



# Well-being in the digital age

Towards a measurement framework for  
understanding the opportunities and risks of the  
digital transformation for well-being

**Vincent Siegerink**  
OECD Statistics and Data Directorate



# Background:

## The OECD Better Life Initiative



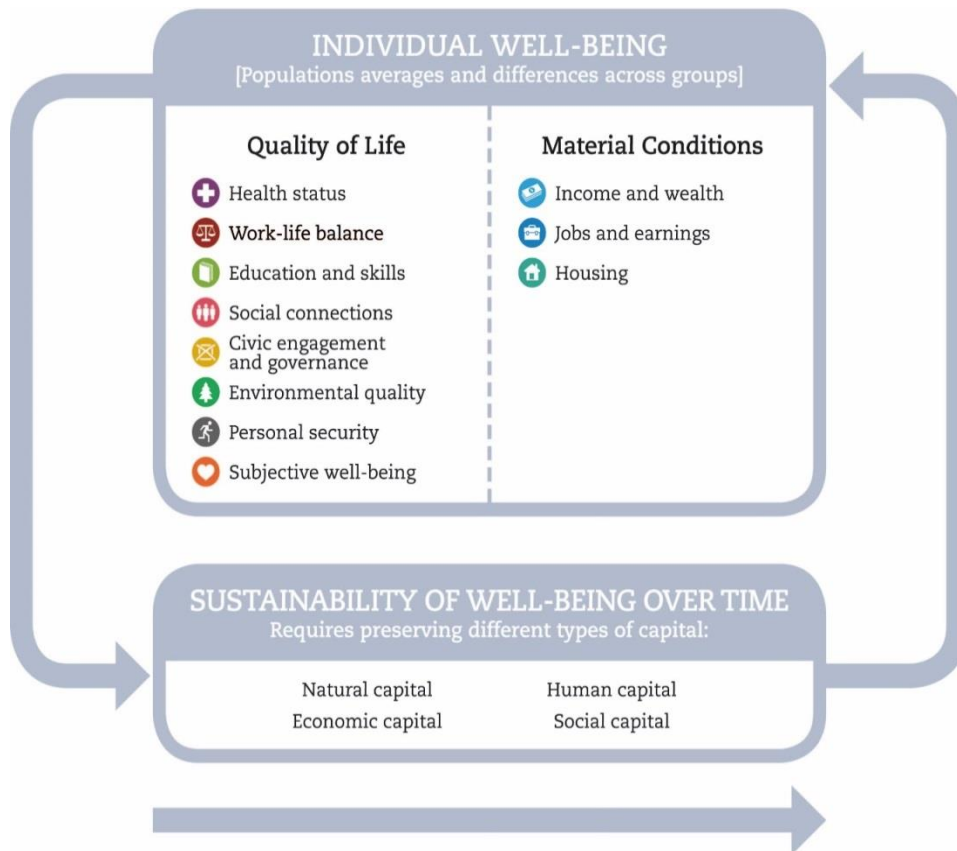
## Policy Context: The “Beyond GDP” policy agenda

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- Report by the Commission on the Measurement of Economic Performance and Social Progress (2009), i.e. **Stiglitz-Sen-Fitoussi Report**, yielding the **creation of OECD HSPM Division**, the **OECD Better Life Initiative** and the associated **OECD Well-being measurement framework** (*How's Life?* 2013, 2015, 2017)
- **EU 2020** and Communication on “GDP and beyond”
- **UN Resolution** 65/309 (2012): “Happiness: towards a holistic approach to development”
- **Rio+20** “The Future We Want” declaration, June 2012
- Wide range of **well-being national initiatives (UK, NZL, ISR...)**
- OECD work on **Inclusive Growth** and **Multi-dimensional Living Standards**
- **SDG as a prominent multi-dimensional policy agenda**



# The OECD Well-being framework



- Puts **people** at the centre of the assessment
- Focuses on well-being **outcomes**, rather than inputs and outputs
- Includes outcomes that are both **objective** and intrinsically **subjective**
- Considers the **distribution** of well-being outcomes across the population



# Going Digital:

## Measuring the impacts of the digital transformation on well-being

# GOING DIGITAL

Making the transformation work for growth and well-being

- OECD **Going Digital project** includes a vast new body of research on the implications of the digital transformation for the economy, society and policymakers
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- Map the opportunities and risks** of the Digital Transformation for Well-being in each dimension of the OECD Well-being framework
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- Highlight the **data gaps** that need to be addressed in the future
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- Show the **different paths** countries take in seizing opportunities and mitigating risks of the digital transformation



# Process: towards a measurement framework

## Impact mapping

- Based on consultation process and broad literature review
- Considers a full range of potential impacts
- Uses quantitative and qualitative evidence of well-being impacts

## Conceptual framework

- A curation of opportunities and risks, based on the following criteria:
  - Robustness of evidence
  - Relevance to individual well-being
  - Potential for measurement (now or in the future)

## Measurement framework

- Selection of impacts that are currently **measurable**
- Employs available indicators that are representative of broader impacts identified in the conceptual framework
- Compares country performance in seizing opportunities and mitigating risks



# Conceptual framework

	Opportunities	Risks
ICT Access and use	<p>Access to <b>digital infrastructures</b> is a prerequisite to reap the benefits of the digital transformation</p> <p><b>Diversity of Internet use</b> brings greater benefits to individuals</p>	<p>There may be <b>inequalities of Internet usage</b> even when there is equality in access</p>
Education and skills	<p>Students and adults need <b>digital skills</b> to participate in a digital society and economy</p> <p><b>Digital resources at school</b> can help prepare students for a digital society and economy</p> <p><b>Online education</b> and digital learning tools can allow for lifelong learning and new learning models</p>	<p>Emergence of a <b>digital skills gap</b> between those who do and those who do not have digital skills</p> <p>The <b>adverse effects</b> of digital resources at school may reduce learning outcomes</p>
Income and consumption	<p>Digital skills confer a <b>wage premium</b> upon workers</p> <p><b>Online consumption</b> and the <b>sharing economy</b> have the potential to increase consumer surplus</p>	<p>The gap between workers with high and low digital skills fuels a <b>wage gap</b></p>
Jobs	<p><b>New jobs in ICT</b> and <b>new jobs in other sectors</b> become available</p> <p><b>Online job search</b> helps job seekers find employment opportunities</p> <p><b>Positive job quality effects</b> can arise due to lower physical demands, increased task discretion and self-realisation</p>	<p>The digital transformation has an <b>impact on job polarisation</b></p> <p>Digital technologies may destroy <b>job at risk of automation</b></p> <p><b>Negative job quality effects</b> can arise from increased job stress and emotional demands</p>
Work-life balance	<p><b>Teleworking</b> allows people to spend <b>less time in transportation</b> and has the potential to improve gender balance by <i>sharing childcare responsibilities</i></p>	<p>Constant connectedness may increase <i>worries about work when not working</i></p>
Health	<p>Healthcare delivery becomes more efficient due to <b>improved communication with healthcare services</b> and <b>universal health records</b></p> <p>The <b>digitalisation of health technologies</b> has the potential to yield better health outcomes</p> <p><b>Health information online</b> has the potential to improve patient experiences</p>	<p>Digital technologies may yield <b>digital addiction</b> among children and other <b>negative mental health effects</b></p>





# Conceptual framework

	Opportunities	Risks
Social connections	<b>Increased online interactions</b> among friends and social networks	<i>Digital addiction may crowd out real-life interactions</i>
	<b>Potential decrease in loneliness</b> as a result of new means of maintaining social networks	<i>Cyberbullying and online harassment negatively impact the social experiences of children and adults</i>
	Improved civic engagement associated with <b>increased expression of opinion online</b>	<i>Discrimination against minority groups and women using hate speech</i> <i>People's trust in institutions may be challenged by higher exposure to information and misinformation</i>
Governance and civic engagement	Increased <b>engagement of citizens</b> in societal and political communities	Discrimination against individuals with poor digital skills to <b>access digital public platforms</b>
	Citizens are <b>consumers and prosumers of news</b>	Intelligent systems may be biased against minorities or specific individuals leading to <b>unfair treatment in public service delivery</b>
	<b>Open data</b> allows improved transparency and accountability of government	Potential increase in <b>political polarization</b> due to algorithm-led media consumption
	The <b>uptake of blockchain-based technologies</b> may enhance safety of transactions and information exchange	Individuals are at risk of <b>data privacy violations</b> in various domains
Security		<b>Cyber-security incidents</b> may compromise people's online safety
		<b>New physical security risks</b> emerge as a result of automation and intelligent systems
Environment	<b>A reduction in carbon emissions</b> can stem from improved energy efficiency of networks, shared transportation options (car-share, bike-share), reduced need for travel	Digital technologies generate rebound effects that <b>increase energy use</b> (e.g. data centers, blockchain)
		<b>E-waste</b> can increase as people consume more technological products
Housing	Households using <b>Smart Home Technologies</b> can improve house management	
Subjective well-being	Internet access may <b>increase some aspects of subjective well-being</b>	Wider social comparisons and digital addiction may have <b>negative effects on psychological well-being</b>



# Available indicators

ICT Access and use	1.	Access to digital infrastructures	Opportunity
	2.	Use of the Internet	Opportunity
	3.	Diversity of Internet use	Opportunity
	4.	Inequality of Internet uses	Risk
Education and skills	5.	Digital skills	Opportunity
	6.	Digital skills gap	Risk
	7.	Digital resources at school	Opportunity
	8.	Teacher ICT skills	Risk
	9.	Online courses	Opportunity
Income and consumption	10.	Wage premium associated with digital skills	Opportunity
	11.	Online consumption	Opportunity
	12.	Selling goods and services online	Opportunity
Jobs	13.	Employment in information industries	Opportunity
	14.	Online job search	Opportunity
	15.	Jobs at risk of automation	Risk
	16.	Lower extended job strain associated with computer-intensive jobs	Opportunity
	17.	Job stress associated with computer-intensive jobs	Risk



# Available indicators

Work-life balance	18. Penetration of teleworking	Opportunity
	19. Worries about work when not working associated with computer-intense jobs	Risk
Health	20. Making medical appointments online	Opportunity
	21. Accessing health information online	Opportunity
	22. Extreme Internet use among children	Risk
Social connections	23. Using online social networks	Opportunity
	24. Children experiencing cyberbullying	Risk
Governance and civic engagement	25. People expressing opinions online	Opportunity
	26. Individuals interacting with public authorities online	Opportunity
	27. Availability of open government data	Opportunity
	28. Individuals excluded from e-government services due to lack of skills	Risk
Environmental quality	29. Exposure to fake news	Risk
	30. E-waste generated per capita	Risk
Security	31. Individuals experiencing cyber-security events	Risk
	32. Individuals experiencing abuse of personal information	Risk
Subjective well-being	33. Life satisfaction gains associated with Internet access	Opportunity



## Results:

# Countries' exposure to the opportunities and risks of the digital transformation



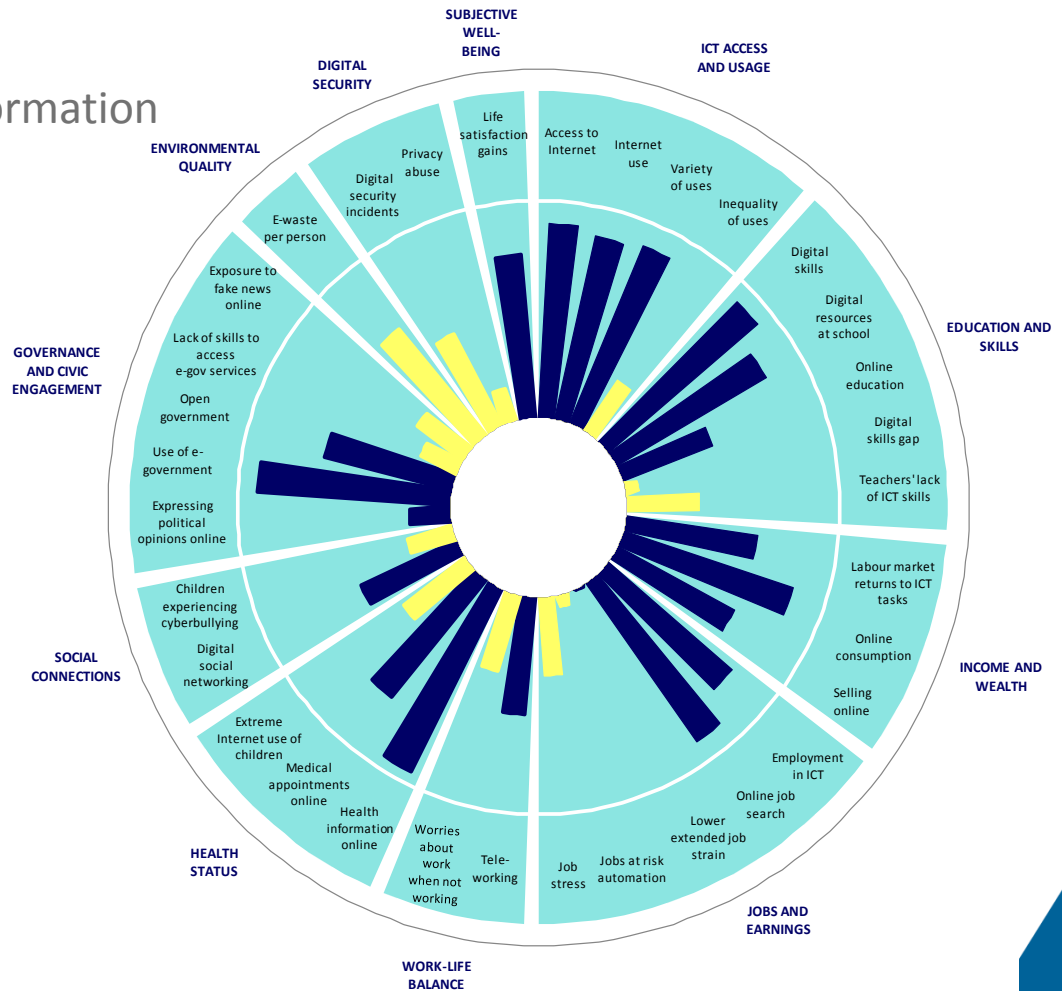
# Monitoring individual country performance

➡ Considers **measurable**  
Impacts of the digital transformation

➡ Distinguishes clearly  
between **risks** and  
**opportunities** of  
digital  
transformation

➡ Assesses **country  
performance** in seizing  
opportunities and  
mitigating risks

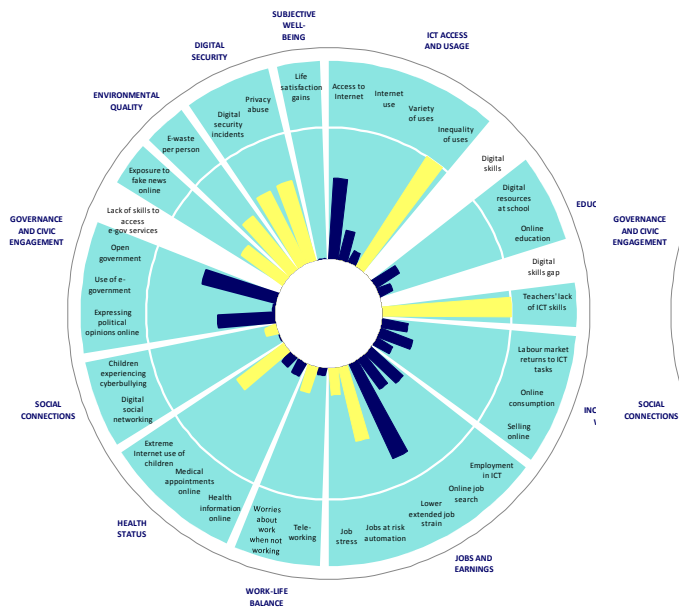
**Illustrative country wheel:  
Finland**





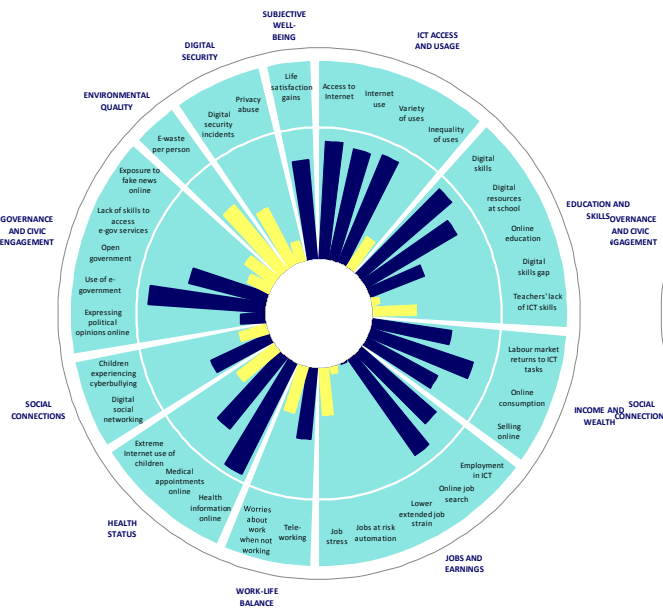
# Monitoring individual country performance

## Italy



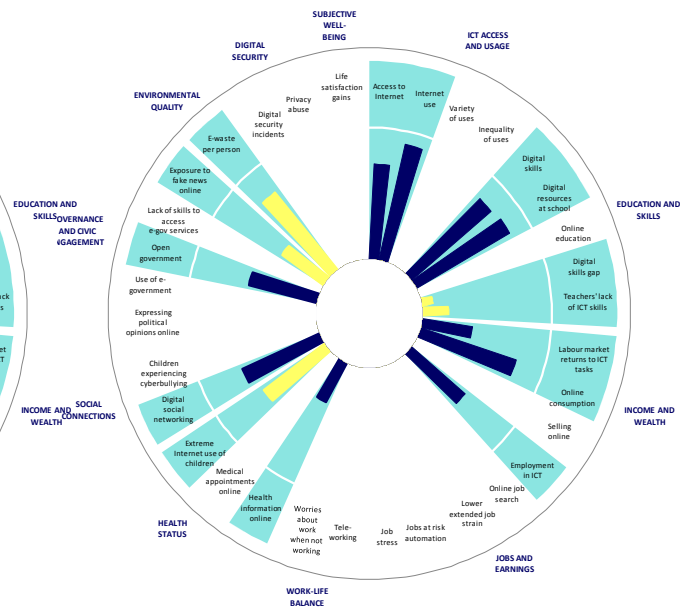
High risks  
Low opportunities

## Finland



High opportunities  
Low risks

## Australia



Data gaps



# Two composite indicators

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## Digital opportunities

= Mean of average rank (ICT+EDU+INC+EMPL+WLB+HEALTH+SOCIAL+GOV+SWB)

➤ 20 indicators across 9 dimensions

## Digital risks

= Mean of average rank (ICT+EDU+EMPL+WLB+HEALTH+SOCIAL+GOV+ENV+SEC)

➤ 13 indicators across 9 dimensions



## Key procedural notes

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- Linear aggregation of rank of indicators
- Equal weighting scheme
  - Each dimension has equal importance
  - Some underlying factors (Internet use penetration, digital skills) have high importance by construction
- Same procedure at the dimension-level and at the indicator-level





# Comparative analysis of country progress

## Opportunities and risks often go together....

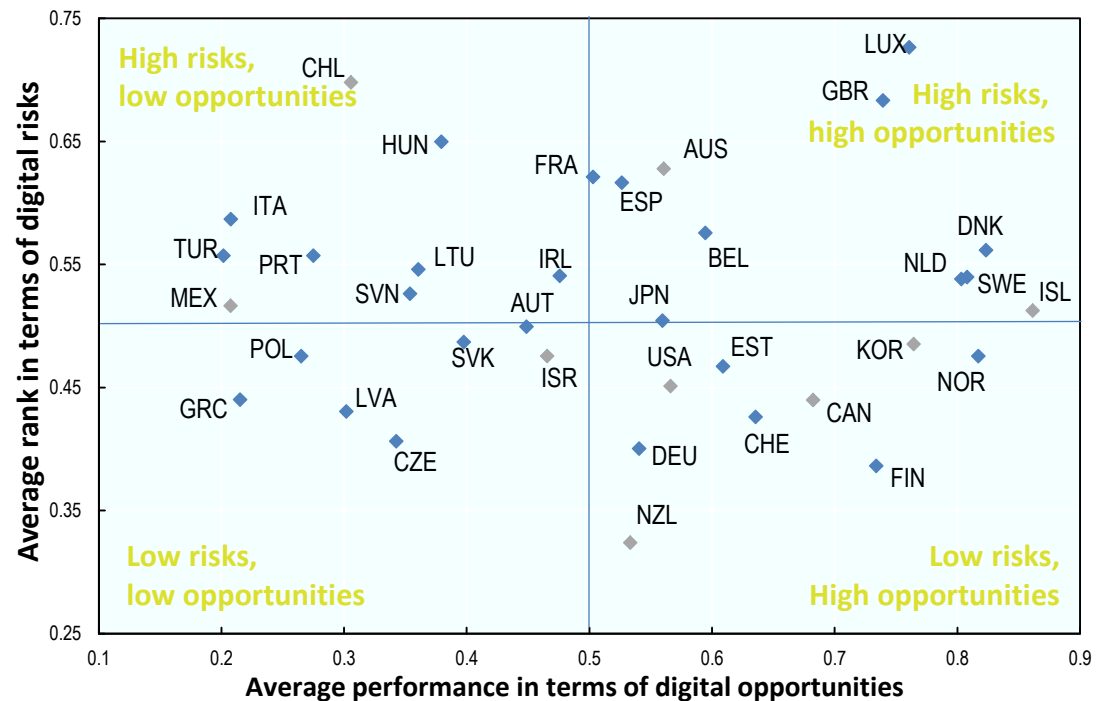
- e.g. high risks/high opportunities (LUX, GBR, Nordic countries)
- e.g. low risks/low opportunities (GRC, CZE)

## ...but some countries seize opportunities without risks

- e.g. EST – countries with strong digital strategies

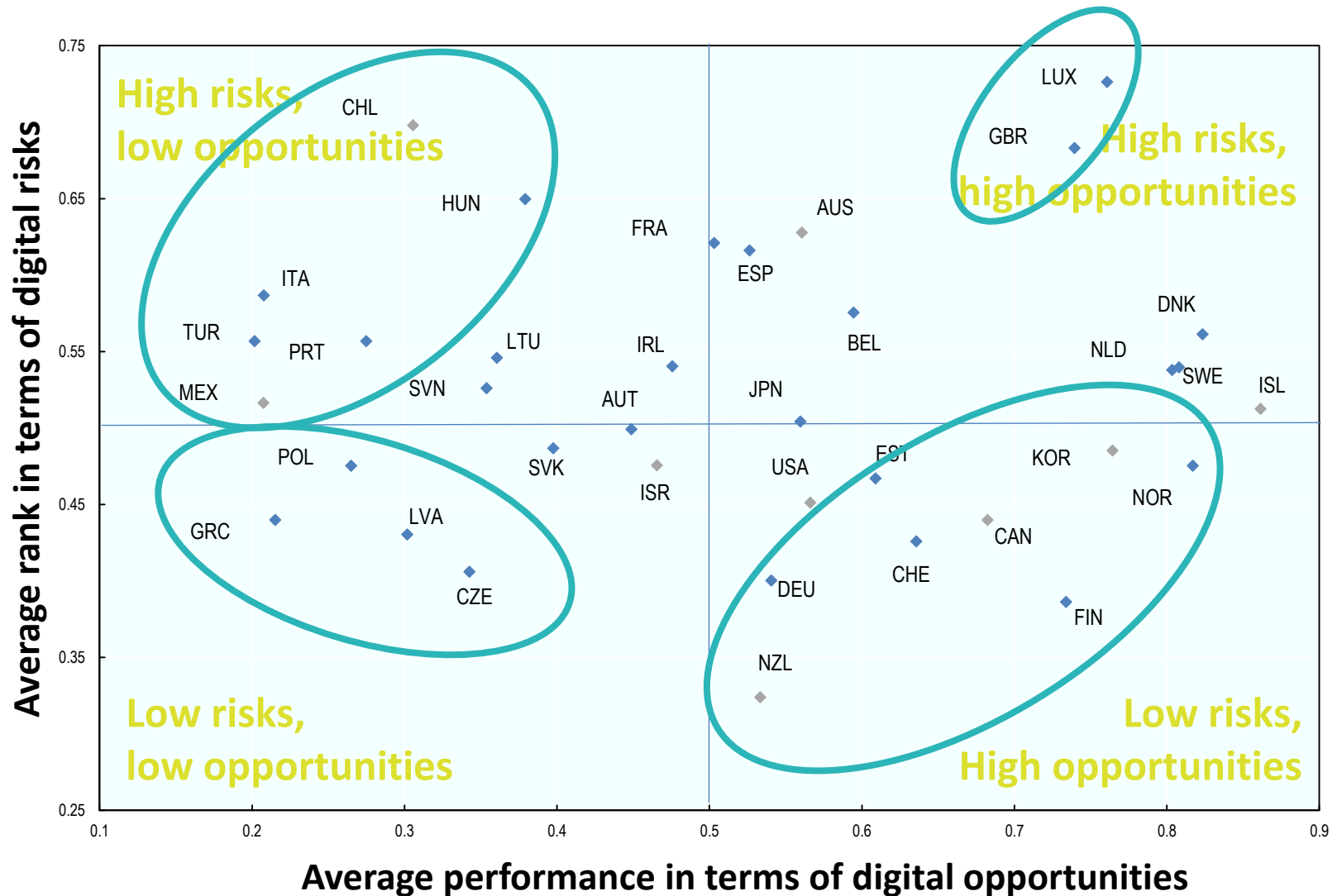
## ... while others are exposed to risk without reaping the benefits

e.g. CHL, HUN





# Mapping country performance

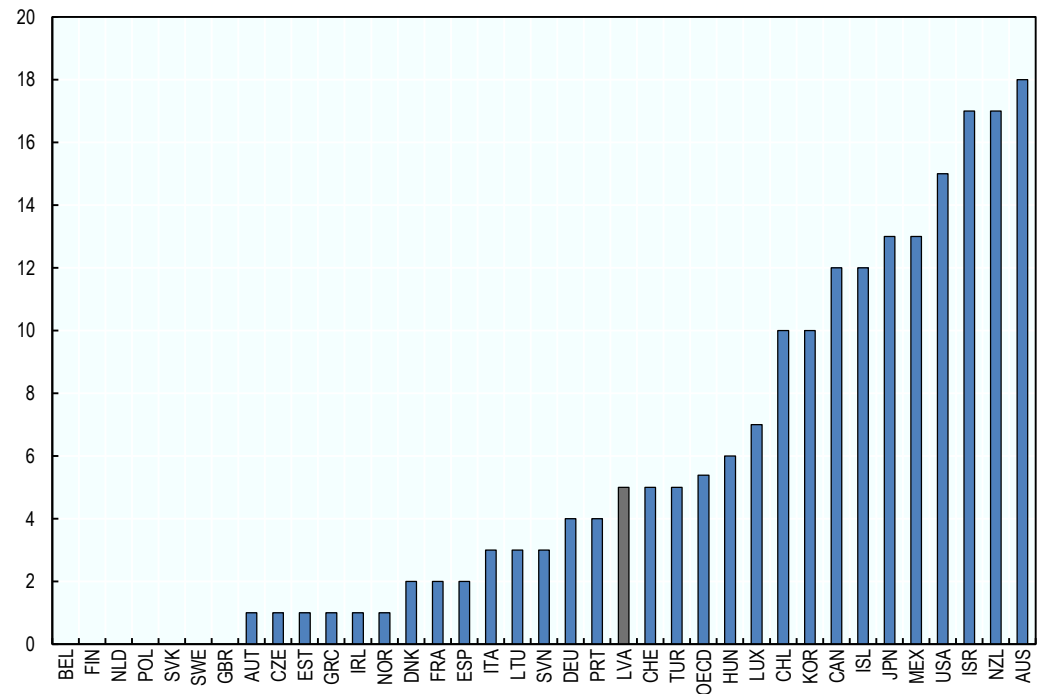




# Missing data by country in current indicator set

- Lack of harmonisation limits country comparisons
- EU countries benefit from Eurostat's standardised survey on ICT usage in households and individuals, which closely follows the **OECD Model Survey on ICT access and usage by households and individuals (2015)**
- But some countries have a significant number of missing values, which limits cross-country comparisons

*% of indicators missing, by country*





# Some data gaps to be filled in terms of indicators

Dimension	Name of indicator	Survey type	Feasibility
<b>ICT Access and Use</b>	Frequency of use of mobile devices	ICT Surveys	High
<b>Jobs</b>	ICT-driven jobs in other sectors	Labour force surveys, PIAAC	High
	Extent of job polarisation driven by digital skills and job automation	Labour force surveys, PIAAC	Medium
<b>Work Life Balance</b>	Decrease in time spent in transportation associated with telework	Time use surveys	High
	Increase in sharing of childcare responsibilities associated with telework	Time use surveys	Medium
<b>Health</b>	Diffusion of health monitoring tools	Health surveys	High
	Improvement in health technologies due to digital innovations	PREMS/PROMS	Low
	Mental health effects of digital devices on adults	GSS, Health, ICT surveys	Medium
	Crowding out of healthy behaviour	Time use surveys	High
	Reduced frequency of offline contact	Time use surveys	High
<b>Social connections</b>	Hate speech and online harassment	Victimisation surveys or innovative techniques	High/Medium
<b>Governance</b>	Digital skills of civil servants	Civil servants surveys	Civil servants surveys
<b>Security</b>	Physical injury associated with automated technology	Victimisation surveys	High
<b>Environment</b>	Net carbon footprint of digital activities and technologies	Energy accounts	Low
	Reduced personal automobile mileage associated with digital vehicle sharing options	Household consumption surveys	Low
<b>Housing</b>	Diffusion of Smart Home Technologies	Household consumption surveys	High
<b>Subjective well-being</b>	Change in life satisfaction associated with having Internet access	ICT Surveys, General Social Surveys	Medium
	Change in net affect balance associated with having Internet access		
	Change in eudaimonic well-being associated with having Internet access		



# Lessons learned and wider findings

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- Evidence in certain dimensions is still debated and scattered
  - More evidence is needed from NSOs and academic community
- The need to harmonising existing measures
  - improve inclusion of ICT and SWB variables in ICT and other surveys
- This exercise is not easily repeated
  - Need to improve timeliness and longitudinal data



**Thank you**

**[vincent.siegerink@oecd.org](mailto:vincent.siegerink@oecd.org)**