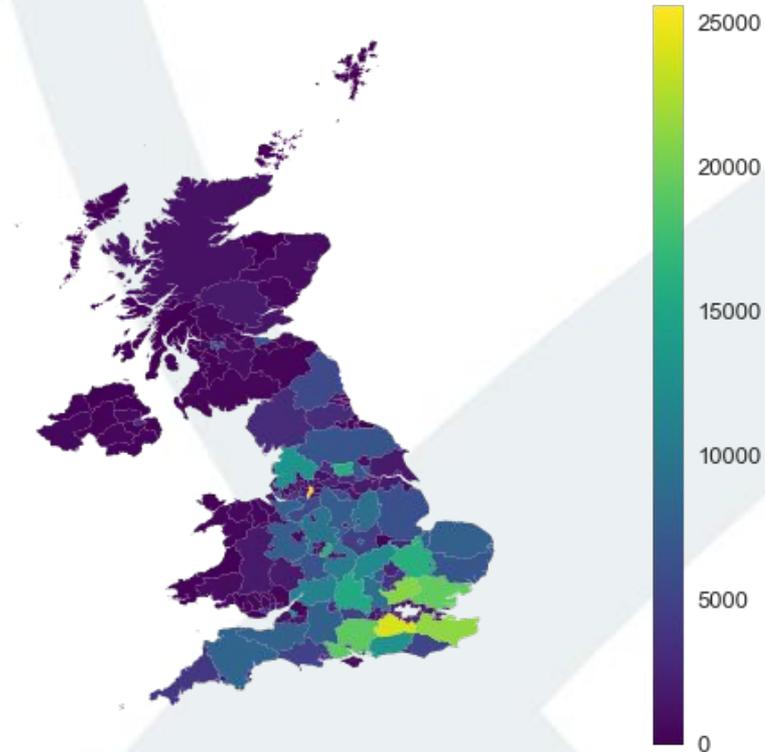
UK - Experimental stats by location

JV counts by county (except London): bg, adzuna

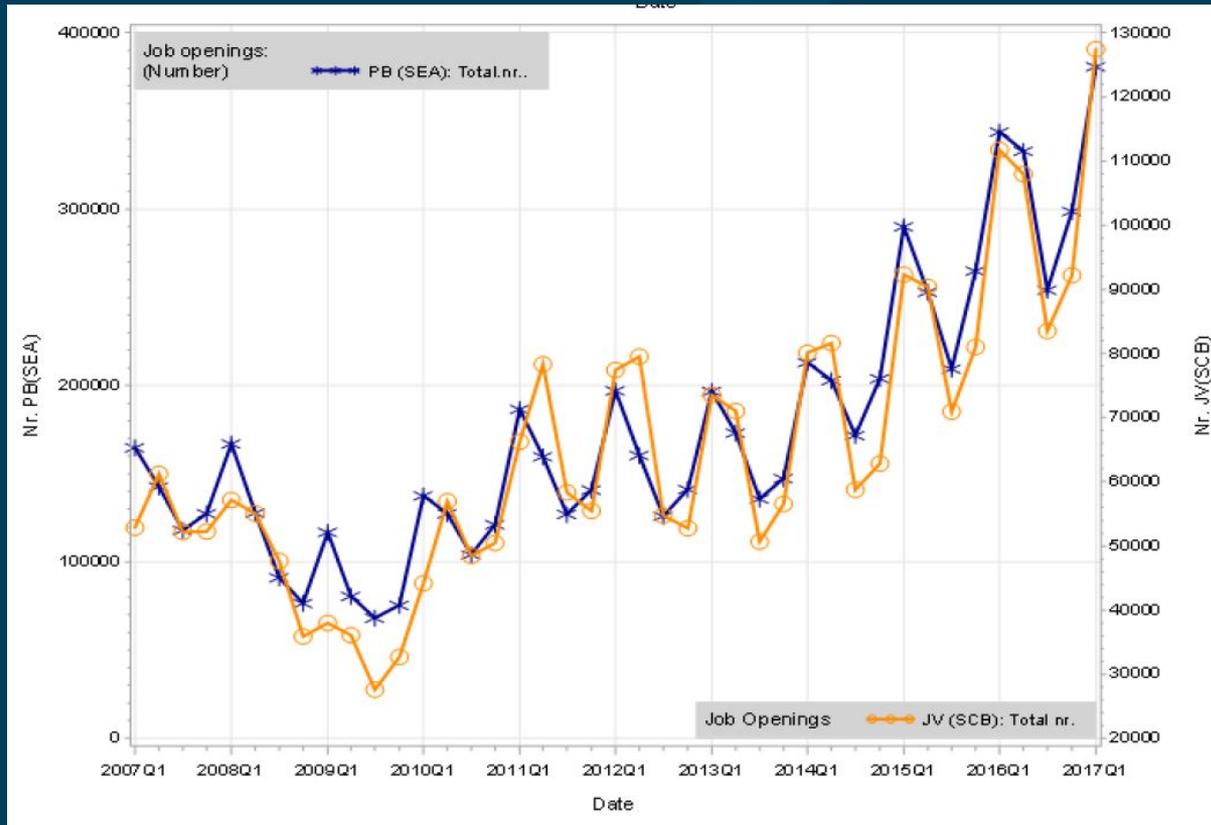
bg 17-12-31



adzuna 18-01-10



Sweden - National Emp. Agency (PB) vs. JVS (2007-2017)



Belgium - NACE encoding confusion matrix

		NACE code by Machine Learning																			Sensitivity	
		A	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T		U
Real NACE code	A	3	0	0	0	1	16	0	0	0	0	0	1	0	0	0	1	0	0	0	0	14%
	C	0	469	1	0	41	287	2	27	16	0	1	44	18	14	2	22	0	0	0	0	50%
	D	0	0	219	0	1	16	0	0	6	0	0	7	5	7	0	3	0	2	0	0	82%
	E	0	0	0	16	3	9	0	1	1	0	0	2	3	8	2	0	0	0	0	0	36%
	F	0	4	0	0	671	200	7	21	6	1	6	45	24	42	3	24	0	3	0	0	63%
	G	0	26	0	0	39	4320	29	120	85	1	2	118	37	29	10	44	1	18	0	0	89%
	H	0	4	0	0	11	213	1499	3	18	0	1	25	5	57	0	89	0	4	0	0	78%
	I	0	10	2	0	6	355	1	1879	3	0	1	23	19	40	3	37	2	4	0	0	79%
	J	0	14	2	0	14	386	6	11	1096	1	3	152	40	61	4	28	0	5	0	0	60%
	K	0	0	0	0	1	138	0	1	23	524	8	73	22	24	1	5	0	1	0	0	64%
	L	0	2	0	0	12	118	1	21	4	1	249	48	20	32	8	69	1	6	0	0	42%
	M	0	44	0	0	45	876	10	38	134	29	10	2847	130	103	14	106	2	14	0	0	65%
	N	0	18	1	0	49	699	14	35	106	8	8	313	2116	108	12	107	2	6	0	0	59%
	O	0	4	1	0	5	51	4	12	6	2	12	33	20	6950	362	156	1	6	0	0	91%
	P	0	3	0	0	7	59	2	10	7	0	1	57	14	295	5141	276	8	21	0	1	87%
	Q	0	8	0	0	10	167	9	56	12	0	4	42	60	375	187	5499	6	45	0	0	85%
	R	0	3	0	0	2	103	0	7	9	0	2	22	7	91	26	158	213	15	0	0	32%
	S	0	6	0	0	3	193	3	16	13	1	8	86	58	232	39	389	16	601	0	0	36%
	T	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	1	0	0	2	0	25%
	U	0	0	0	0	0	12	3	2	4	0	0	4	2	5	0	2	1	2	0	20	35%
Specificity	100%	76%	97%	100%	73%	53%	94%	83%	71%	92%	79%	72%	81%	82%	88%	78%	84%	80%	100%	95%		

Source: Statbel, Actiris data processing, job offers 2013 to 2016

Germany - Federal emp. Agency vs JVS

- On avg 1.6 job vacancies per ad
- Still not reaching full JVS scale
 - Time lag?
 - Definitional difference?

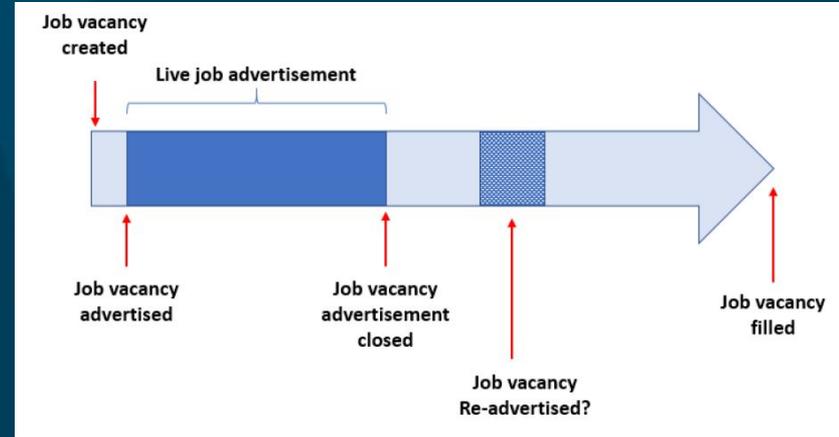


Table 1: FEA-OJV versus JVS: number of job ads, job vacancies and jobs to be filled immediately

	FEA 26.02.2018	FEA 30 days	JVS 2017q1
number of job ads	470,374	436,506	–
number of job vacancies	748,901	694,820	1,064,000
number of jobs to be filled immediately	–	–	824,000

Source: Own calculations on FEA data and JVS data.

ESSNet - WP1

- Coverage problems
 - *Incorrectly* captured - jobs abroad, ghost vacancies, ...
 - *Difficult* to capture - video ads, many-to-one, ...
 - *Not present* to capture - only offline, not in this source, ...
- ESSNet future: WP B
 - Slovenia - work package leader
 - UK informal partner
 - 2 years (2018 - 2020)
 - Focus on *implementation...*



What would implementation look like

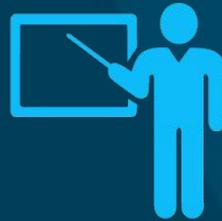
	Option		Assessment
1	OJVs replacing JVS		<ul style="list-style-type: none">• Not feasible
2	OJVs integrated with JVS		<ul style="list-style-type: none">• Not feasible (or at least extremely difficult)
3	Reducing frequency of JVS		<ul style="list-style-type: none">• Possibly feasible but needs investigation• Implies major change to business processes• Business benefits not clear
4	New statistics based on OJVs		<ul style="list-style-type: none">• Feasible• No change to JVS processes• Focus how statistics would be presented<ul style="list-style-type: none">○ Publish side by side○ Stress experimental
5	OJVs used to nowcast JVS		<ul style="list-style-type: none">• Feasible

ESSNet Conclusion

“In summary, OJV data is not representative of the overall labour market and there are various issues that make it difficult to compare directly with official statistics”

Lessons

- *Don't expect too much*
 - Varied landscape across countries
- *Invest resources wisely*
 - Collaboration with Cedefop
- *Focus on statistical outputs (even exp.)*
 - OJV as supplementary indicators





Thank you

frantisek.hajnovic@ons.gov.uk

References

- Nigel Swier, Frantisek Hajnovic, Thomas Declite, Martina Rengers, Chris-Gabriel Islam, Ingegerd Jansson, Dan Wu, Crt Grahonja, Christina Pierrakou, Eleni Bisotti, Maxime Bergat, Alexis Eidelman, Rui Alves, Maria-Jose Fernandes. 2018. ***“Work Package 1, Web scraping / Job vacancies, Deliverable 2.2, Final Technical Report (SGA-2)”***. As of 21.8.2018 available at:
 - https://webgate.ec.europa.eu/fpfis/mwikis/essnetbigdata/images/e/e0/SGA2_WP1_Deliverable_2_2_main_report_with_annexes_draft_v0.2.docx
- Nigel Swier, Frantisek Hajnovic, Ingegerd Jansson, Dan Wu, Boro Nikic, Christina Pierrakou, Martina Rengers. 2017. ***“Work Package 1, Web scraping / Job vacancies, Deliverable 1.3, Final Technical Report (SGA-1)”***. As of 21.8.2018 available at:
 - https://webgate.ec.europa.eu/fpfis/mwikis/essnetbigdata/images/2/20/Deliverable_1_3_main_report_final_1.0.pdf



**Skills Demand Evolution and
the Future of Jobs:
Replacement of Occupations
due to Robotisation /
Digitalisation**

Exeter, 11 September 2018

Mario Mezzanzanica

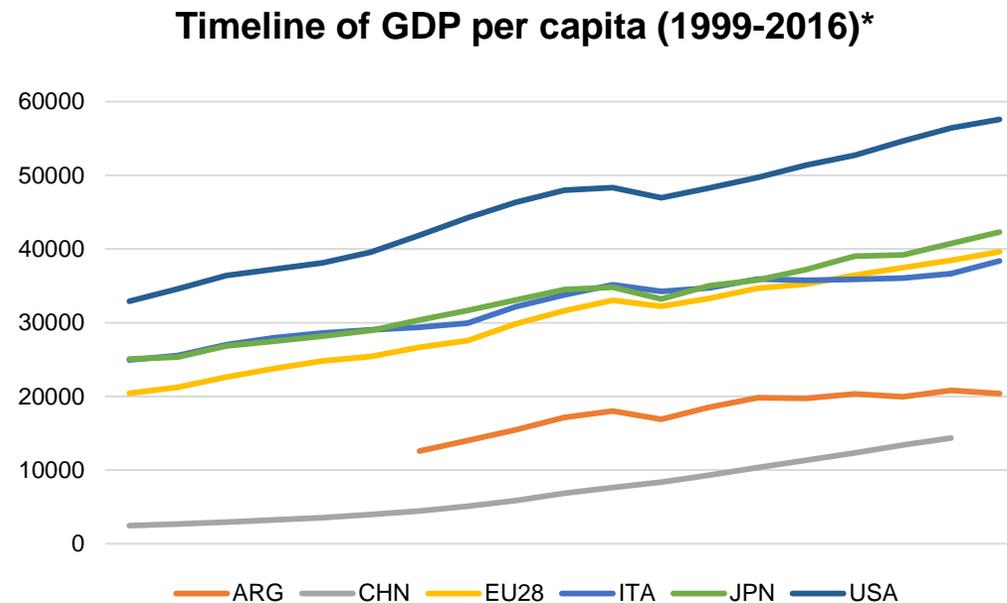
Emilio Colombo

**Labor market
changes
*opportunity or
disadvantage?***

“There’s never been a better time to be a worker with special skills or the right education because these people can use technology to create and capture value.” However, “there’s never been a worse time to be a worker with only ‘ordinary’ skills and abilities to offer, because computers, robots and other digital technologies are acquiring these skills and abilities at an extraordinary rate”

Erik Brynjolfsson and Andrew McAfee, 2014

Context: the jobless recovery

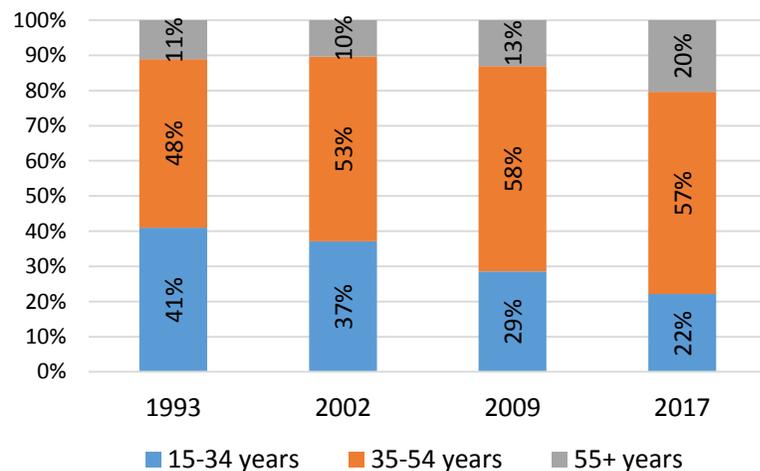


Despite the evident recovery, also witnessed by the growing trend of GDP - not only in Europe - there are many studies that underline how the global economic growth that followed the financial crisis is characterized by job creation rate below the average of the pre-crisis period (the so called jobless recovery). These elements suggest the existence of structural phenomena that have altered the relationship between employment and product.

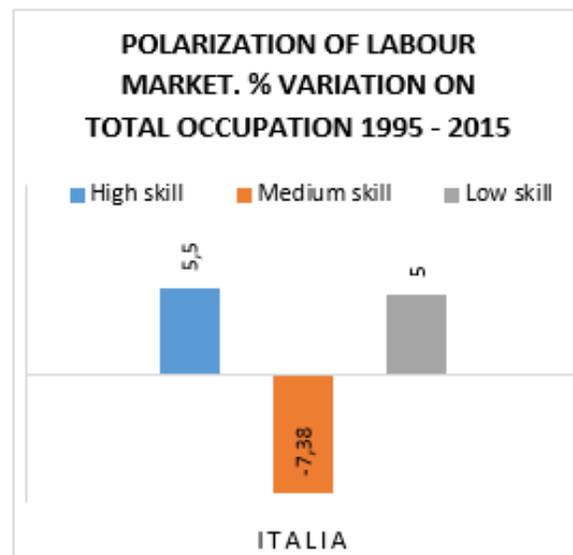
The mega trends

We can identify the structural phenomena that have altered the relationship between employment and product in three main factors, also called mega trends:

Italian population per age classes



1. The aging of population*



2. The globalization process°



3. The technological progress

* source ISTAT

° source OECD

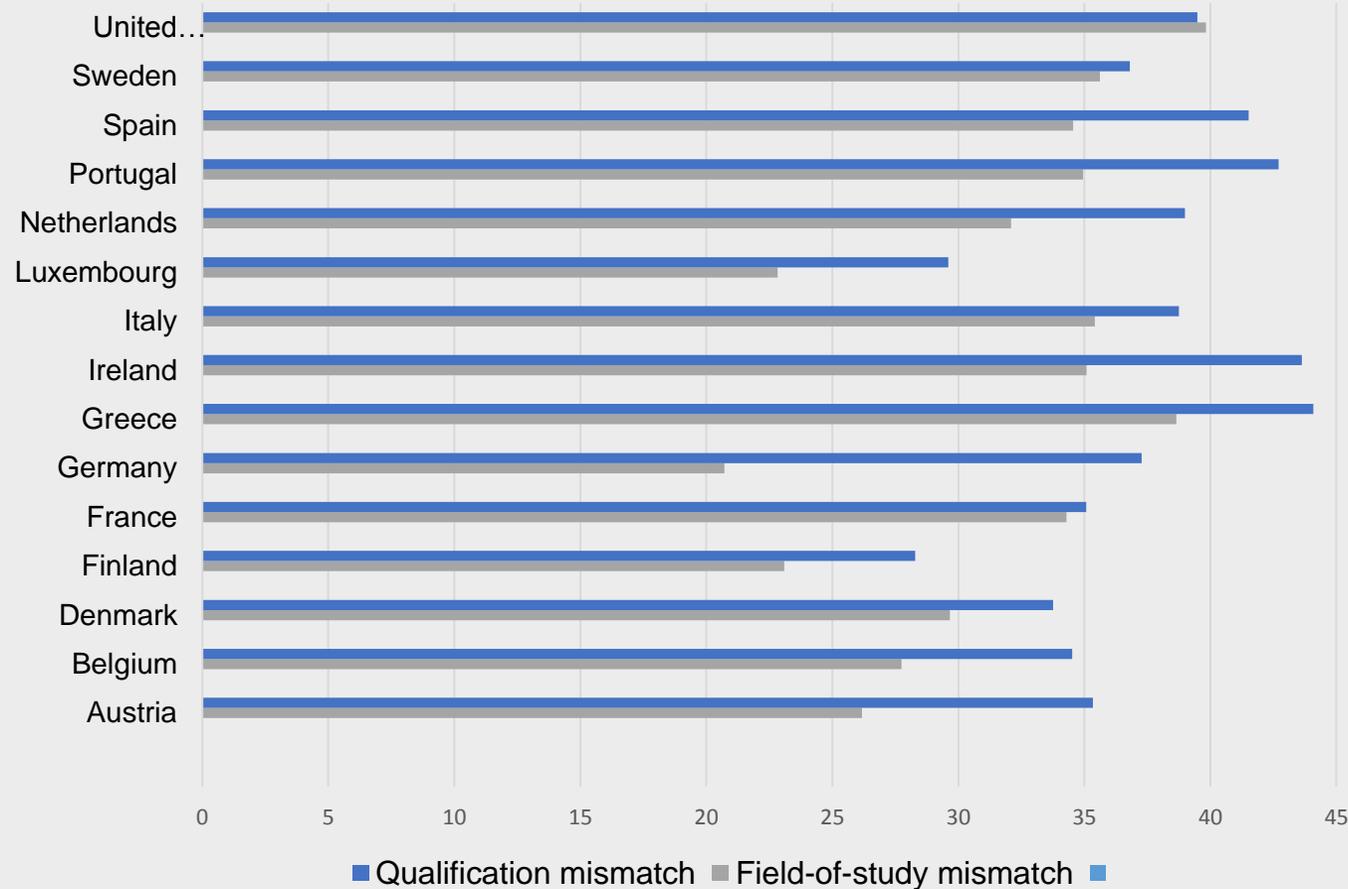
The mismatch

The problem is not only quantitative but, above all, is qualitative, i.e. the difference between the new skills required by companies and the ones offered by workers. The mismatch is a fundamental cause of unemployment, often underestimated in many contexts.

There are 2 types of mismatching:

1. The "field of study" mismatch refers to the percentage of workers who are employed in a field different from their specialization one.
2. The qualification mismatch measures the percentage of workers having a qualification level (in this case an educational level) different from the one required by the work they are currently doing.

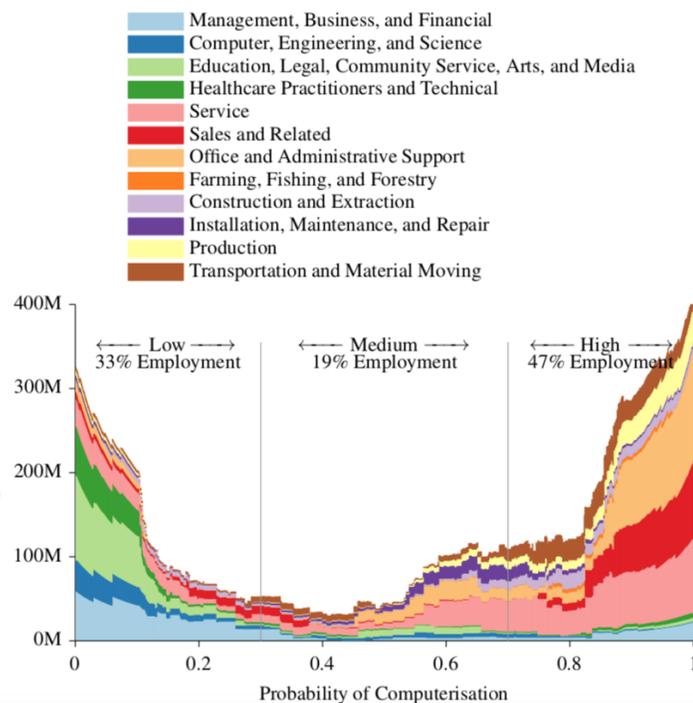
% of mismatched workers



Source: OECD

The demand is changing!

C. Frey, M. Osborne / *Technological Forecasting & Social Change* 114 (2017) 254–280

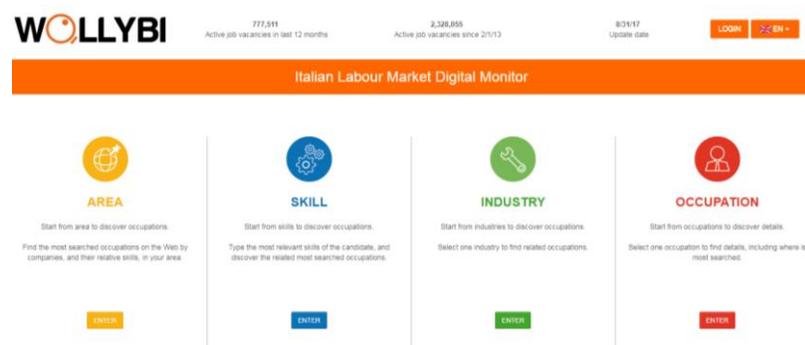


- Several Studies show that the automation/digitalization is contributing to change the kind and nature of jobs available and the skills and knowledge that employers need.
- A famous work by Frey and Osborne estimates that almost half of the existing works have a high probability of "automation" over the next 25 years.
- A recent report by the World Economic Forum estimated that 65% of children currently attending primary school will do a job in their lives that does not exist today.

Monitor this change

- KNOWLEDGE becomes a key factor in such a context to have a clear picture of the Labour Market and to understand how the concept Labour is evolving.
- In such a rapidly changing and broad market **Big Data** play a relevant role to provide timely and detailed (tailored) information.

Big data: the Online Job Vacancies



In the Labour Market, for the Labour Demand side, the Online Job Vacancies are considered very significant. OJV are an extremely rich source of information: they are very granular as they offer detailed information about the occupation, the sector and the place of posting.

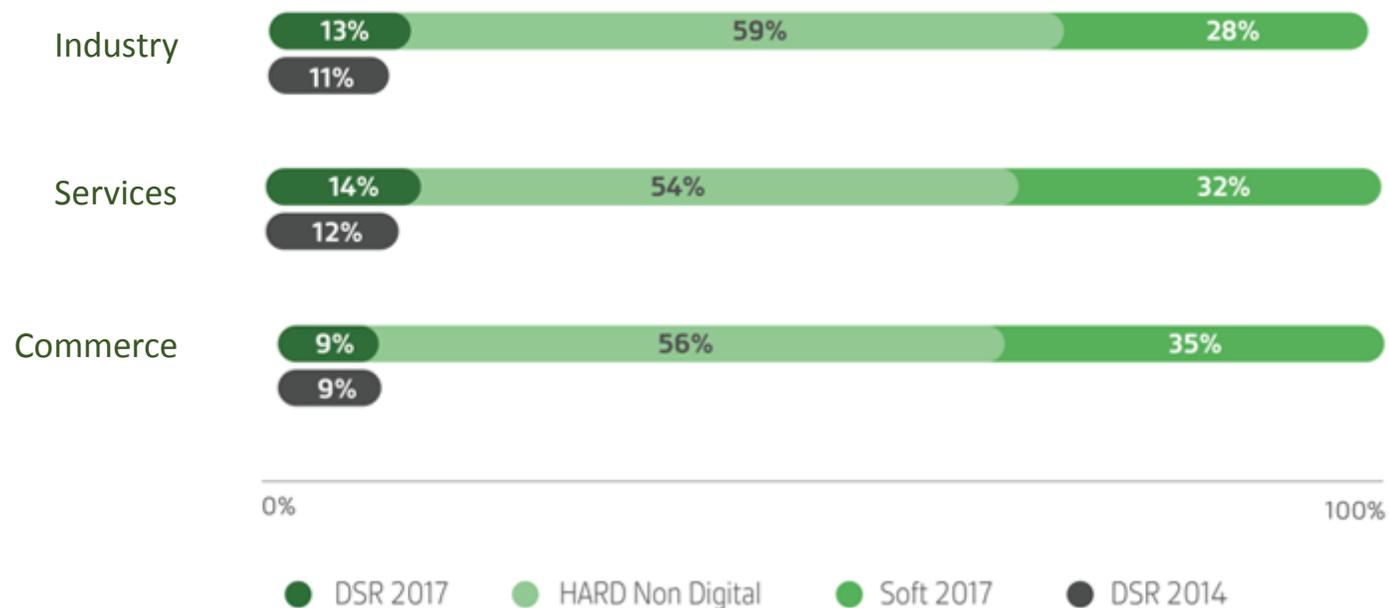
Wollybi* is a database containing more than 3 million active vacancies for Italy, updated to August 2018.

* Wollybi is a trademark of TABULAEX

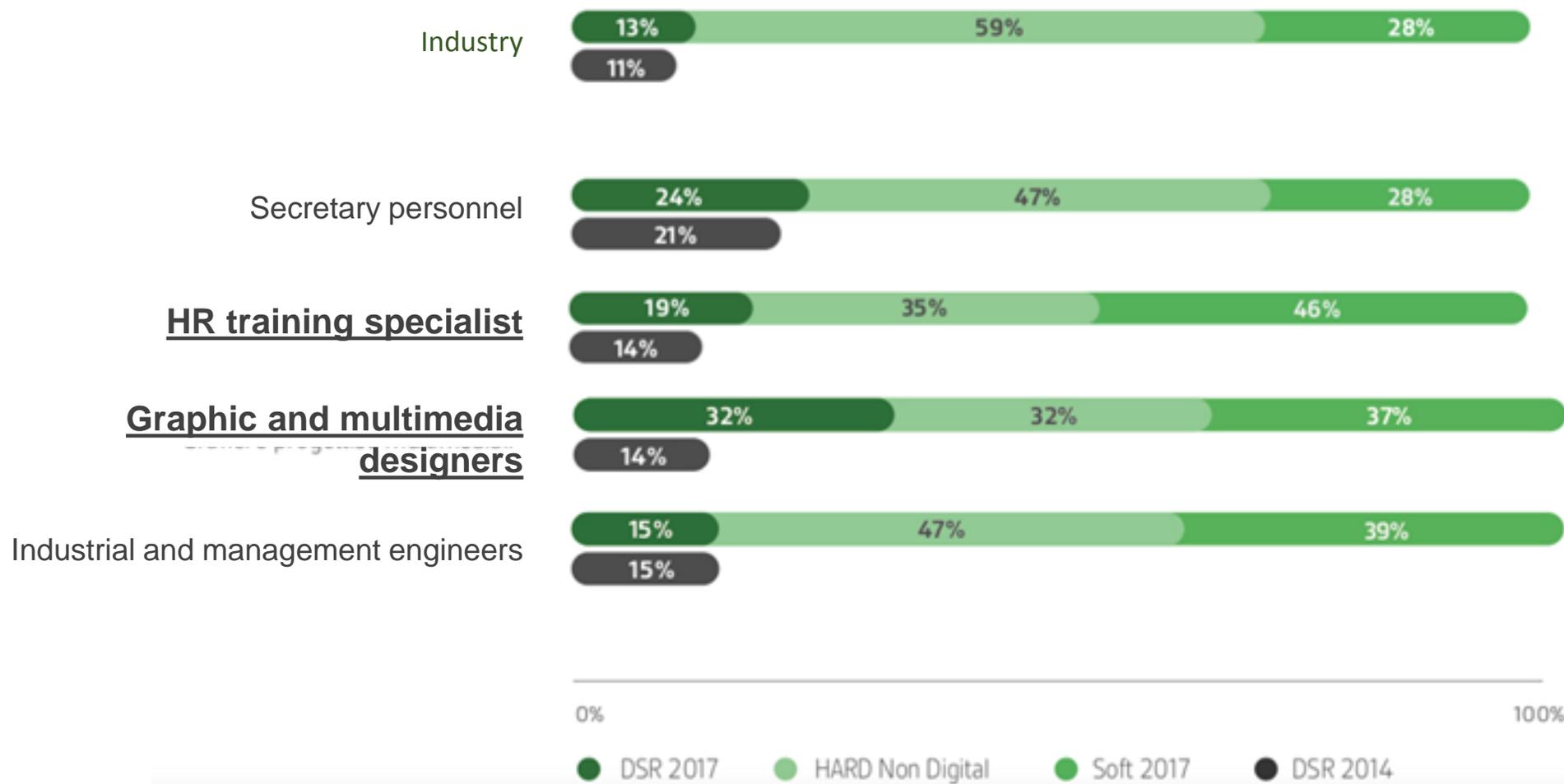
The calculation of the Digital Skills Rate

Using the **Wollybi** database we focused on the development of the Digital Skills demand (DSR), in a recently published work called “Observatory of digital skills”

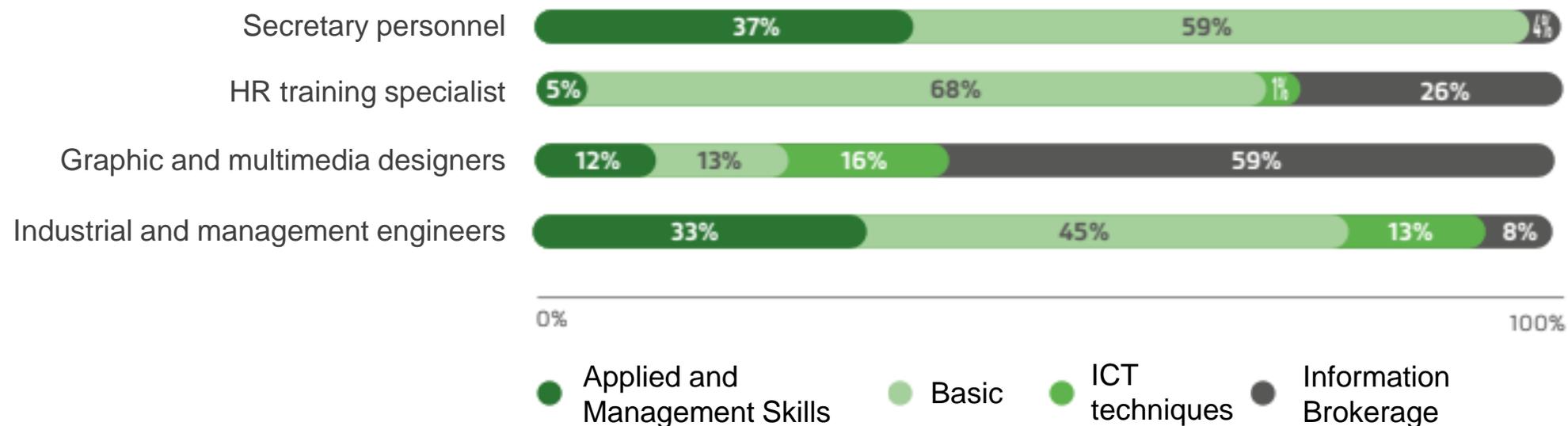
Demand of digital, specialist and soft skills - by sector



The DSR in some occupations belonging to Industry sector



The DSR in detail



- **Applied and Management Skills** = ability to use tools and software to manage both operational and decisional processes
- **ICT Techniques Skill** = very specialized on solutions, platforms and programming languages
- **Basic Skill** = for everyday use of basic IT tools
- **Information Brokerage Skill** = for the use of IT tools aimed at corporate communication

The digital skills

Applied and Management Skills				ICT techniques		Information Brokerage	
Occupation	Database usage	Programs for draughts man	3D modelling	Front-end Website implementation	Web programming	Graphic Software Usage	SW markup usage
Graphic and multimedia designers	25	35	3	45	2	5	2

Applied and Management Skills			Information Brokerage		
Occupation	Database usage	ERP	Digital data management	SEO Search Engine Optimiz.	Social Network Usage
HR training specialist	45	4	45	4	25

Final considerations



+ KNOWLEDGE
+ DATA DRIVEN POLICIES
=
- MISMATCH

Having the possibility to reach such a detailed knowledge level of what is happening and what is changing in the Labour Market can have a great impact in the short-medium period in terms of education / vocational training, policies and services for labour (like vocational guidance, counselling, etc.).

Soft, hard, digital skills and job automation

The same methodology used for calculating the digital skill rate can be applied to all other dimension of skill content. We used the general ESCO classification augmented for digital content.

Soft, hard, digital skills and job automation

- Hard vs soft skills
- Hard skills: digital vs non-digital
- Digital skills:
 - Information brokerage skills
 - Basic ICT skills
 - Applied/Management ICT skills
 - ICT Technical skills

Soft, hard, digital skills and job automation

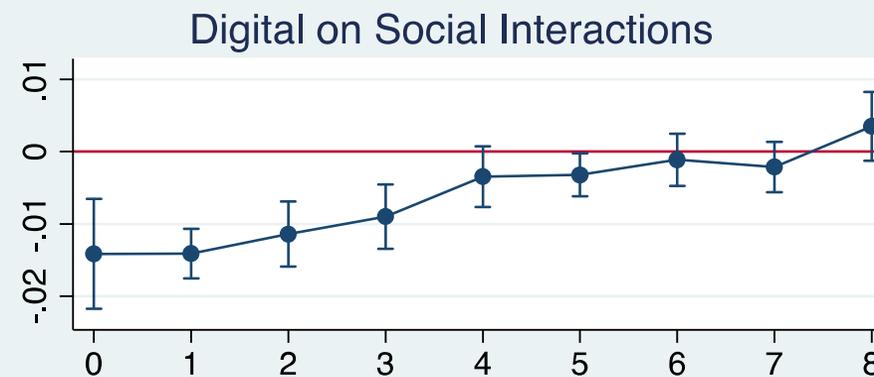
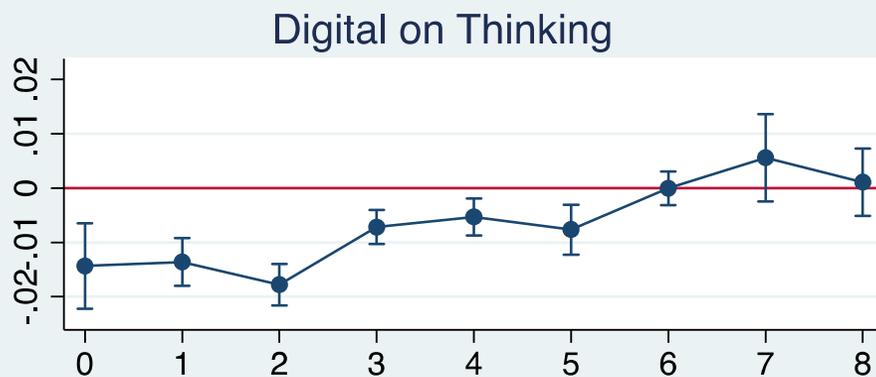
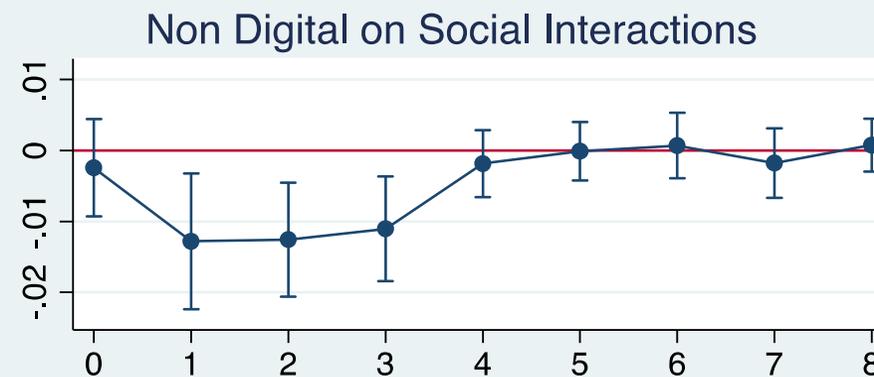
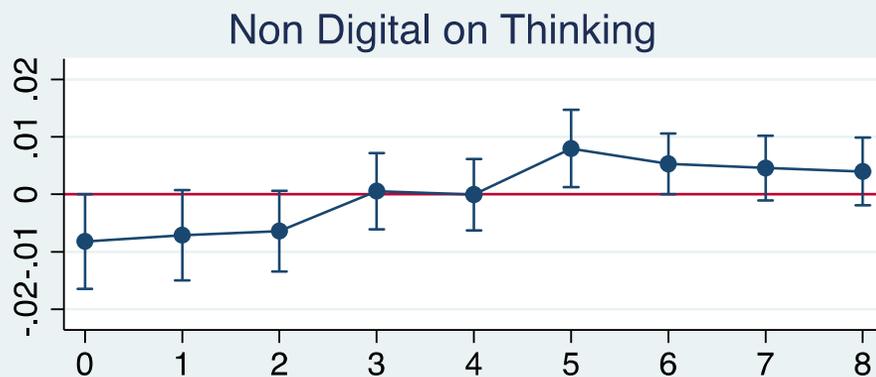
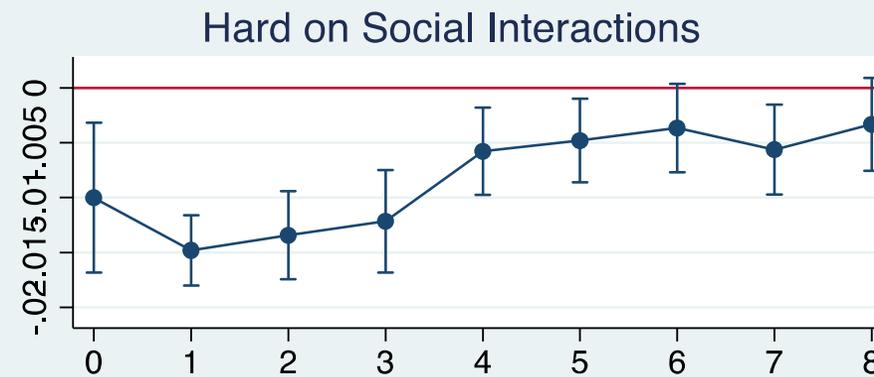
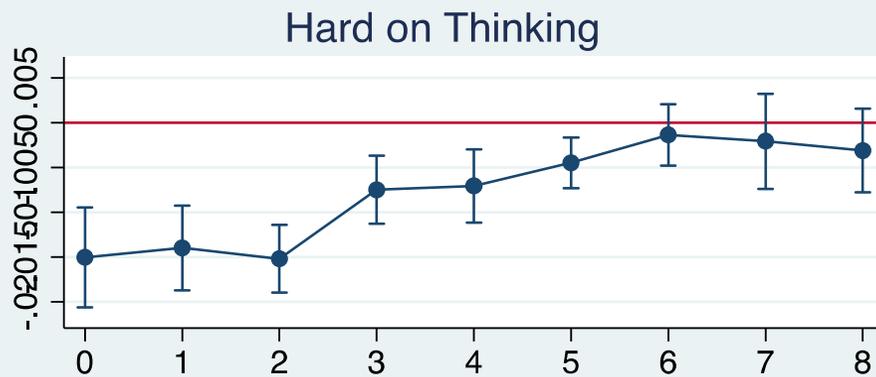
Soft skills

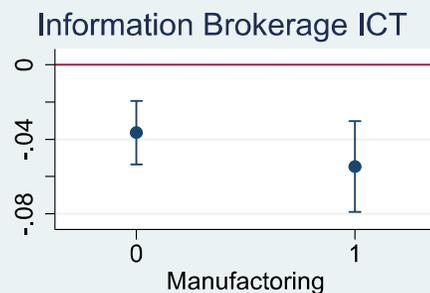
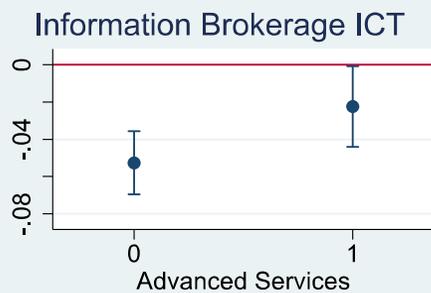
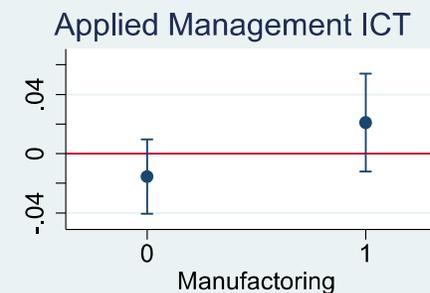
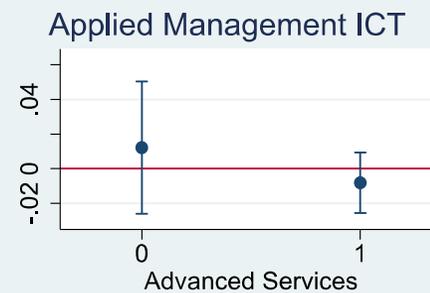
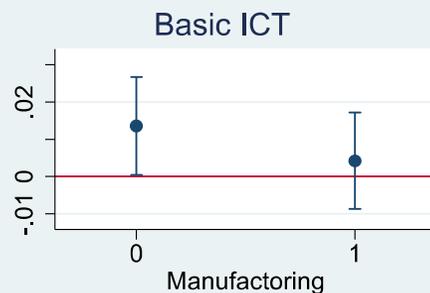
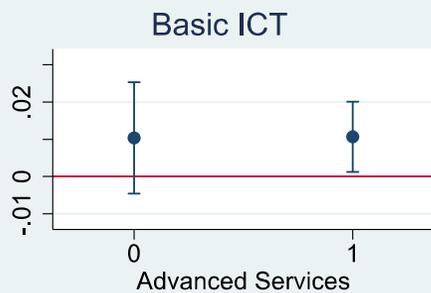
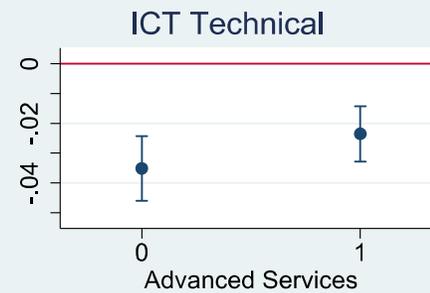
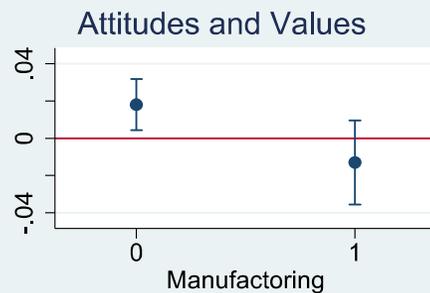
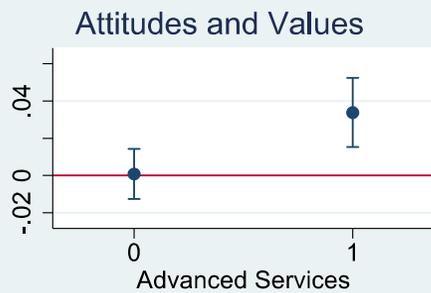
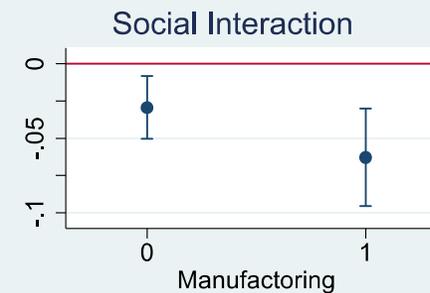
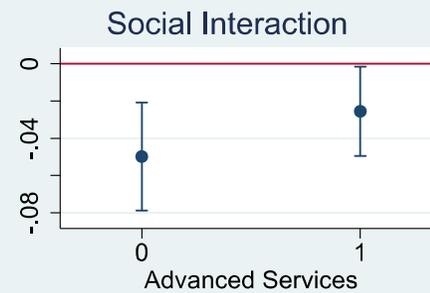
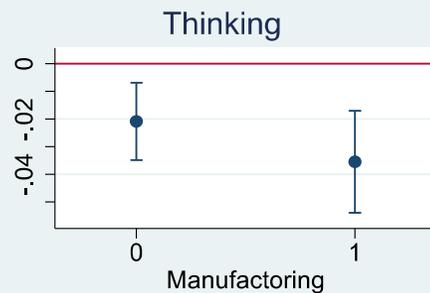
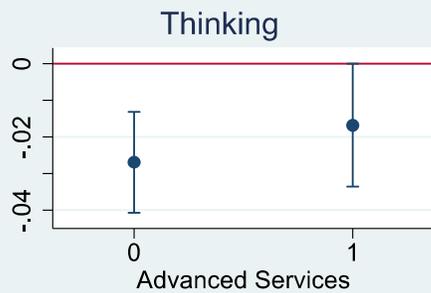
- Thinking skills
- Social Interaction
- Application of knowledge
- Attitudes and values

Soft, hard, digital skills and job automation

- We compute the skill degree for each occupation group (4 digit) and translated ISCO classification into SOC
- We impute for each occupation the degree of automability as computed by Frey and Osborne (2017)
- We explain the probability of automation by detailed skill degree and look at skill interactions in automation

	(1)	(2)	(3)
Non Digital	-0.007**	-0.007**	-0.007**
ICT Technical	-0.025***	-0.025***	-0.024***
Basic ICT	0.008	0.008	0.009*
Applied. Manag. ICT	0.012	0.011	0.011
Inf. brokerage	-0.032***	-0.032***	-0.030***
Thinking	-0.023***	-0.023***	-0.022***
Language	-0.007	-0.007	-0.004
Soc. Interaction	-0.042***	-0.042***	-0.040***
App. Knowledge	-0.008	-0.008	-0.010
Attitude values	-0.002	-0.002	0.009*
Experience		0.003	-0.001
Education			-0.071***
r2	0.173	0.173	0.188
N	1299928	1299928	879887





Thank you

mario.mezzanzanica@unimib.it emilio.colombo@unicatt.it

WOLLYBI

Business Intelligence from Web

www.wollybi.it

CRISP

www.crisp.org.it



Skills, Not Jobs: Insights on the 'Re-skilling Revolution' from Labour Market Vacancy Data

European Network on Regional Labour Market Monitoring
11 September 2018

*Dan Restuccia, Chief Analytics and Product Officer
Burning Glass Technologies*

Behind the Skills Gap is An Information Gap



Building a Detailed Understanding of Labour Market Mismatch

Online vacancy data provides a key window into critical questions related to skill gaps.

- **How can we understand skill gaps at detailed and actionable level?** In order to determine effective policy interventions, we must be able to measure which specific jobs and skills face shortages.
- **What are the underlying dynamics and causes behind the gaps?** There set of systemic changes occurring in the job market disrupting past patterns of credentials and other signaling mechanisms: hybridization, upcredentialing, automation, etc.
- **What are the future trends in the job market?** We can project future skill demand to prepare tomorrow's workers, today.

IMPACT OF REAL-TIME JOBS DATA

POWERFUL RESULTS ACROSS COMMUNITIES



RESKILLING

Thousands of at-risk retail workers are reskilling for adjacent careers in retail banking and IT support.



ECONOMIC DEVELOPMENT

Cities like Pittsburgh and Birmingham have been using our data to shape coordination across education, industry, and government to build their skill base.



REEMPLOYMENT

1 million unemployed are served by agencies using our data. On average, they return to work a week faster than others.



EDUCATIONAL PERSISTENCE

90% of high dropout risk students at a national university are persisting in their studies.



JOB STABILITY

A global technology leader has been able to avoid thousands of layoffs by upskilling rather than replacing workers.



CAREER GUIDANCE

A training provider has experienced 60% increases in enrollments to high impact vocational courses by better articulating their career value.

Part 1: Occupational Mismatch Model

Challenge: There are not readily available data sources which comprehensively assess both the supply and demand in jobs and skills in the market.

Demand Side Model:

Determine demand by occupation.

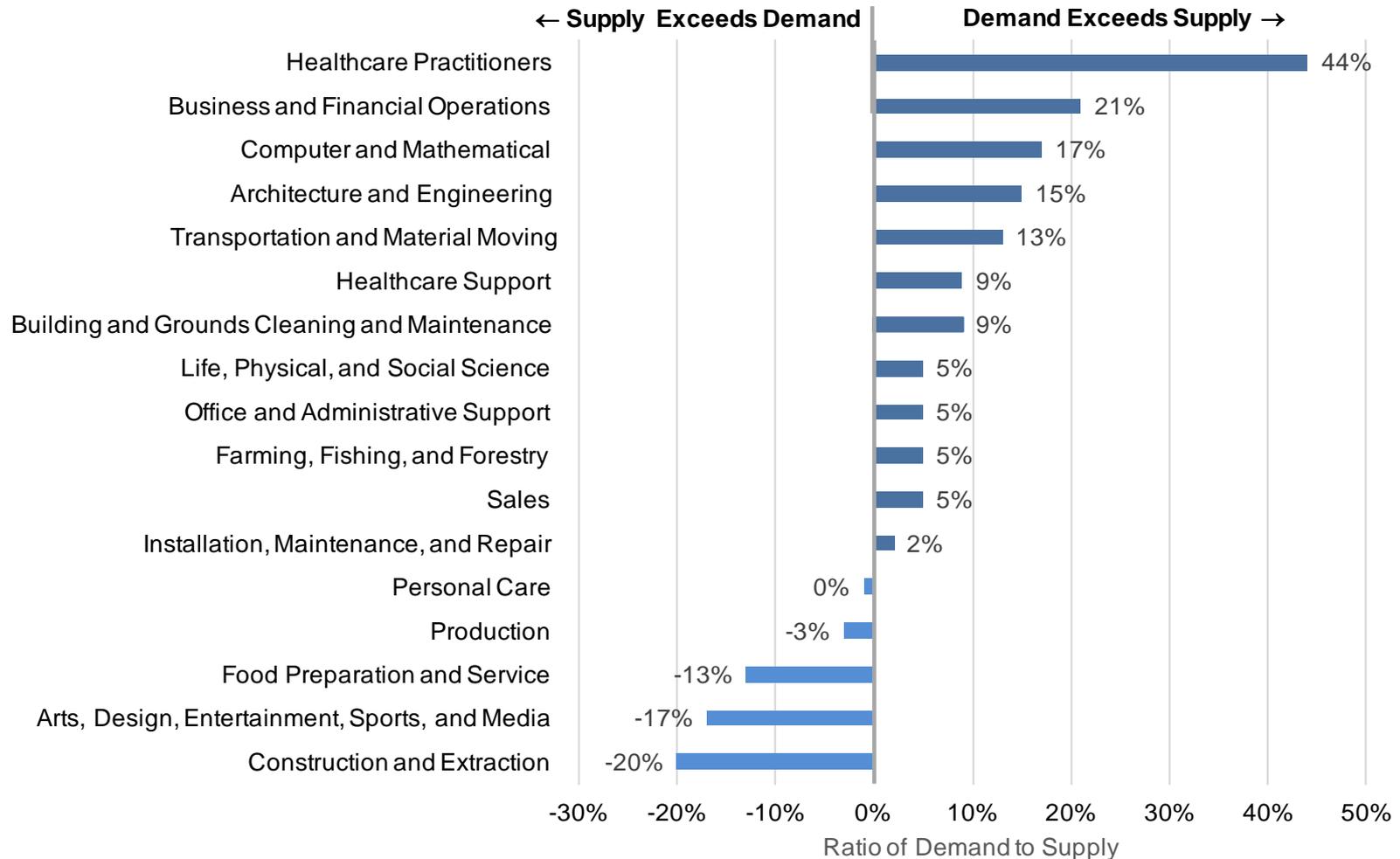
- Burning Glass' data set has collects 25M US postings per year, approx. 2/3 of overall openings and assigns each an occupation.
- JOLTS has comprehensive survey of vacancies, but only at the industry level.
- OES and QWI data are used to normalize postings to JOLTS total to determine to total vacancies by occupation.

Supply Side Model:

Determine available supply of labour by occupation.

- Employment survey data provides information on the total number of workers by occupation.
- CPS is used to calculate a churn rate, which is multiplied by employment to determine available number of incumbent workers.
- New programme graduates are added to supply and retiring workers are subtracted to determine the total pool of available workers by occupation.

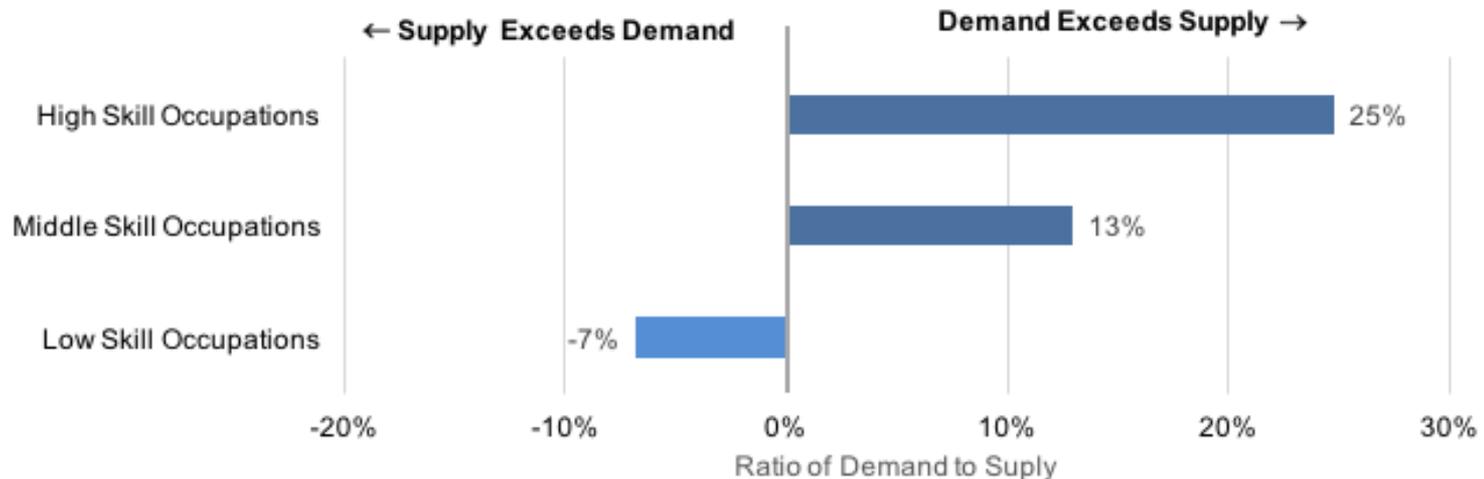
Demand Supply Ratio by Occupation Family



Demand Supply Ratio by Skill Level

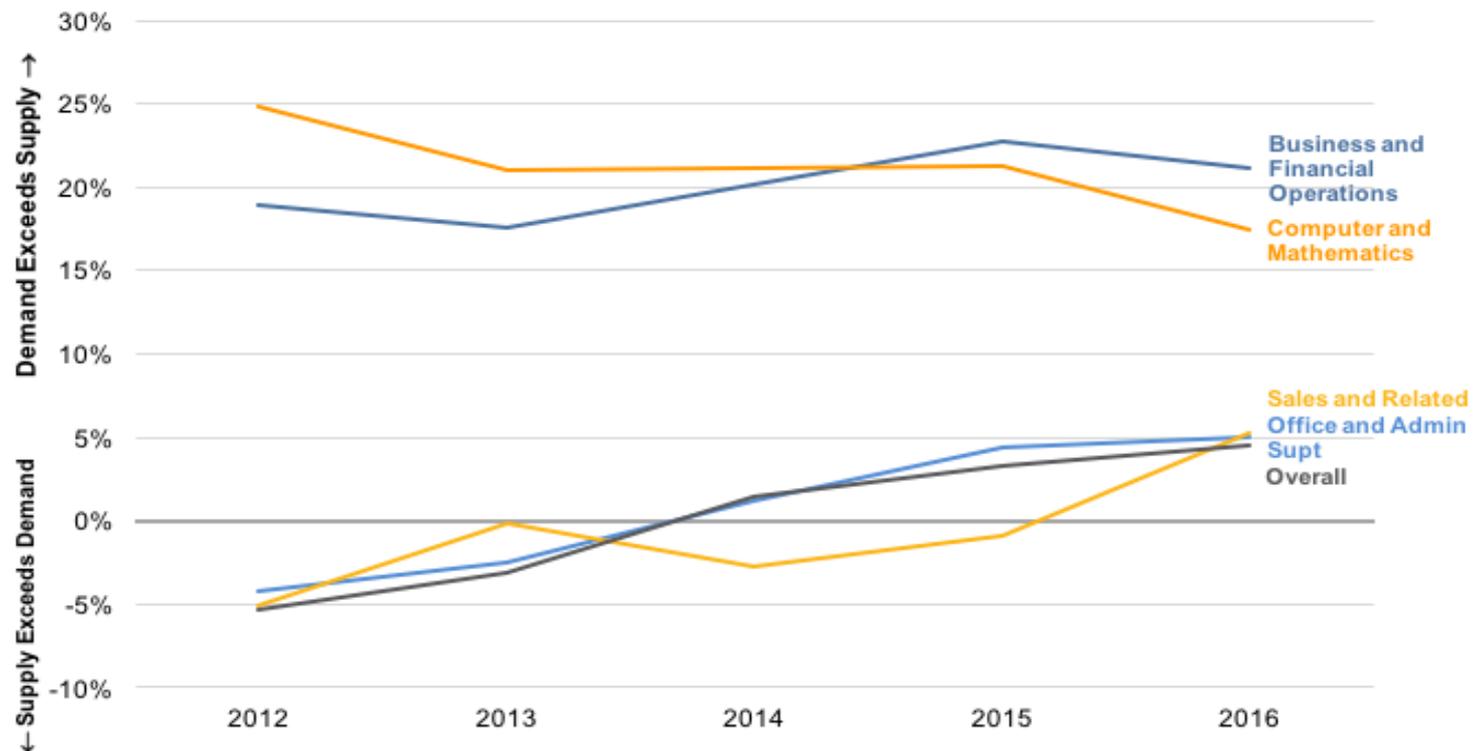
Skill gaps increase among higher skill jobs.

- High skill jobs (>80% of postings request a bachelors) and middle skill jobs (where average wage >\$15/hr and < 80% postings request a BA) are undersupplied.
- Low skill jobs (wage < \$15 / hr) are oversupplied.



Supply / Demand of Business Occupations Over Time

- High skill roles were less affected by the recession and have seen supply increase along with post-recession demand.
- Middle skill roles were oversupplied during the recession, but as the economy has improved, now face gaps.



Part 2: Skill Gap Causes

The skills gap is not a singular gap. We see evidence of a range of factorings which create labour market mismatch.

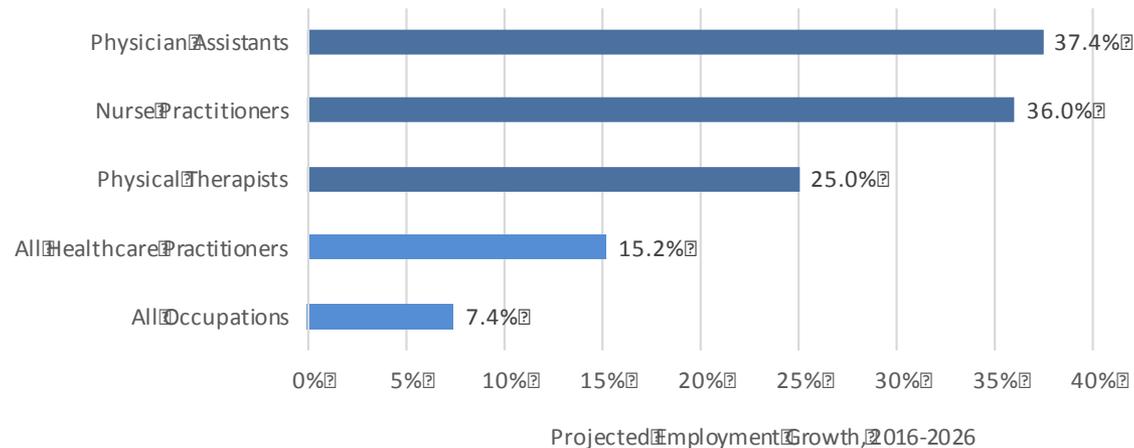
- **Occupational Supply Shortages.** Many rapidly growing occupations face supply shortages.
- **Overcredentialing and Misaligned Signals:** Employers have a tendency to overcredential, asking for university degrees when they don't need them.
- **Skill Shortages and Changing Demand:** As occupations evolve to required new skills, available talent often struggles to keep up.

Skill Gap Causes: Occupational Supply Shortage

Advanced practice clinical care roles, such as nurse practitioners, physician’s assistants, physical therapists and occupational therapists have more than 1.7 openings for every potential worker.

Long training times, complex licensure requirements and rapid growth projections make these gaps challenging to address.

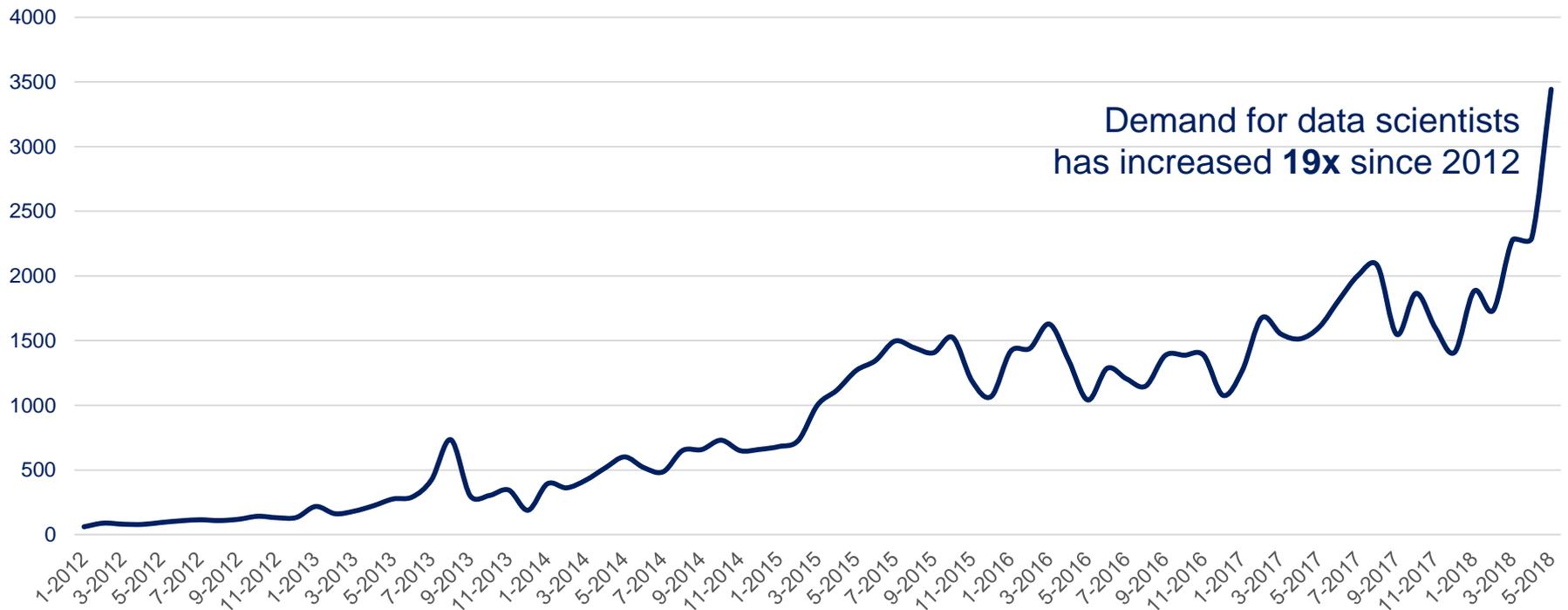
Rapidly growing health care roles, ten-year projections



Skill Gap Causes: Occupational Supply Shortage

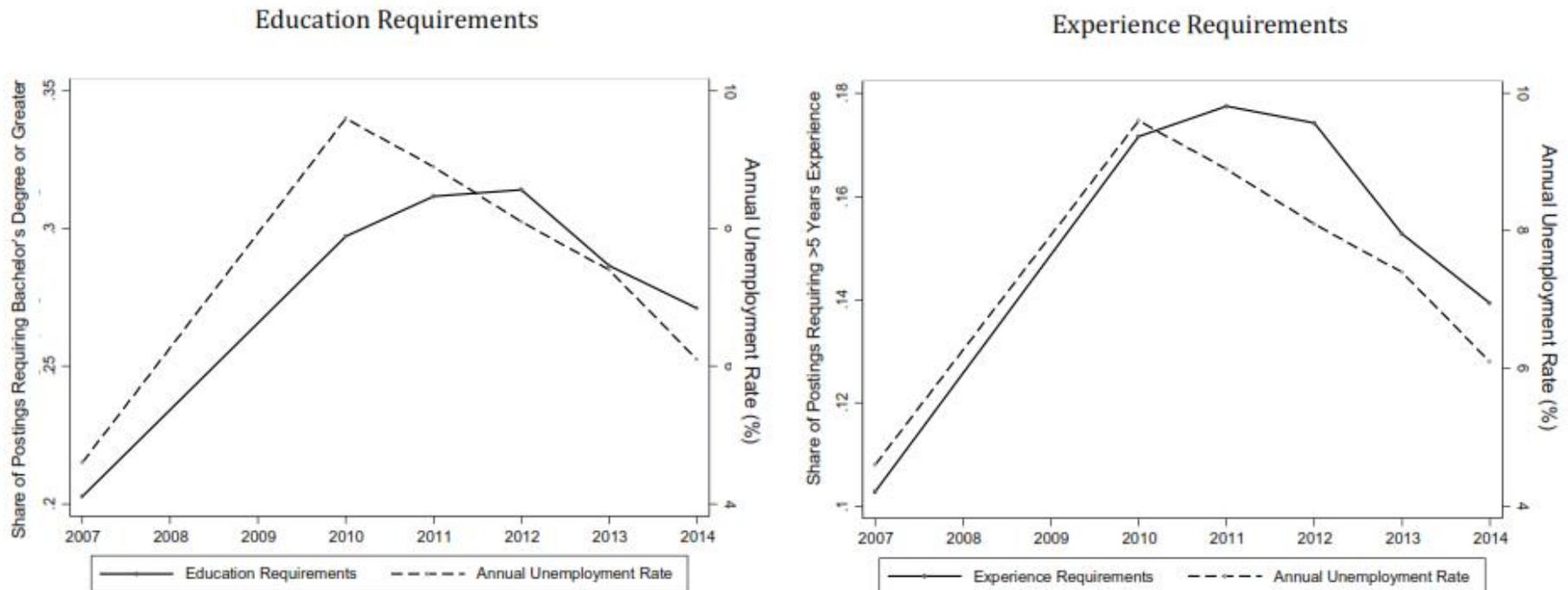
Computer and Information Scientists: There was no gap in 2012, but the occupation is now undersupplied by 20%. The gap is driven by increased demand for data scientists, an important subset of this occupation.

Monthly Demand for Data Scientists, 2012- 2018



Skill Gap Causes: Overcredentialling and Misaligned Signals

Figure 1. Relationship between Changes in Employer Requirements and Labor Market Slack, 2007—2014



Notes: Authors' analysis using the unemployment rate as reported by the Bureau of Labor Statistics and data on job postings from Burning Glass Technologies, 2007—2014.

From: Modestino, Alicia Sasser, Daniel Shoag, and Joshua Ballance. "Downskilling: changes in employer skill requirements over the business cycle." *Labour Economics* (2016).

Skill Gap Causes: Skill Shortages

Hybrid roles requires skills that do not commonly train together creating skills gaps within the occupations because works often do not have viable training pathways to develop the necessary combinations of skills.

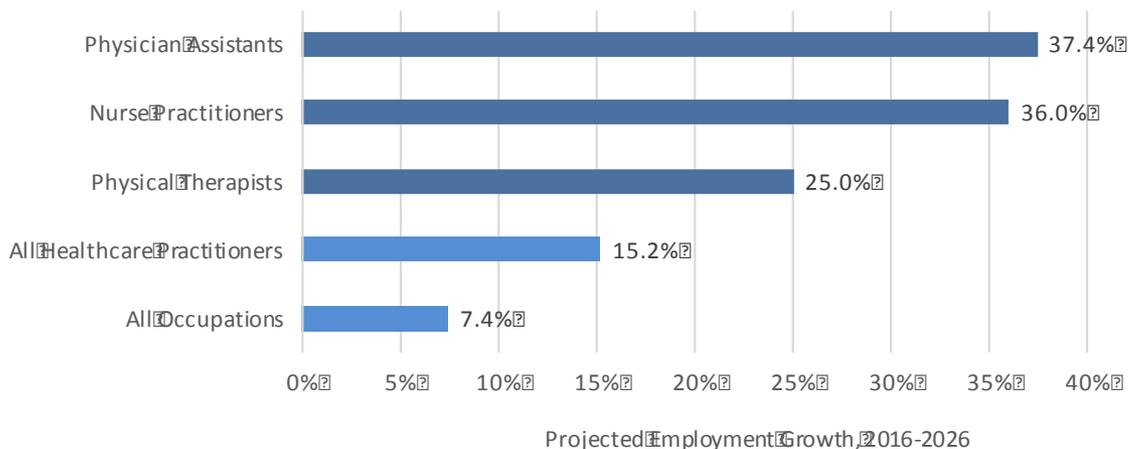
Occupational Supply Shortages

The skills gap is not a singular gap. We see evidence of a range of factorings which create labour market mismatch.

Advanced practice clinical care roles, such as nurse practitioners, physician’s assistants, physical therapists and occupational therapists have more than 1.7 openings for every potential worker.

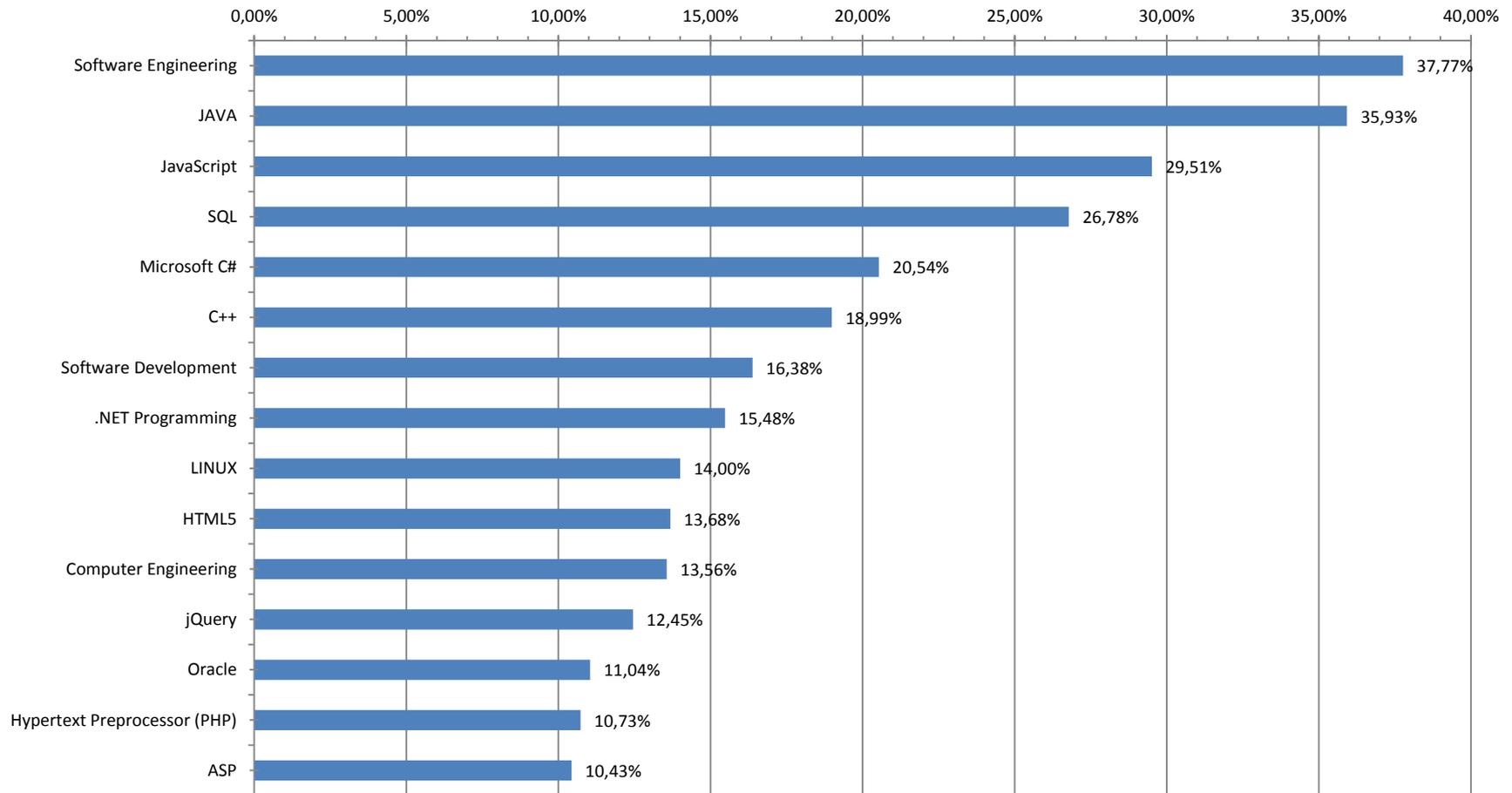
Long training times, complex licensure requirements and rapid growth projections make these gaps challenging to address.

Rapidly growing health care roles, ten-year projections



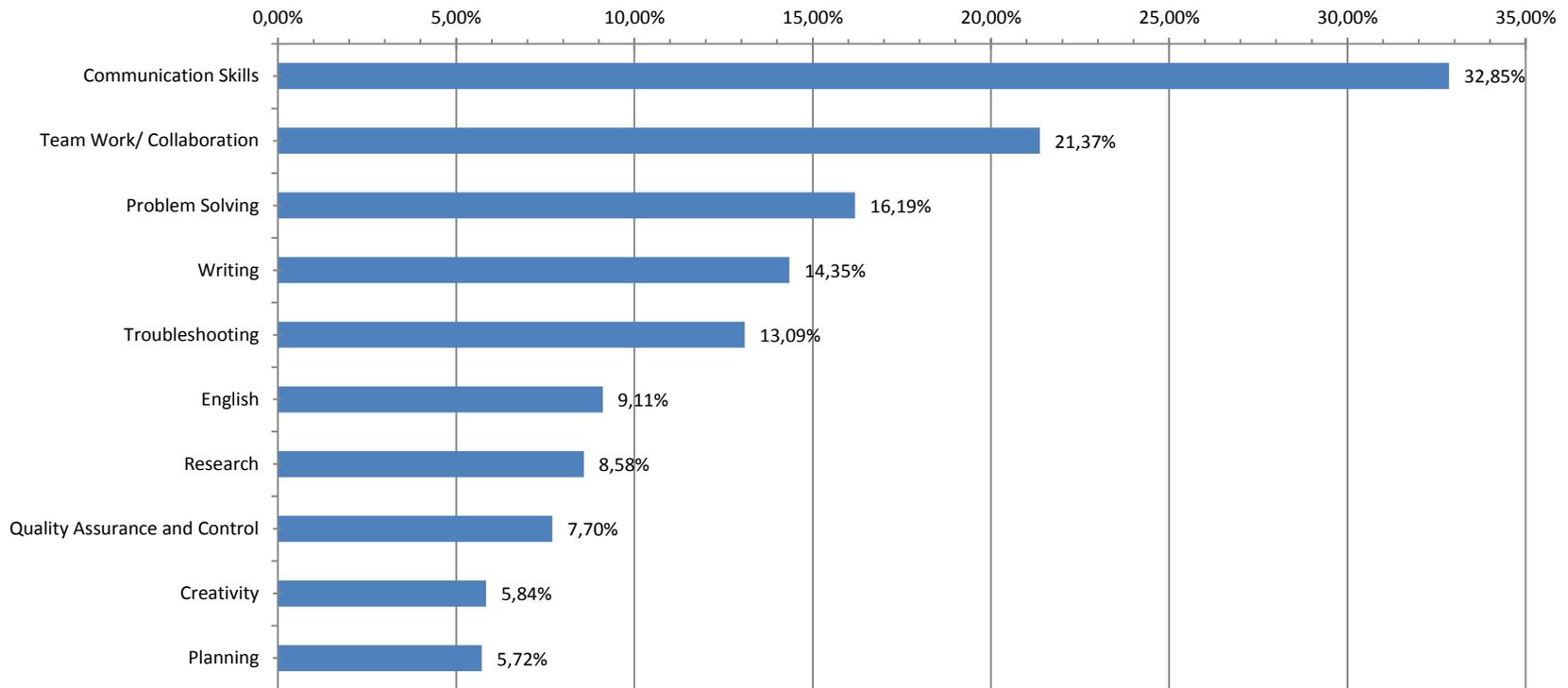
Highlight Technical Skill Needs

Top Specialised Skills for Software, Web and Multimedia Developers



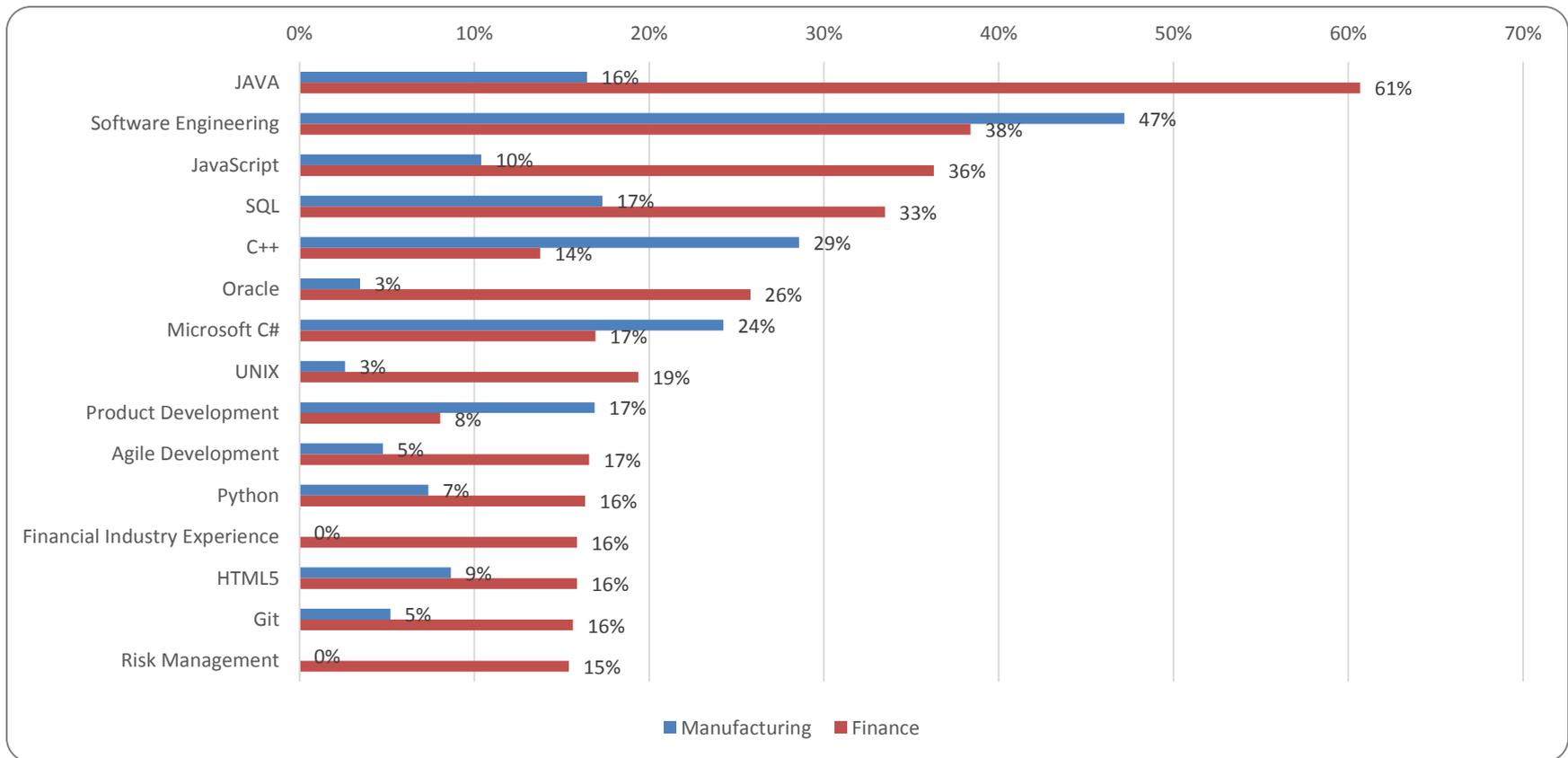
Highlight Baseline Skill Needs

Top Baseline Skills for Software, Web and Multimedia Developers



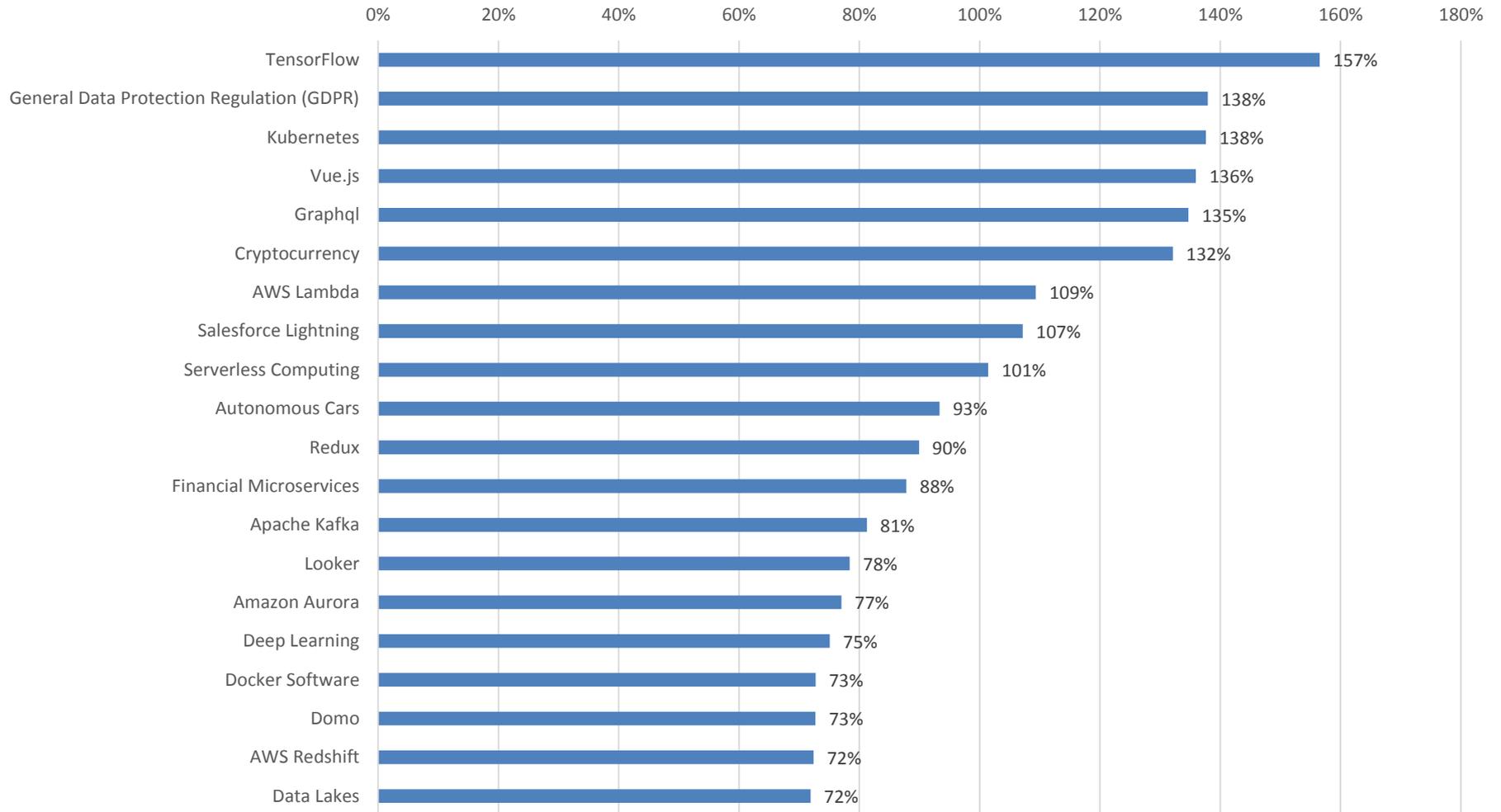
Focus Skill Development on Target Industries

Top Specialized Skills for Software, Web and Multimedia Developers in Manufacturing and Finance.



Highlight Future Skill Demand

Fastest Growing Skills: 2 Year Projections



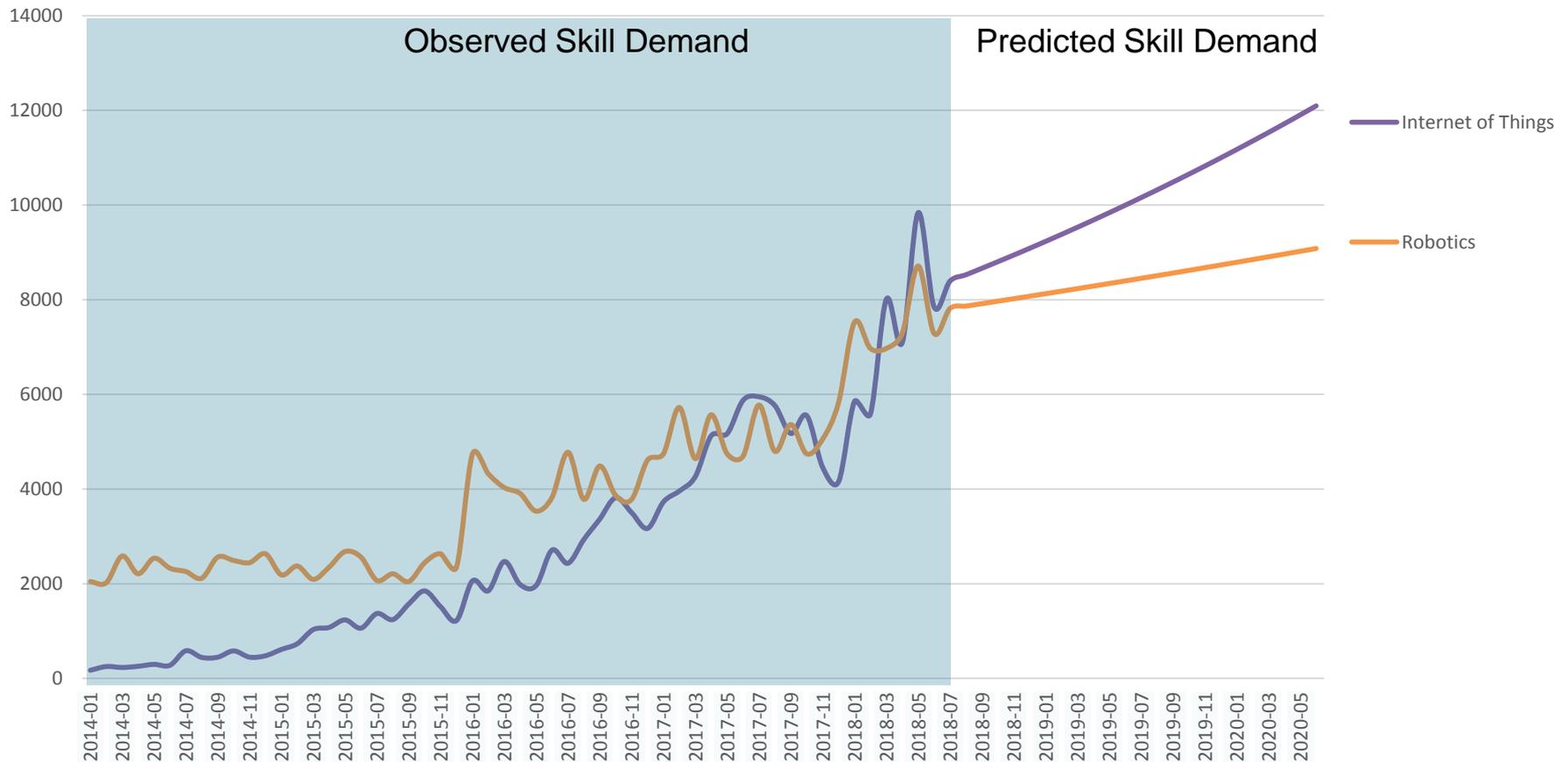
Highlight Talent Development Challenges

An array of lenses on the skills and talent sets that are proving most critical

	Top IT Skills (Total postings)	Highest Paying IT Skills (Mean advertised salary)	Fastest Growing IT Skills (24 month projections)	Hardest to Fill IT Skills (Mean posting duration)
1.	SQL	Zookeeper	TensorFlow	Public Cloud Security
2.	Java	TensorFlow	General Data Protection Regulation (GDPR)	Infrastructure as a Service (IaaS)
3.	JavaScript	Scala	Kubernetes	Cloud Technology Architecture
4.	Linux	AWS Redshift	Spring Boot	Cloud Infrastructure
5.	Python	AWS DynamoDB	Webpack	Ansible
6.	Data Analytics	Go Programming Language (Golang)	AWS Lambda	Apache Mesos
7.	Salesforce	Pig	Salesforce Lightning	Data Protection Planning
8.	C#	Apache Mesos	Redux	Work Breakdown Structure
9.	Scrum	AWS CloudFormation	Financial Microservices	Hadoop Cloudera
10.	C++	Deep Learning	Apache Kafka	OpenShift

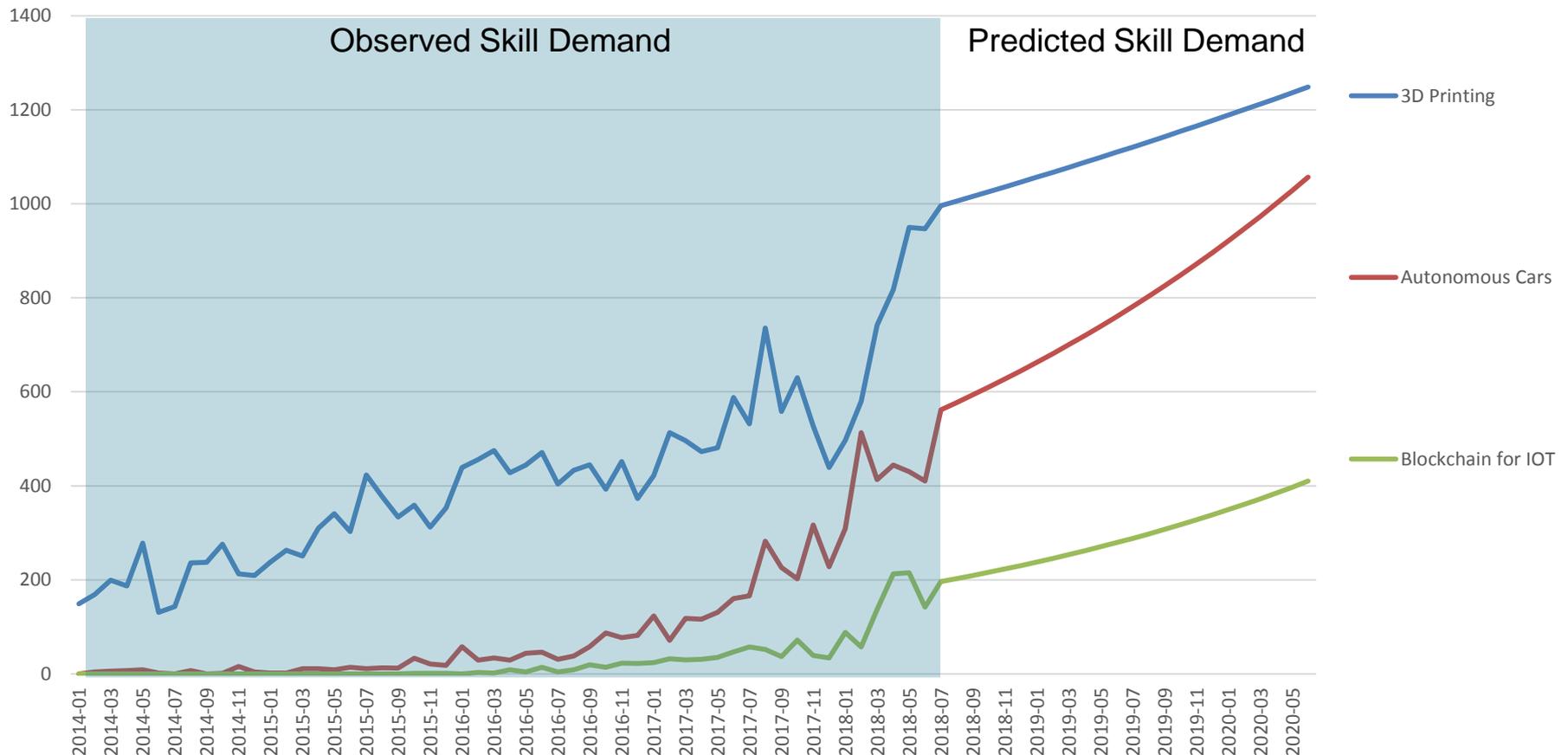
Track the Future of Emerging Technologies

Robotics and the IoT are each projected to grow annually by double digit rates, representing major underpinnings in the future of industry.

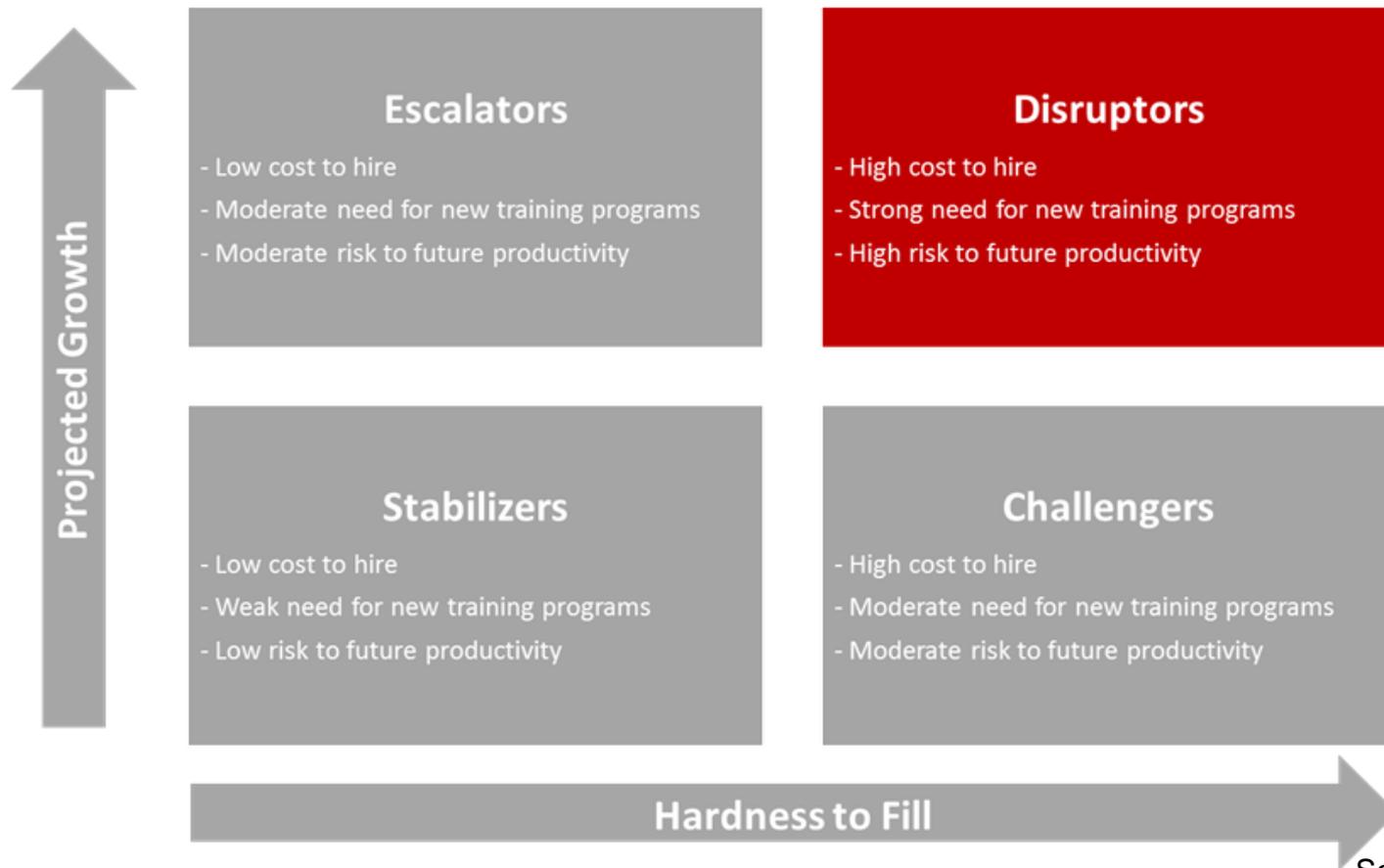


Track the Future of Manufacturing

Rapidly emerging technologies such as 3D printing, autonomous vehicles, and blockchain threaten to disrupt the skills landscape in just a few years.

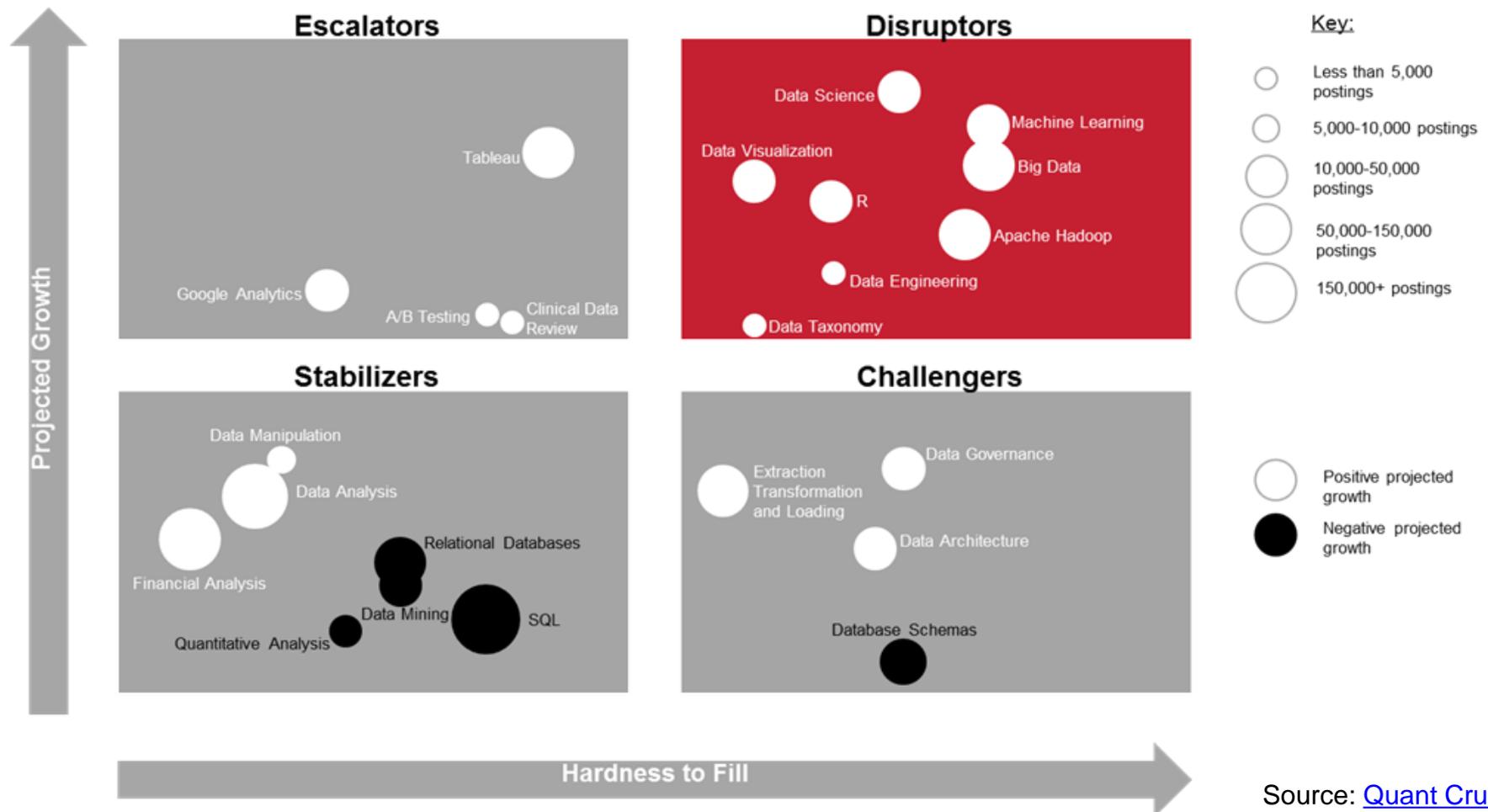


Disruptive Skills: Prepare for tomorrow's market today



Source: [Quant Crunch](#)

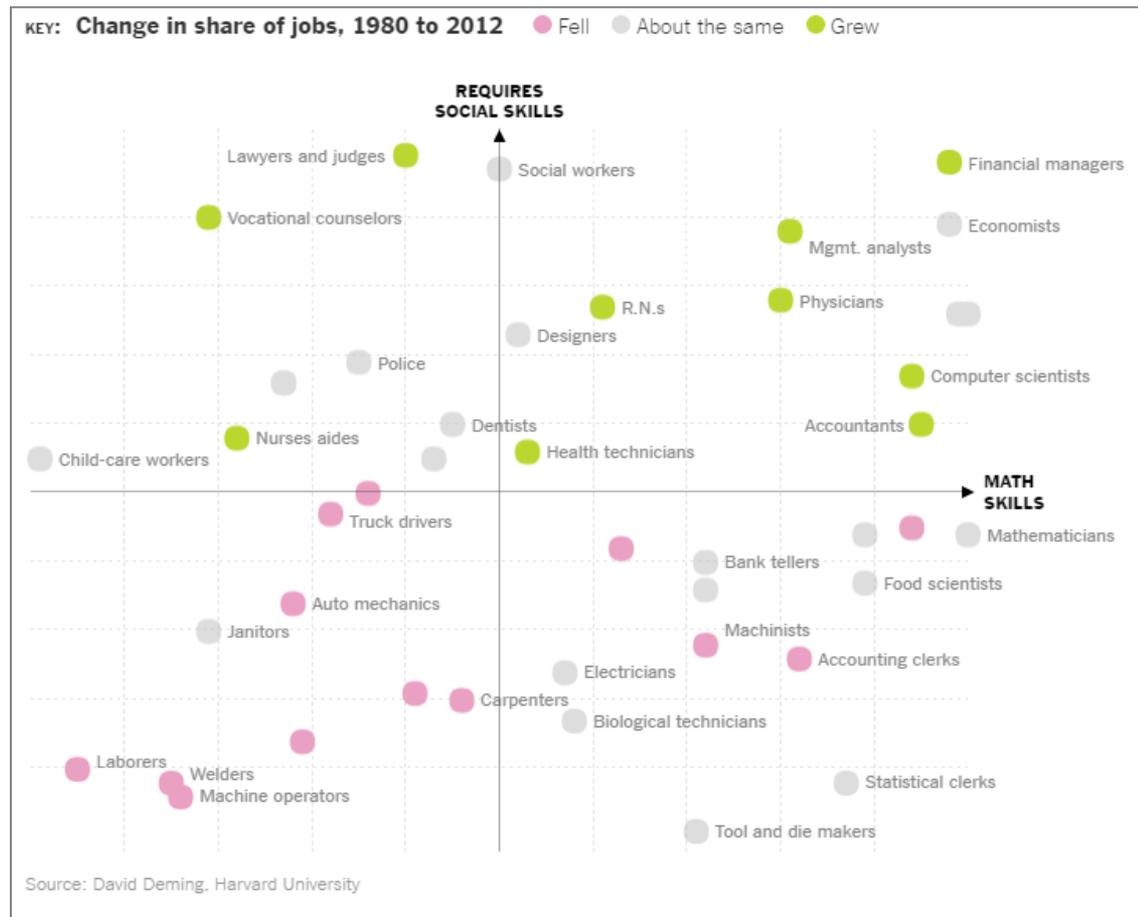
Critical Data science and analytics tools and technologies



Source: [Quant Crunch](#)

Hybridization: The job market requires a diverse mix of skills

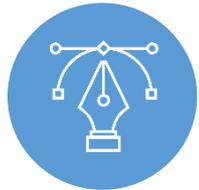
Deming: Jobs requiring a combination of math and social skills are growing fastest.



Source: [Jobs of the Future](#)

Hybrid skills are redefining the market

A **key trend** is jobs that combine skills from different fields, such as technology and marketing, or product management and data analytics



**WEB
DEVELOPMENT
AND DESIGN**

67,250
JOB COUNT
LAST 12 MONTHS

3%
CHANGE SINCE 2011

\$87,217
AVG. SALARY



**DIGITAL
MARKETING &
MARKETING
AUTOMATION**

45,991
JOB COUNT
LAST 12 MONTHS

145%
CHANGE SINCE 2011

\$76,783
AVG. SALARY



**PROJECT
MANAGEMENT**

40,752
JOB COUNT
LAST 12 MONTHS

7%
CHANGE SINCE 2011

\$106,471
AVG. SALARY



**USER
EXPERIENCE /
USER
INTERFACE
(UI/ UX)**

29,825
JOB COUNT
LAST 12 MONTHS

15%
CHANGE SINCE 2011

\$99,177
AVG. SALARY



**MOBILE
DEVELOPMENT**

41,032
JOB COUNT
LAST 12 MONTHS

135%
CHANGE SINCE 2011

\$111,380
AVG. SALARY



**DATA
ANALYTICS**

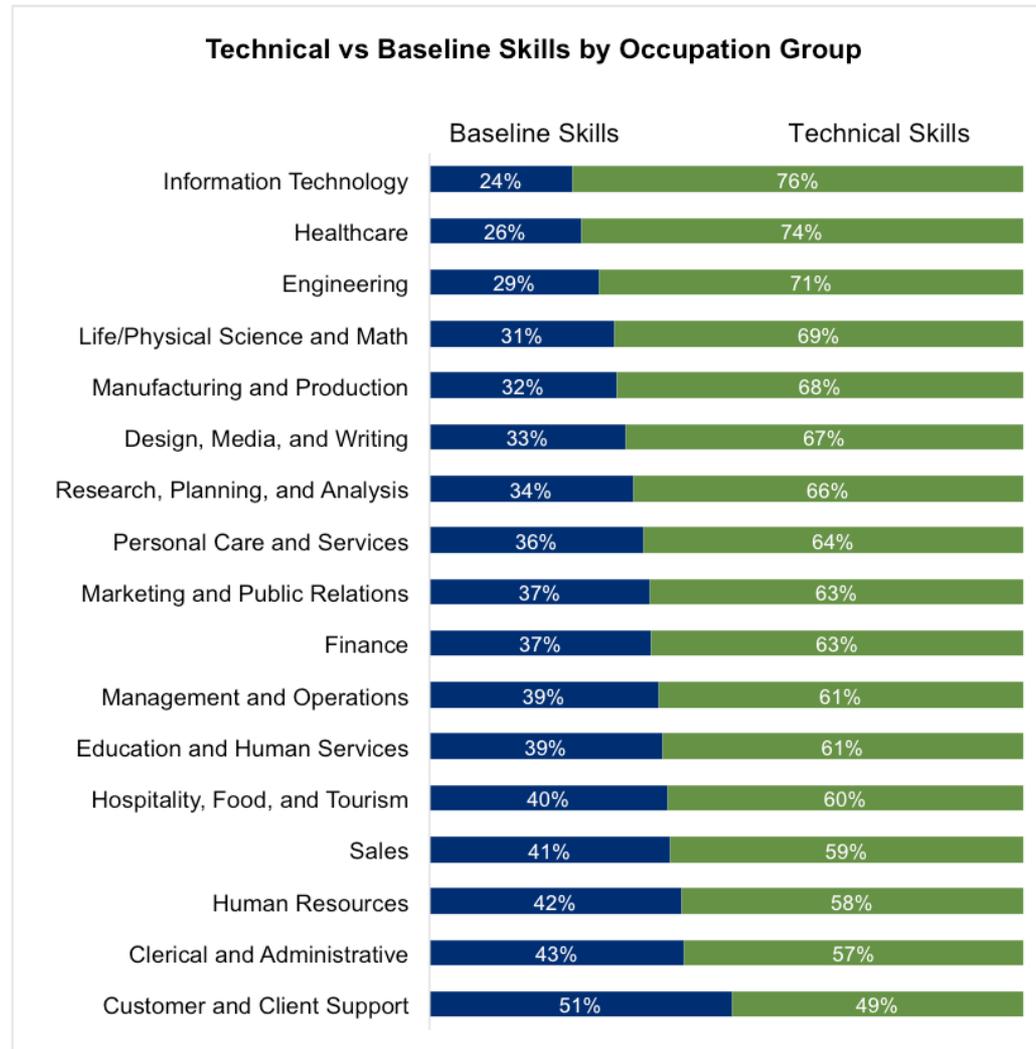
41,000
JOB COUNT
LAST 12 MONTHS

372%
CHANGE SINCE 2011

\$105,540
AVG. SALARY

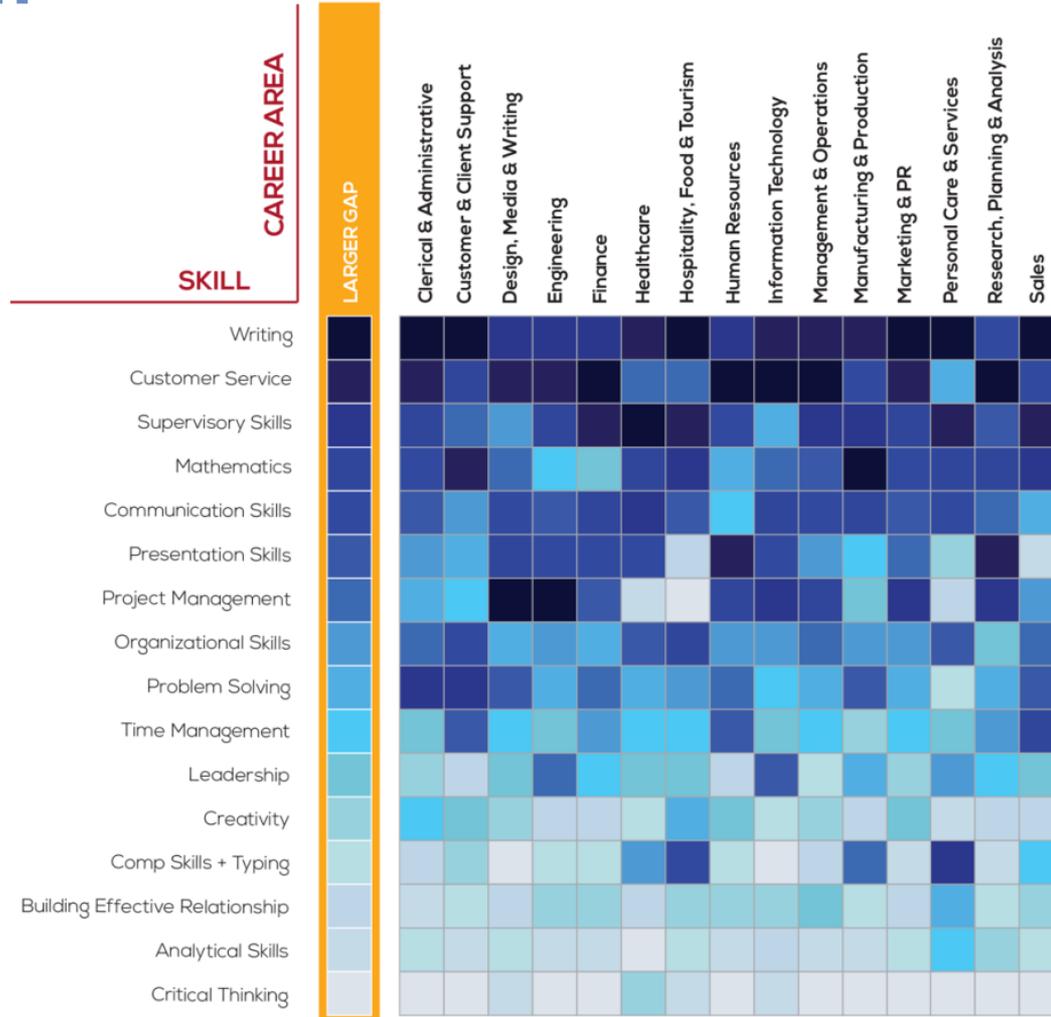
Source: [Burning Glass: Hybrid Jobs Report](#)

Soft Skills Matter: Even in technical jobs



Source: [Human Factor](#)

Soft Skills Matter: And employers struggle to fill them



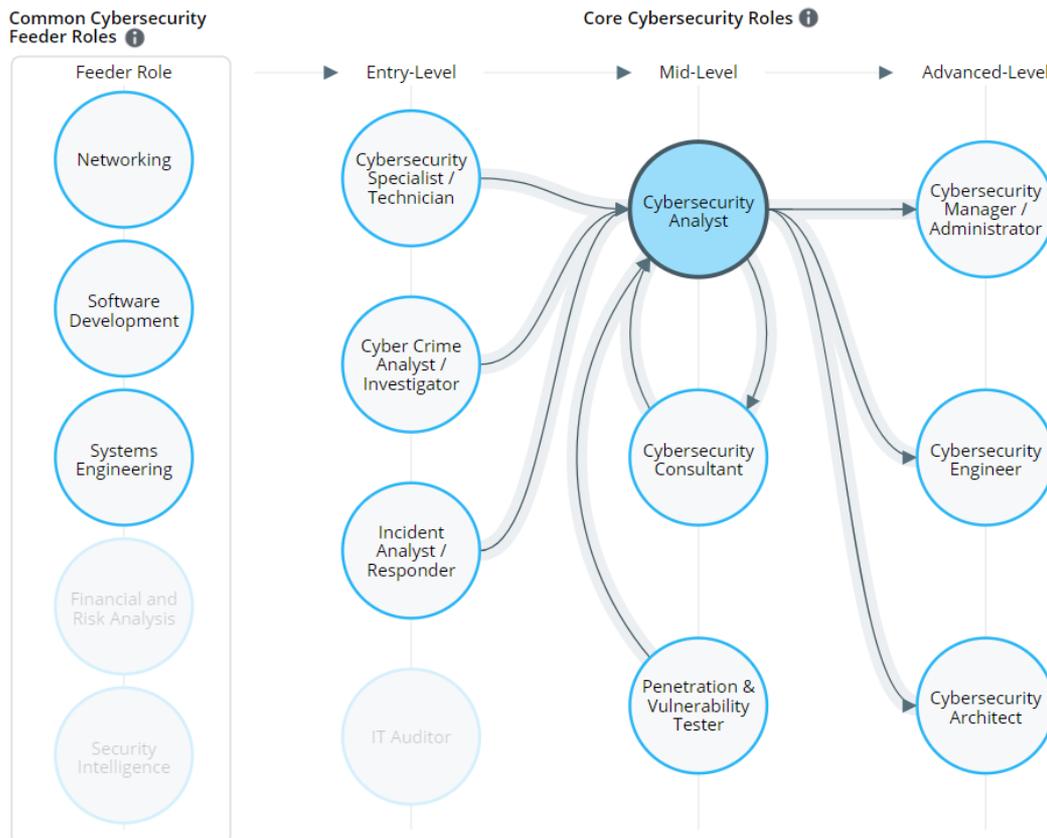
Source: [Human Factor](#)

Aligning Signals



Skill-based Career Pathways

- Understand career progression based on skill adjacency to retain and promote mobility
- Align occupations to realities of the labor market so employees understand the impact of their career progression



Cybersecurity Analyst

TOP SKILLS REQUESTED

- 1 Information Security
- 2 Information Systems
- 3 LINUX
- 4 Network Security
- 5 Security Operations
- 6 Cryptography
- 7 Scanners
- 8 Project Management
- 9 UNIX

TOTAL JOB OPENINGS

19,017



REQUESTED EDUCATION (%)



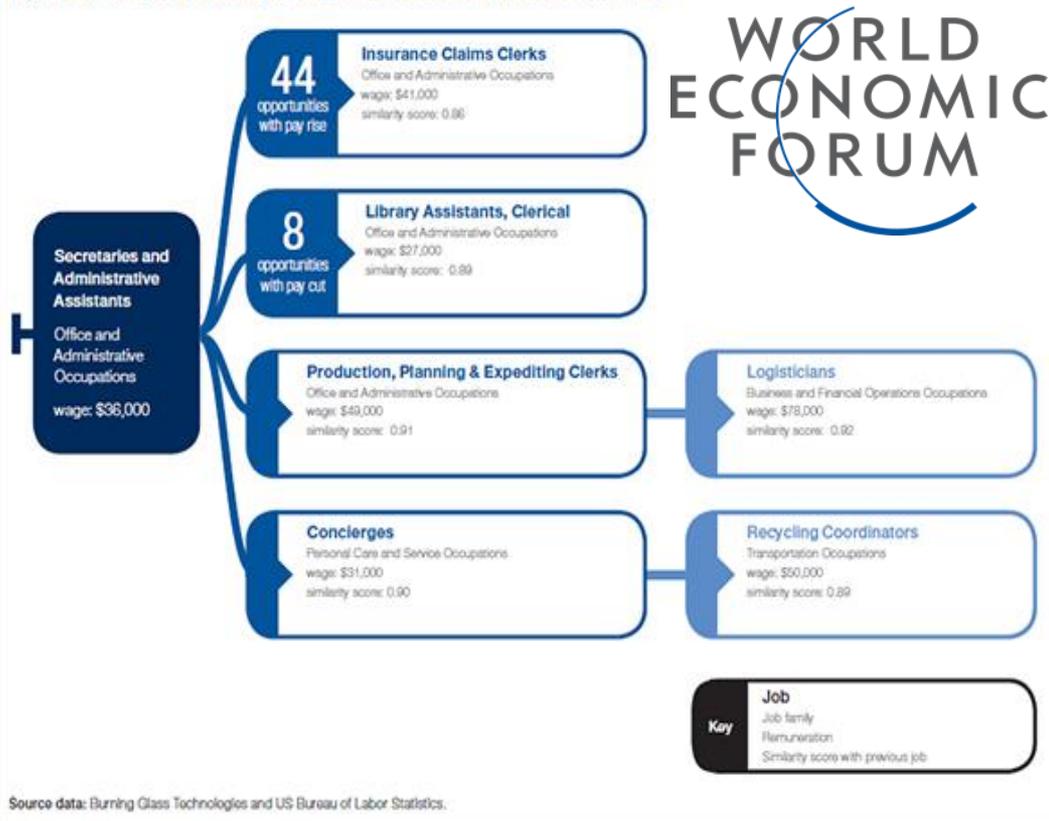
TOP CERTIFICATIONS REQUESTED

- GIAC
- CISA
- CISM
- Security+
- Cisco Certified Network Associate

Source: www.cyberseek.org

PATHWAYS TO BUILDING SKILLS THAT SURVIVE AUTOMATION

Figure B1: Examples of Pathways for Secretaries and Administrative Assistants



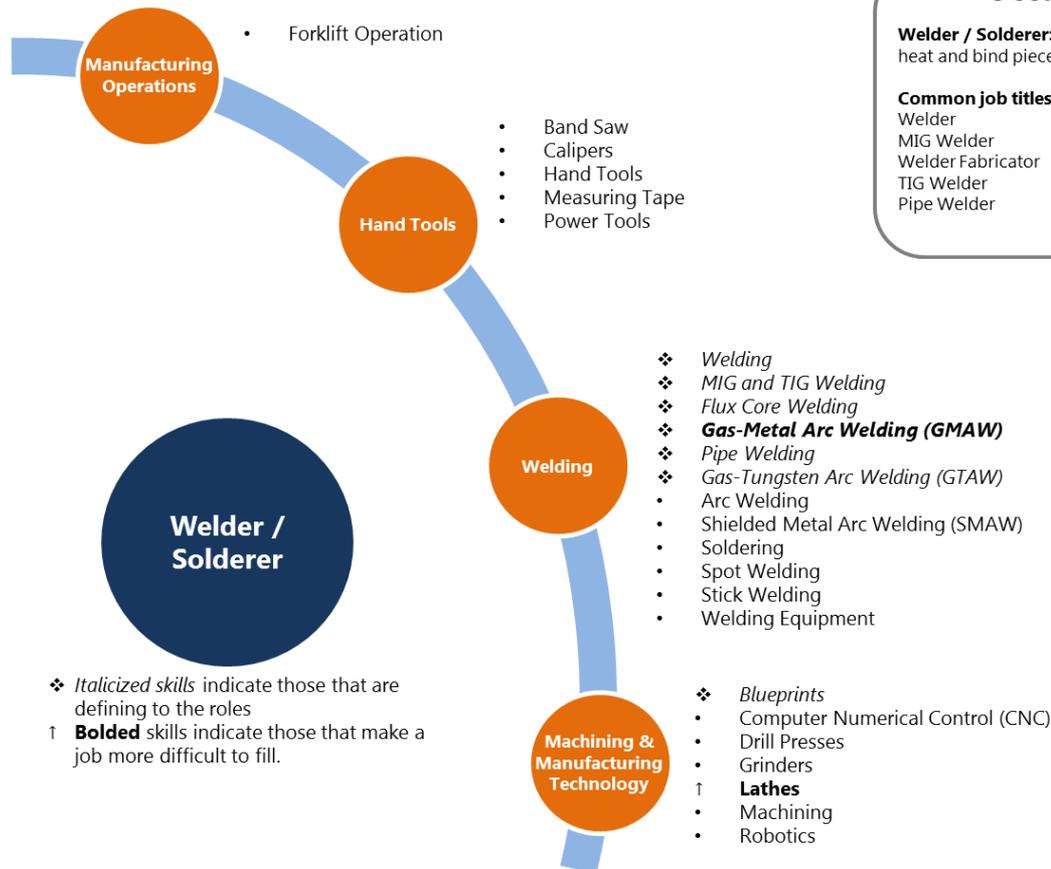
With reskilling, at-risk workers could **expand their options fivefold**, and could **increase income by up to \$15,000**.

Without reskilling, one in four workers would see their **income drop by \$8,600**.

Source: [Toward a Reskilling Rev](#)

For new entrants: Highlight skills critical for workforce success

Welder / Solderer



- ❖ *Italicized skills* indicate those that are defining to the roles
- ↑ **Bolded** skills indicate those that make a job more difficult to fill.

Occupation Profile

Welder / Solderer: Uses welding equipment to solder or heat and bind pieces of metal together.

Common job titles include:

	National Postings	% BA	% Entry Level
Welder	★★★	○	☾
MIG Welder	34,208	0%	31%
Welder Fabricator			
TIG Welder			
Pipe Welder			

Posting Counts

★	Below 10,000
★★	10,000-25,000
★★★	25,000-75,000
★★★★	75,000-150,000
★★★★★	Above 150,000

Employability Skills:

- Mathematics
- Communication Skills
- English
- Detail-Oriented
- Organizational Skills
- Troubleshooting
- Quality Assurance and Control

For young students: Highlight future opportunities

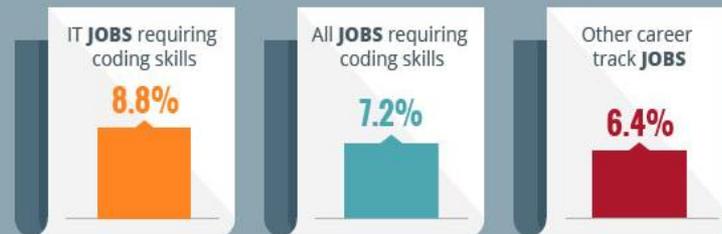
There were **6.8 million job openings** for roles requiring coding skills in the U.S. in 2015.

CODING JOBS ARE GROWING FASTER



Coding jobs are projected to grow faster than other jobs over the next 10 years.

PROJECTED 10-YEAR GROWTH



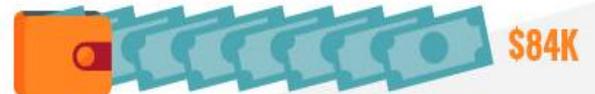
CODING JOBS PAY MORE



Jobs requiring coding skills pay **\$22,000** more per year than other career track jobs.*

AVERAGE SALARY PER YEAR

Jobs requiring coding skills



Other career track jobs



Questions?

For More Information:

Dan Restuccia

Chief Product and Analytics Officer

Burning Glass Technologies

drestuccia@burning-glass.com

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