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AUTOMATION, SKILLS USE AND TRAINING

2A – LABOR MARKET EFFECTS OF DIGITALIZATION AND AUTOMATION

Glenda Quintini – Senior Economist
Skills and Employability division
OECD Directorate for Employment, Labour and Social Affairs

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Plan of the presentation

Based on Automation, Skills Use and Training
Joint work with Ljubica Nedelkoska

- The potential for automation
- What it means concretely
- What we can do about it

2 Policy

2 OBJECTIVES

To what extent will technology **change the way jobs are performed**?

Who will be the **most affected** and **how could adult learning policies** help?

Measuring the risk of automation with PIAAC

BASELINE: Frey and Osborne

- Identify the same occupations and similar bottlenecks
- Canadian PIAAC sample to exploit 4-digit ISCO
- Out-of-sample prediction for jobs in different countries

Key bottlenecks to the risk of automation

Perception and manipulation

- **Finger dexterity**
- Manual dexterity
- **Cramped space**

Creative intelligence

- Originality
- **Fine arts**

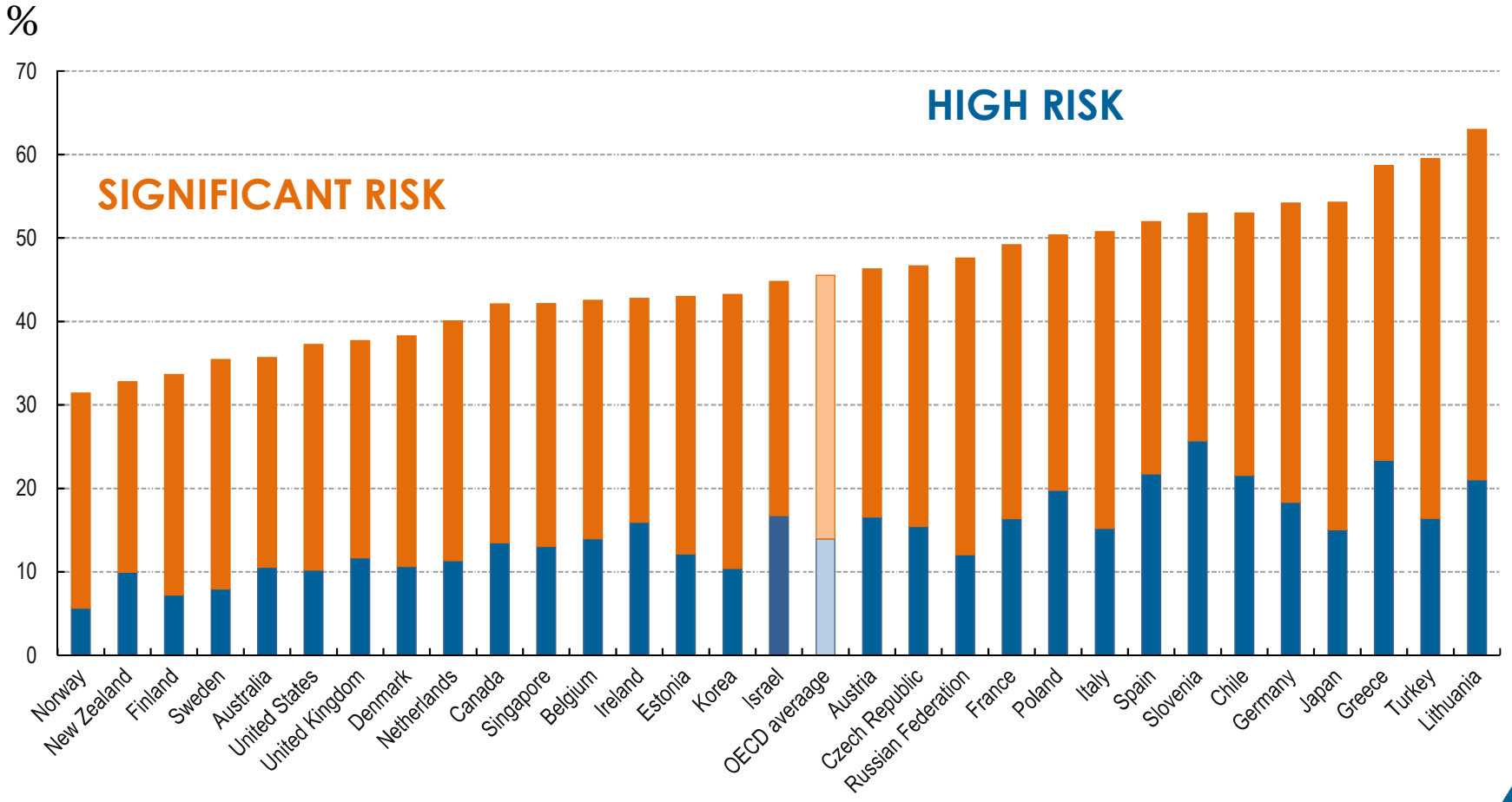
Social intelligence

- Social perceptiveness
- Negotiation
- Persuasion
- **Assisting/caring**

Warning!!! **Potential over-estimate at low end**

Fears of mass technological unemployment are likely exaggerated

Share of jobs at **significant risk (50-70%)** and of **high risk (>70%)** of automation

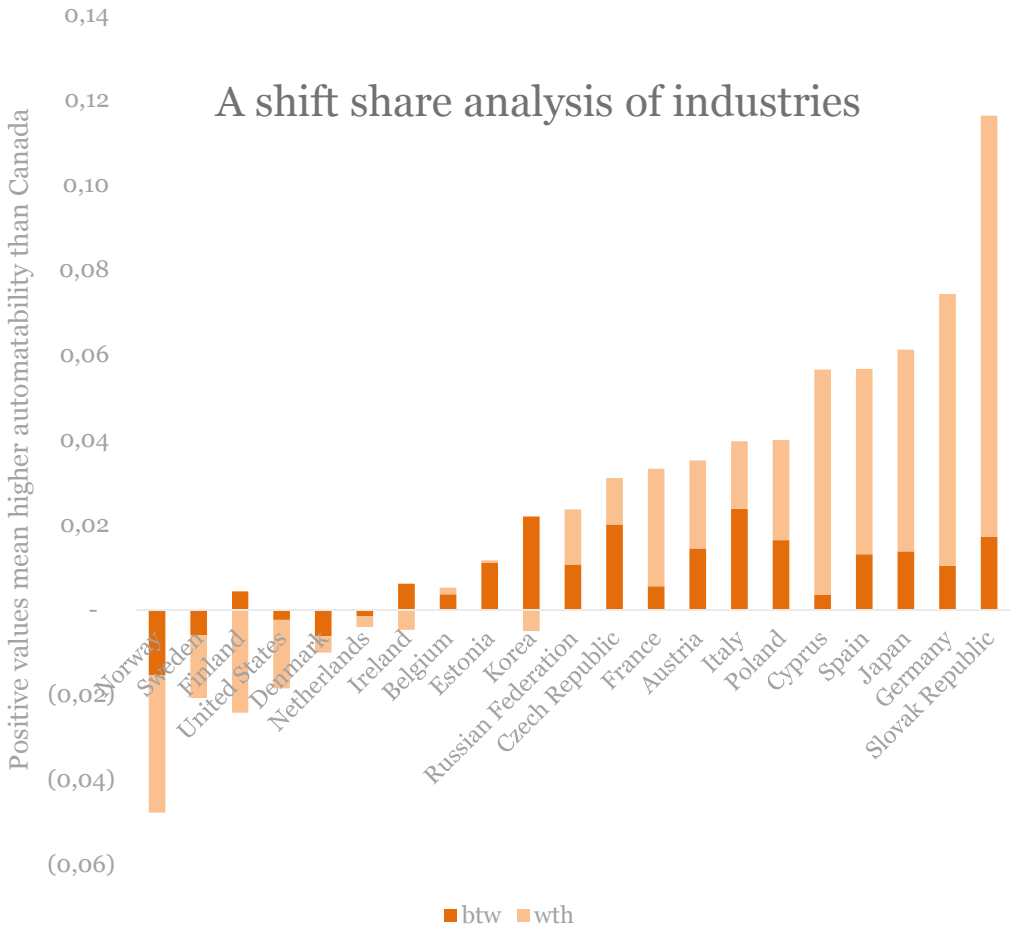


However, many jobs will experience significant change

Source: Survey of Adult Skills (2012, 2015)

Why are jobs in other countries more/less automatable than in Canada? (1)

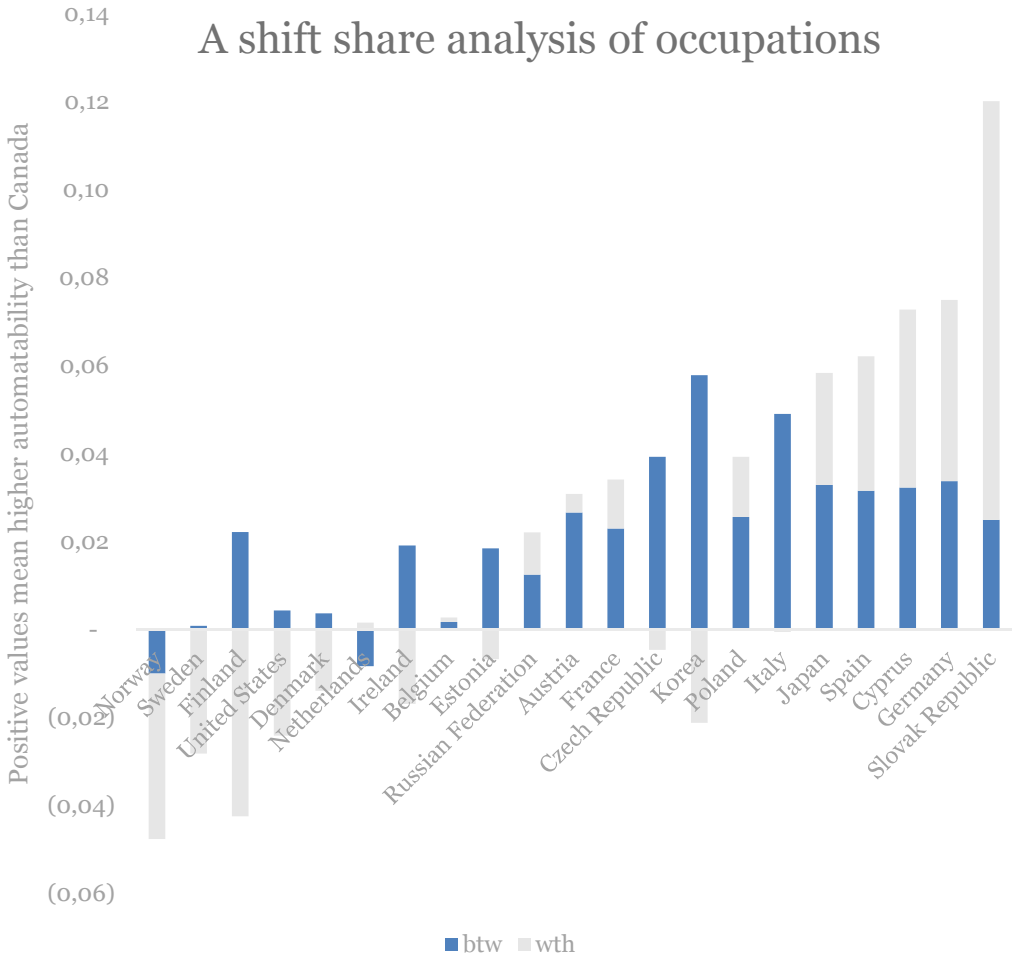
Within-industry variation in tasks (70%) more important than differences in the industrial structure (30%)



Source: PIAAC, all countries, own calculations.

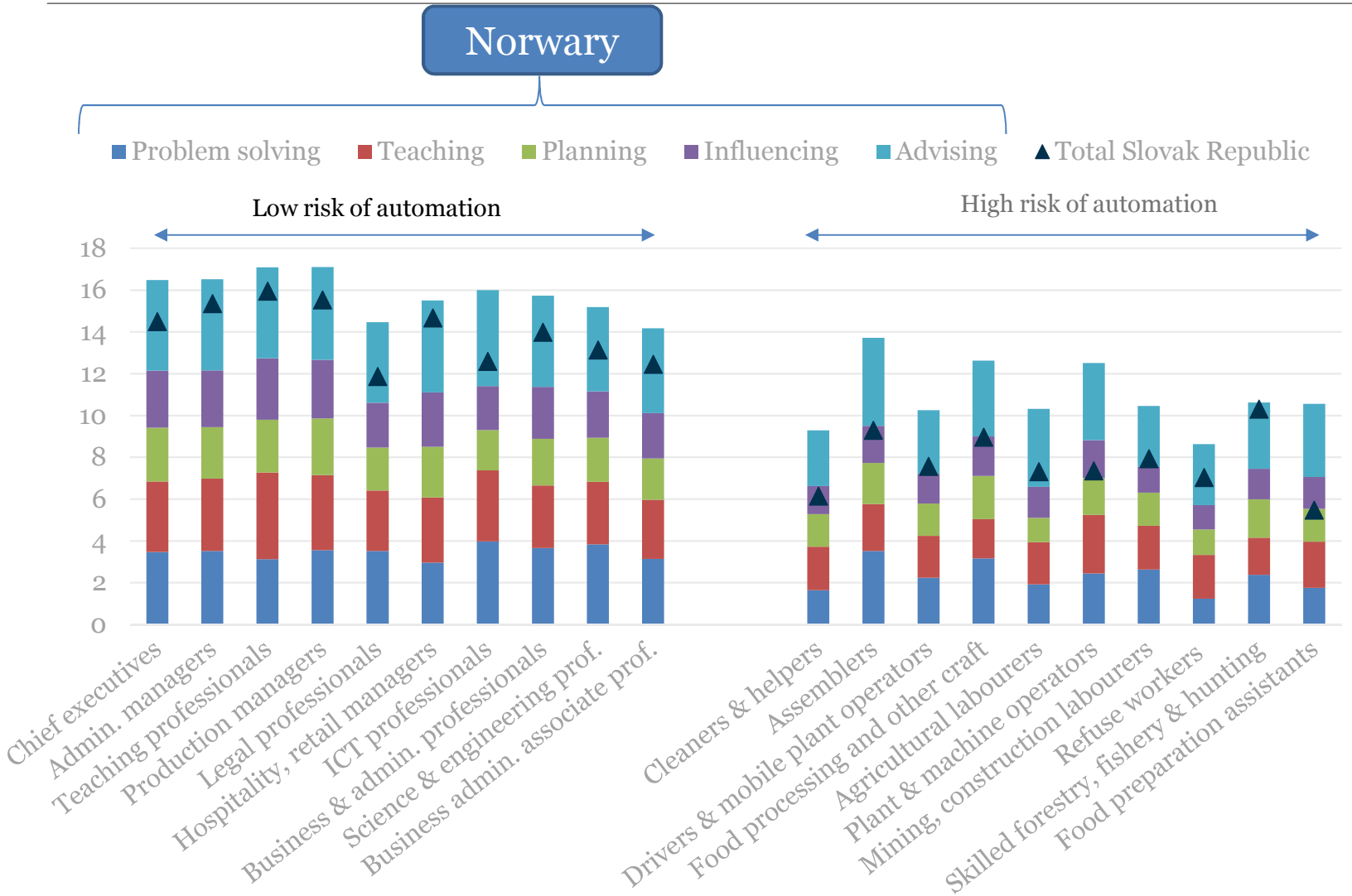
Why are jobs in other countries more/less automatable than in Canada? (2)

Equal importance of differences within and between occupations



Source: PIAAC, all countries, own calculations.

Job tasks in a given job can be very different across countries



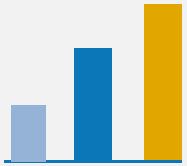
Source: PIAAC, all countries, own calculations.

In the era of AI, the risk of automation is highest for low-skilled low-paid workers

Highest risk in **routine jobs** with low skill and education requirements BUT low risk applies to a broad range from **professionals to social workers**

The risk of automation also falls with **educational attainment**

Automation mostly affects **manufacturing industry and agriculture** BUT some service sectors are highly automatable too.



No evidence of **higher risk for middle-skilled or rising risk at the high end**: automation risk declines with skills, education and hourly wages

The risk of automation falls monotonically with **hourly wages**

Young people are the most at risk of automation, followed by older workers, with disappearing student jobs and entry positions.

Job content has already changed significantly in the past decades

United Kingdom

- ⇩ manual tasks (between occupations)
- ⇧ social skills (within occupations)
- ⇧ analytical skills (within and between occupations)

Germany

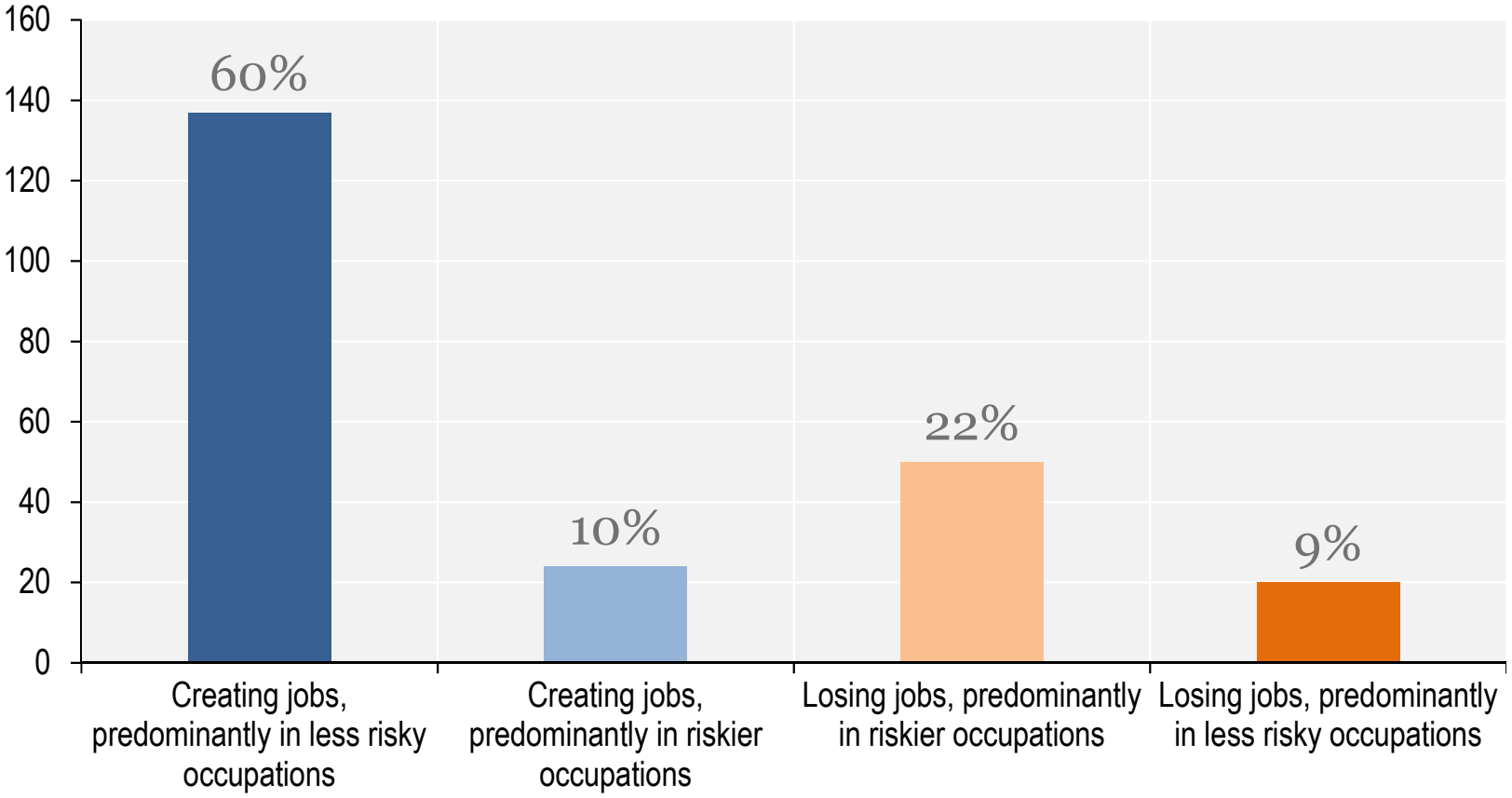
- ⇩ manual tasks (between occupations)
- ⇧ social and analytical skills (within and between occupations)

Overall

- ❖ Shift away from occupations with high manual task content
- ❖ Rise of social and analytical tasks: more important in existing jobs, more jobs that use these intensively

Effects on employment visible at the regional level

Share of regions by net employment changes and automation profile of jobs 2011-2016

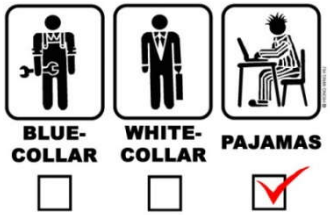


Source: OECD calculations based Labour Force Surveys

From potential to actual employment effects

Sectors differ in:

Their human capital endowment



Their structure and organisation of production

The extent to which they develop and adopt new technologies

Job creation!!!

The cost of inaction is high

For individuals

Lower wages

Risk of jobs loss and skills obsolescence

For employers

Vacancies remain unfilled for too long

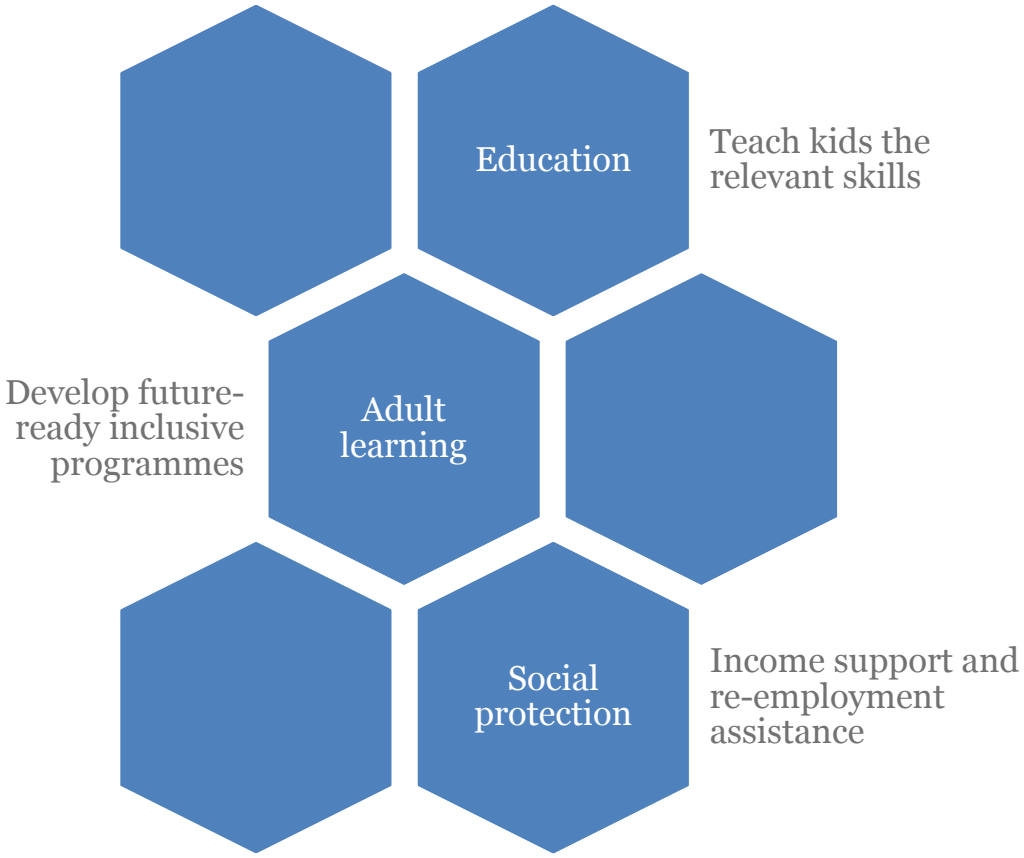
Delays in technology adoption

Higher turnover and re-training costs

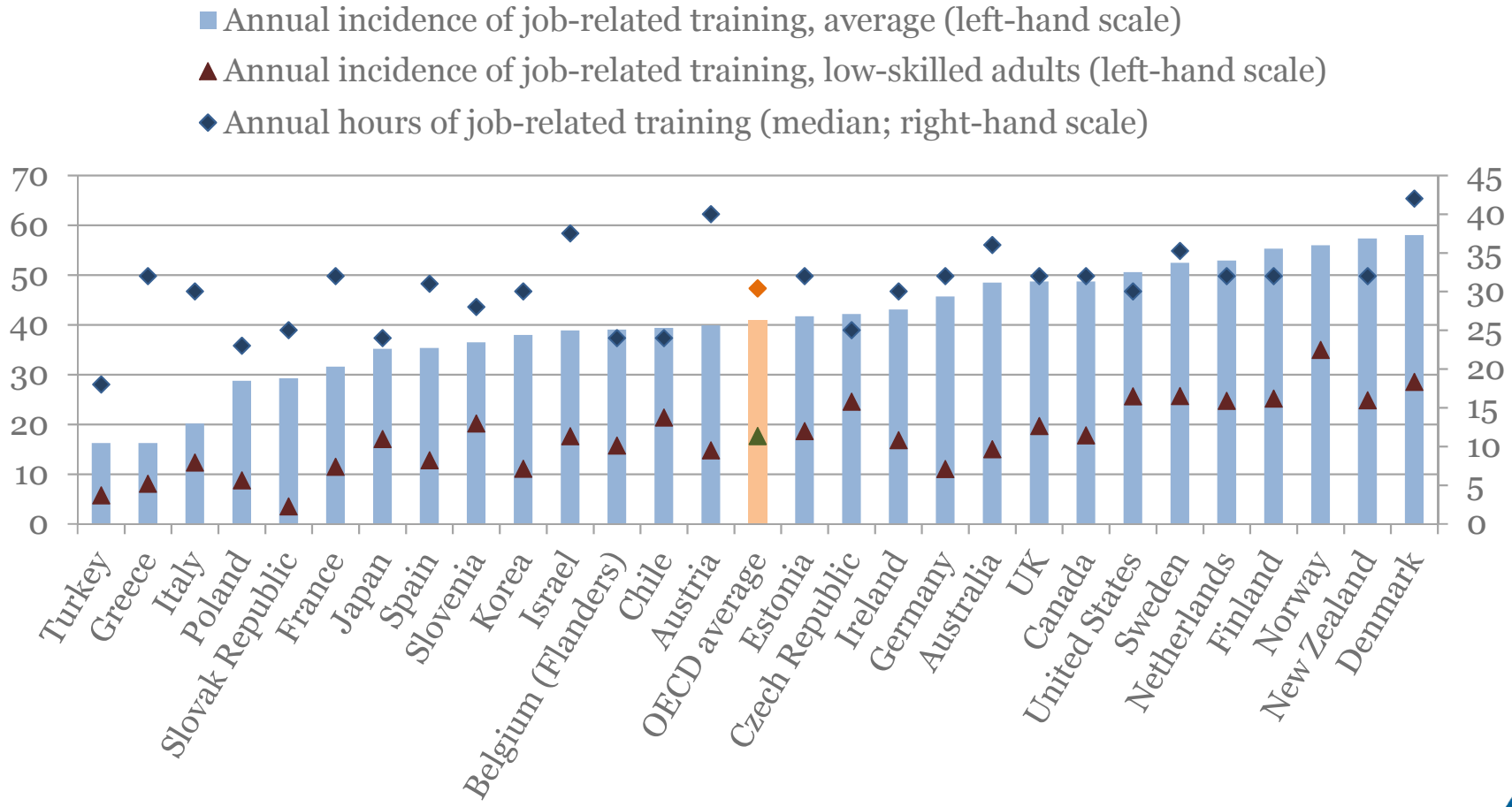
For countries

Less competitiveness and lower productivity

What can we do about it?



Re-training for new jobs is challenging, especially for the low-skilled

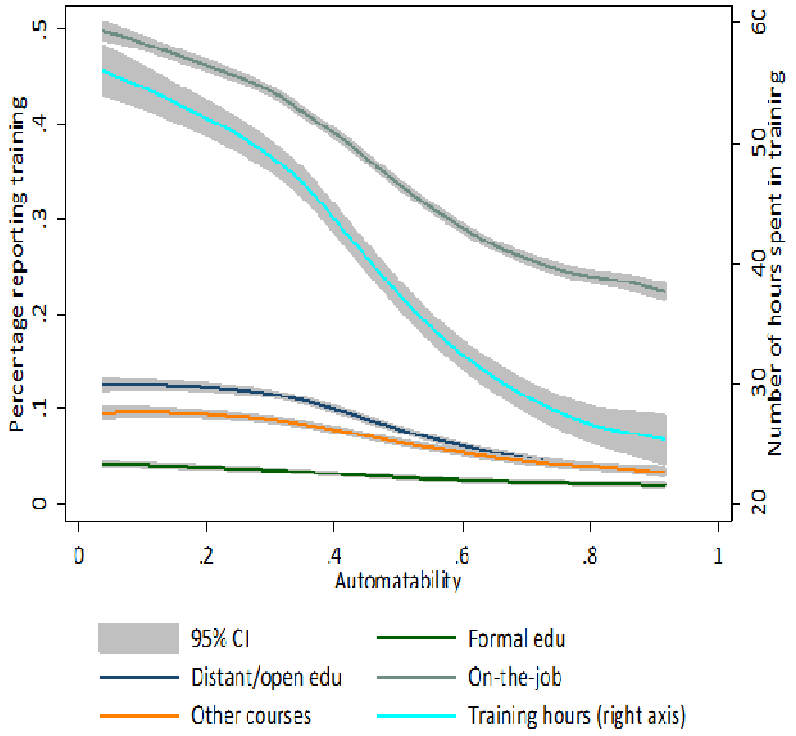


Source: PIAAC, all countries, own calculations.

Risk of automation and training

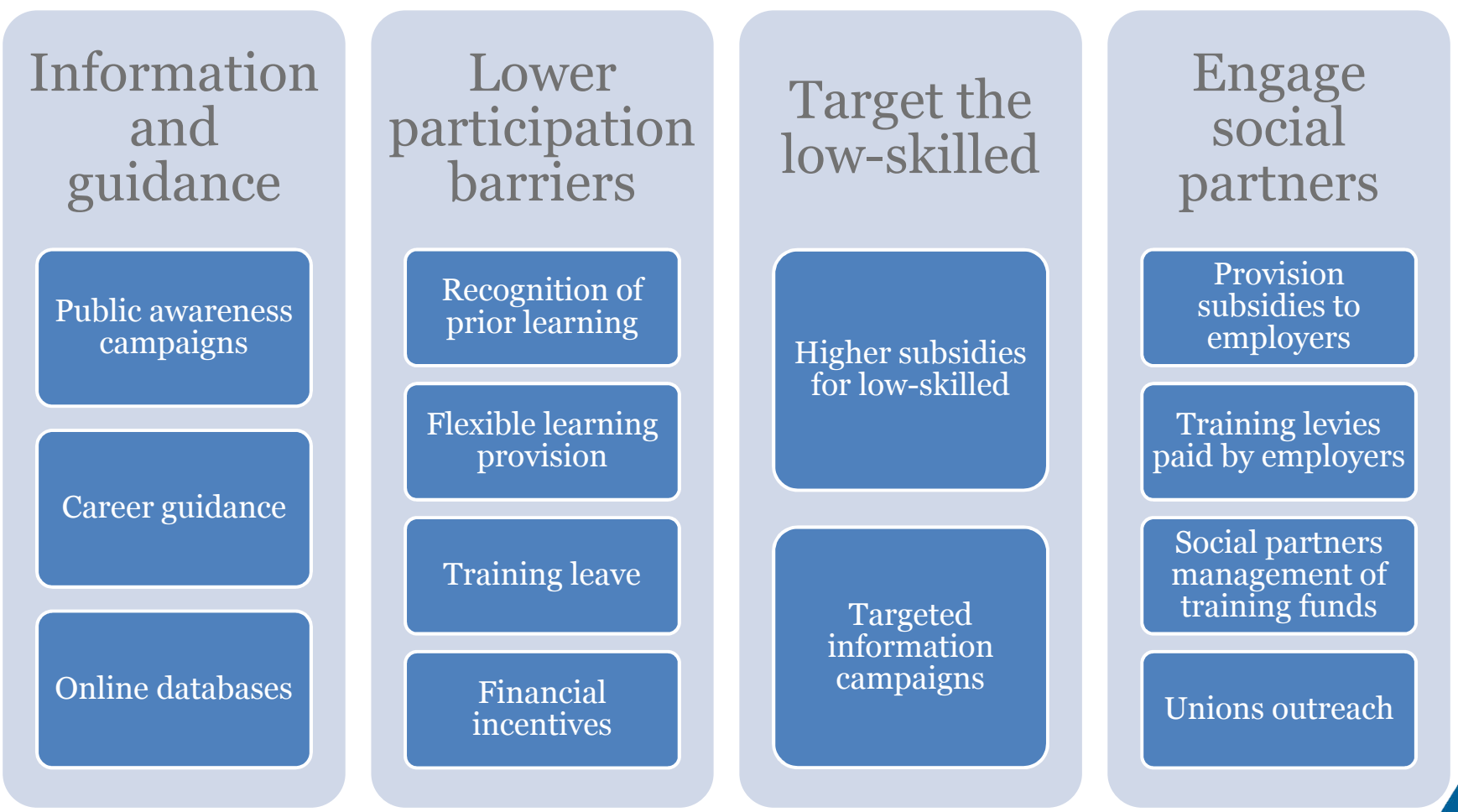
Workers in fully automatable jobs get:

- **4 times** less job-related training
- **3 times** less on-the-job training
- **30 hours** less training per year



Different policy scenarios for different situations

What do inclusive adult learning systems look like?

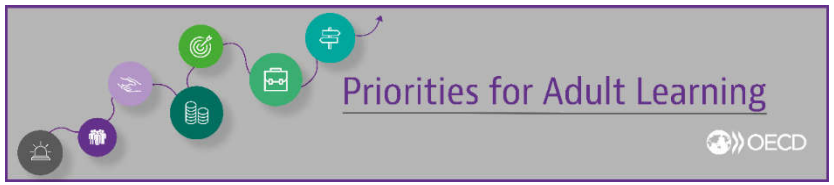


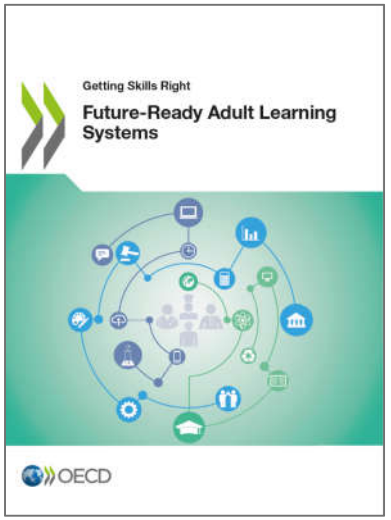
Source: OECD, Future-ready adult learning (forthcoming, Q4 2018)

Future-Ready Adult Learning sytsems to deal with changing skill needs

Thank you

Contact: Glenda.Quintini@OECD.org





Website: http://www.oecd.org/employment/skills-and-work.htm

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