EGH ICT Skills Subgroup

15 September 2022

Agenda

- *Introduction and background*

- *Proposed recommendations (3+1)*
  Discussion

- *Proposed data pilots & support material*

- *Data pilot: Brazil – NIC.br*
  Discussion

Background

- 2013 - Indicator HH15 part of Core list of ICT indicators

- 2017 – EGH created ICT skills subgroup

- 2018-2020 – ICT skills subgroup in operation
  - Amended response categories of HH15 (beyond computer skills)
  - Reduced redundancy, filled data gaps
  - Added new indicators

- 2021 – EGH revived ICT skills subgroup
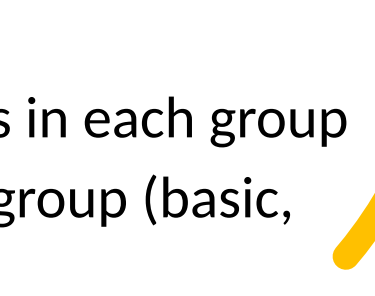 - To reconsider ICT skills aggregation

2020: Indicators added

- *Setting up effective **security measures** (e.g. strong passwords, log-in attempt notification) to protect devices and online accounts*

- *Changing **privacy settings** on your device, account or app to limit the sharing of personal data and information (e.g. name, contact information, photos)*

- *Verifying the **reliability** of information found online*

2020: Aggregation proposal

Digital skill	Group
Sending e-mails with attached files	Basic
Transferring files between a computer and other devices	Basic
Using copy and paste tools to duplicate or move information within a document	Basic
Connecting and installing new devices	Intermediate
Creating electronic presentations with presentation software	Intermediate
Finding, downloading, installing and configuring software	Intermediate
Using basic arithmetic formula in a spreadsheet	Intermediate
Writing a computer program using a specialized programming language	Advanced

- Dashboard approach
  - Mean of share of individuals with skills in each group
  - Flexibility for users on weight of each group (basic, intermediate, advanced)

Aim for 2022

- *To reconsider ways to aggregate indicators on skills in a meaningful way given the **additional skills indicators** that were added.*

- *To provide users with **an aggregated indicator of ICT skills** which would allow for simpler assessment of **the overall level of ICT skills of individuals** in a given country or region.*

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Recommendations

Discontinue the grouping of indicators **by levels** (basic/intermediate/advanced)

- Lacks robust research to support how different skills have been categorized – e.g. as technology progresses

- Recently designed instruments focus on **areas of activities** rather than the level an activity might represent

The subgroup suggests the grouping of indicators to transition towards the **5 areas of the DigComp** framework:

1. Information literacy;
2. Communication and collaboration;
3. Digital content creation;
4. Safety; and
5. Problem solving

The subgroup suggests to **complement** and **rebalance** the data collected for ICT skills indicators by including:

- The **additional new skills indicators** (focus on trust-related behaviour, safety and privacy), and

- A number of **new component indicators from HH9** to have a range of activities (participation in society, labour market)

Recommendations 2

Information / data literacy	Communication / collaboration	Digital content creation	Safety	Problem solving
1. Verifying the reliability of information [2. Getting information about goods or services] [3. Reading or downloading newspapers, etc] [4. Seeking health-related information]	1. Sending messages (e.g. email, messaging service, SMS) with attached files [2. Making calls (Telephoning over the Internet] [3. Participating in social networks] [4. Taking part in consultation or voting via Internet]	1. Using copy and paste tools 2. Creating electronic presentations 3. Using basic arithmetic formula in a spreadsheet 4. Writing a computer program [5. Using software over the Internet for editing text, spreadsheet, presentations] [6. Uploading self/user-created	1. Changing privacy settings 2. Setting up effective security measures	1. Finding, downloading, installing and configuring software 2. Connecting and installing new devices 3. Transferring files or applications between devices [4. Electronic financial transactions] [5. Doing an online course] [6. Purchasing or ordering goods or services

Adding HH9 indicators (in orange) more evenly distributes questions across groups

Recommendations 3

Compiling data for **an aggregate indicator of ICT skills,** the subgroup suggests to

- Treat the 5 areas **separately** rather than as a single aggregate;

- Suggested output: within each areas, the average of the share of individuals who have undertaken the activity.

Output: the average of the share of individuals who have undertaken the activity by area

Raw data

Person	Information and Data				Communication & Collaboration				Content creation				Safety				Problem solving			
A	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	0	1	1	1
B	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
C	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	1	1	0	0	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
G	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0
H	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
I	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0
J	1	1	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0

Aggregating approach

| MEAN | 0,8 | 0,6 | 0,4 | 0,4 | 0,7 | 0,4 | 0,5 | 0,4 | 0,6 | 0,5 | 0,4 | 0,4 | 0,5 | 0,3 | 0,3 | 0,4 | 0,5 | 0,4 | 0,4 | 0,4 |

European Commission

Recommendations 3

Information / data literacy	Communication / collaboration	Digital content creation	Safety	Problem solving
1. Verifying the reliability of information	1. Sending messages (e.g. email, messaging service, SMS) with attached files	1. Using copy and paste tools	1. Changing privacy settings	1. Finding, downloading, installing and configuring software
[2. Getting information about goods or services]		2. Creating electronic presentations	2. Setting up effective security measures	2. Connecting and installing new devices
[3. Reading or downloading newspapers, etc]	[2. Making calls (Telephoning over the Internet]	3. Using basic arithmetic formula in a spreadsheet		3. Transferring files or applications between devices
[4. Seeking health-related information]	[3. Participating in social networks]	[4. Using software over the Internet for editing text, spreadsheet, presentations]		[4. Electronic financial transactions]
	[4. Taking part in consultation or voting via Internet]	[5. Uploading self/user-created content]		[5. Doing an online course]
				[6. Purchasing or ordering goods or services]

- **Output by area:** the average of the share of individuals who have undertaken the activity
- **NOTE:** "Writing a computer program" considered outside of Content creation

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Discussion on 3 recommendations

It is recommended that **the subgroup continues next year** to address remaining issues.

The subgroup:

- Has a preference to create an aggregate indicator of ICT Skills at the **individual level**

National data pilots

The subgroup:

- Proposes national data pilots and envisages support drawing from EU's empirical work on the Digital Skills Indicator (DSI) by Eurostat
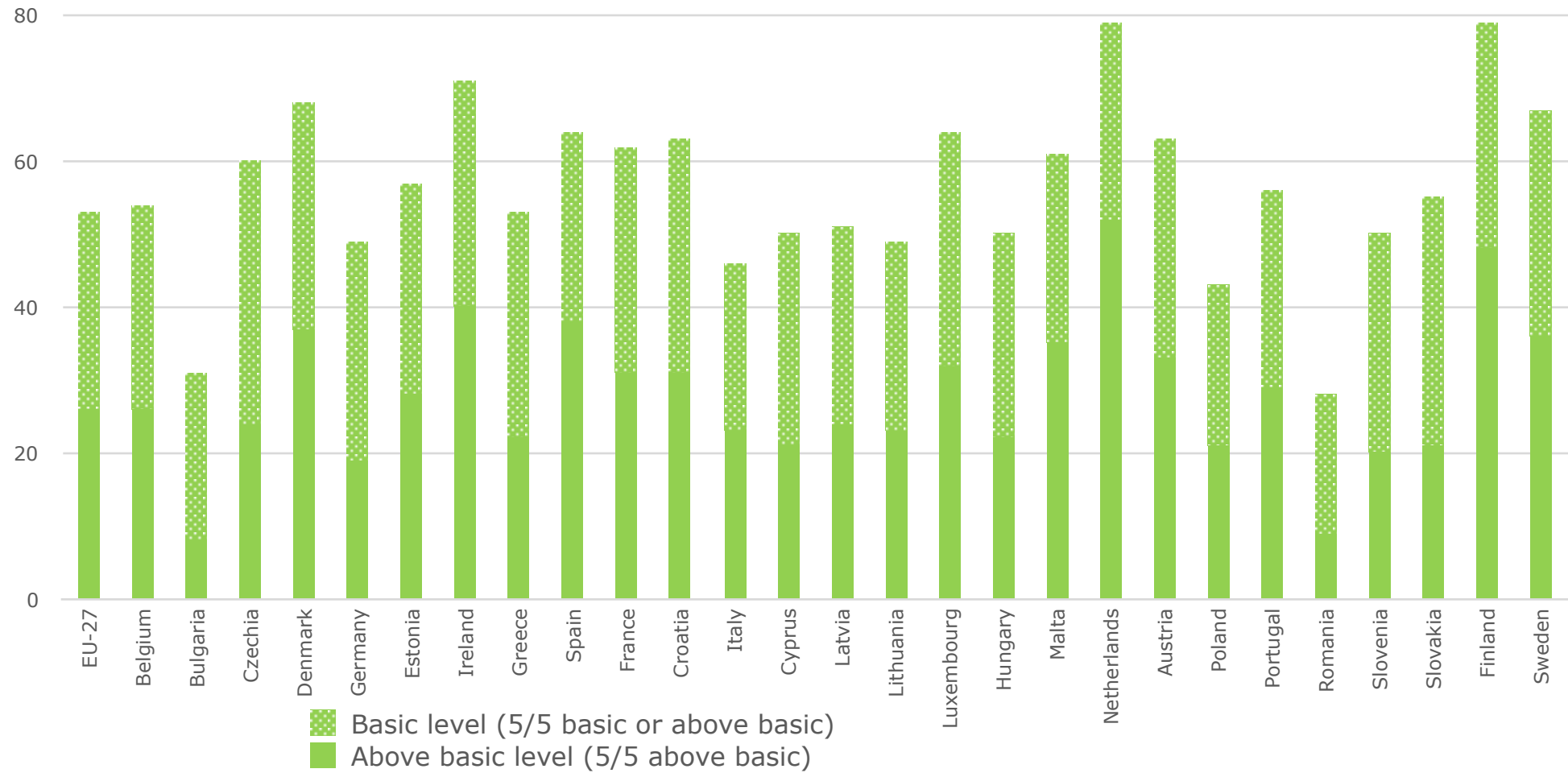
National data pilots to explore an aggregate indicator of ICT Skills *at the individual level*
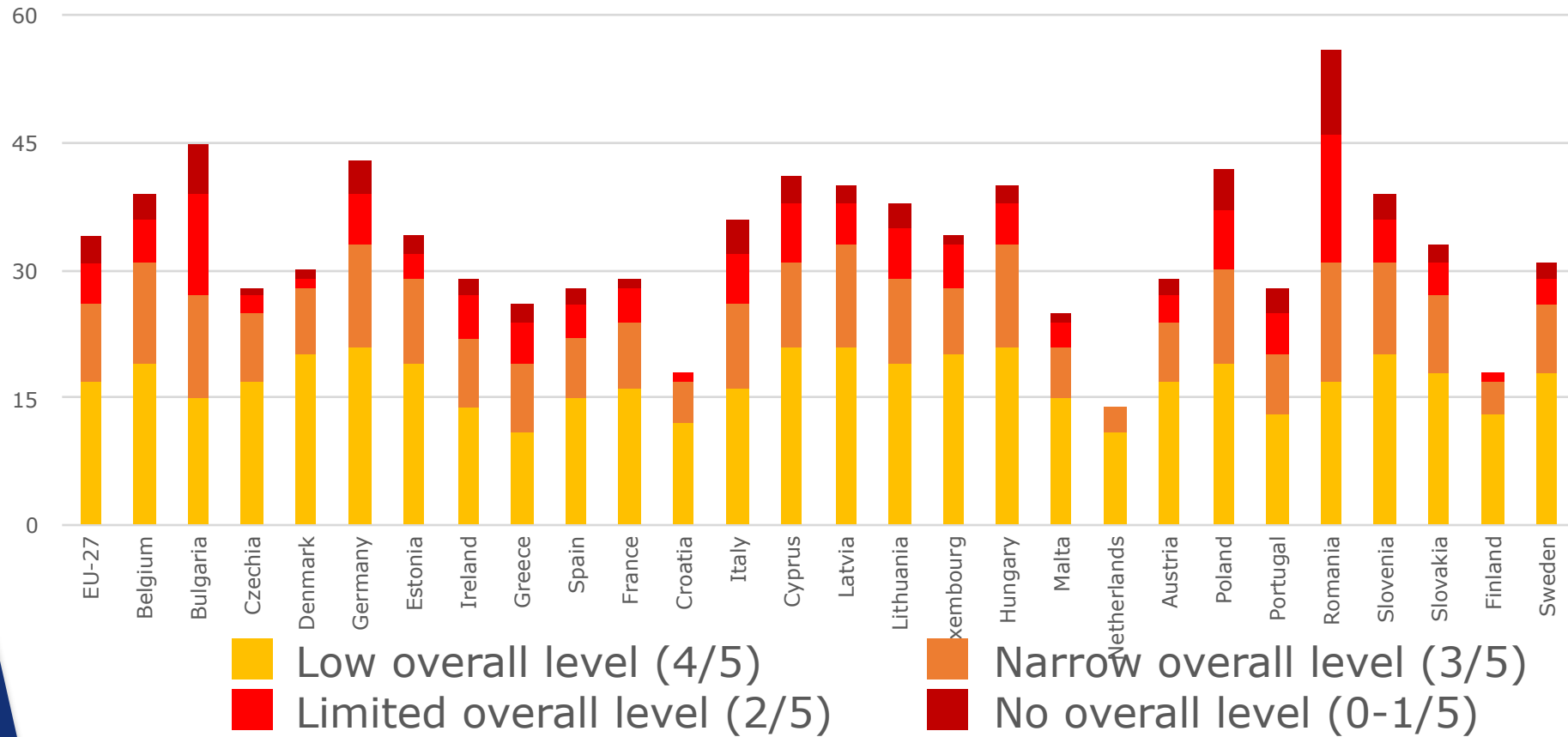
Raw data

Scores converted to skills groups

Person	Information and Data				Communication & Collaboration				Content creation				Safety				Problem solving				INFO	COM	CONT	SAFE	PROB	OVERALL
A	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	0	1	1	1	2	2	2	2	2	2
B	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	2	2	2	2	2	2
C	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	2	2	2	2	2	2
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	1	1	0	0	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	2	2	2	1	2	1
F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
G	1	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	1	1	1	0	1
H	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	1	0	1	1	1
I	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1	1	1	1	1
J	1	1	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0	2	2	2	0	1	1

European Commission

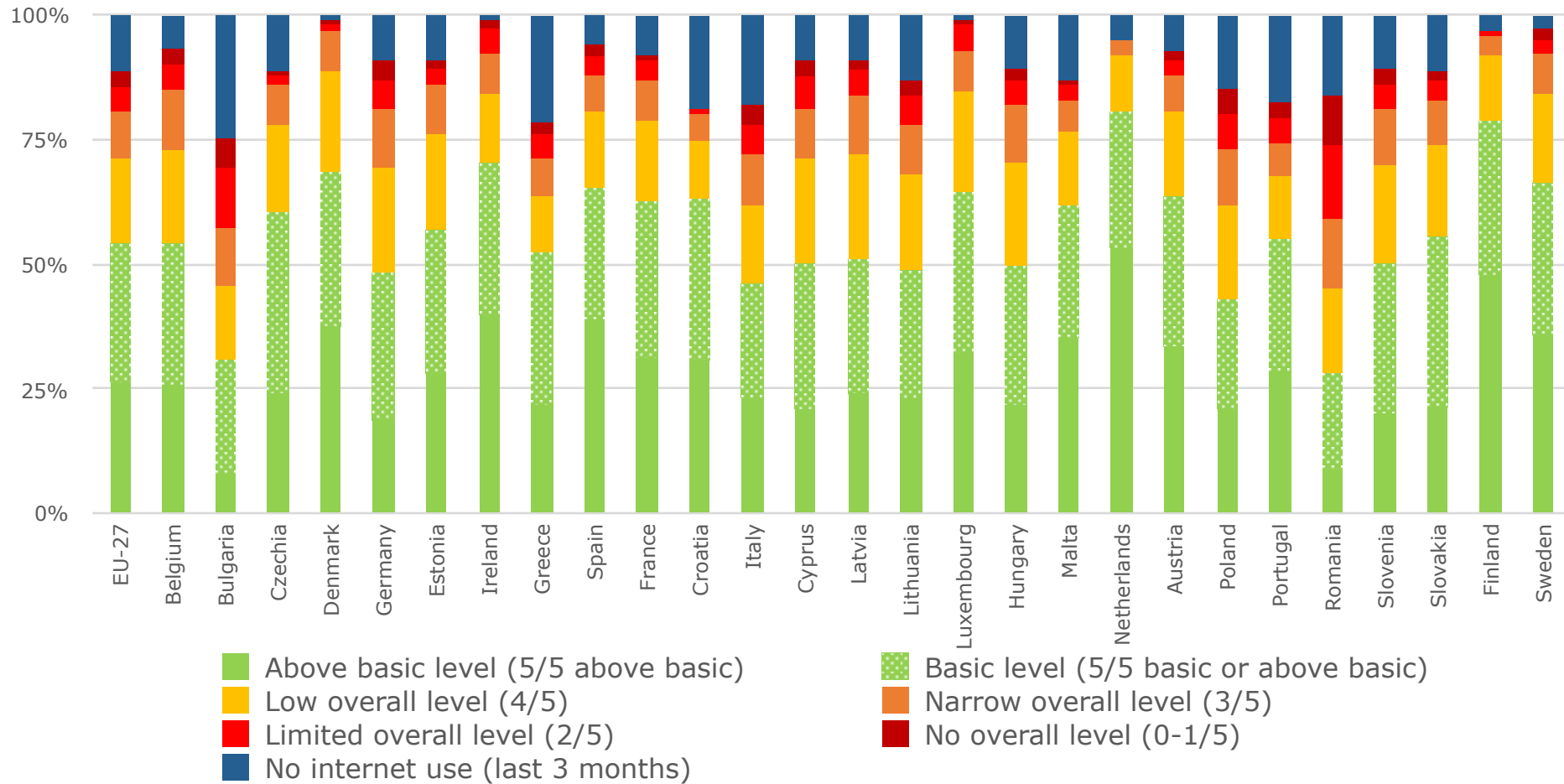Digital Skills Indicator 2021
datasource: Eurostat ISOC_SK_DSKL_I21

Digital Skills Indicator 2021
datasource: Eurostat ISOC_SK_DSKL_I21

Legend:
- Low overall level (4/5)
- Narrow overall level (3/5)
- Limited overall level (2/5)
- No overall level (0-1/5)

Citizens using internet - but skills below basic.
Targeted training intervensions needed!

Digital Skills Indicator 2021
datasource: Eurostat ISOC_SK_DSKL_I21

No internet use (last 3 months)
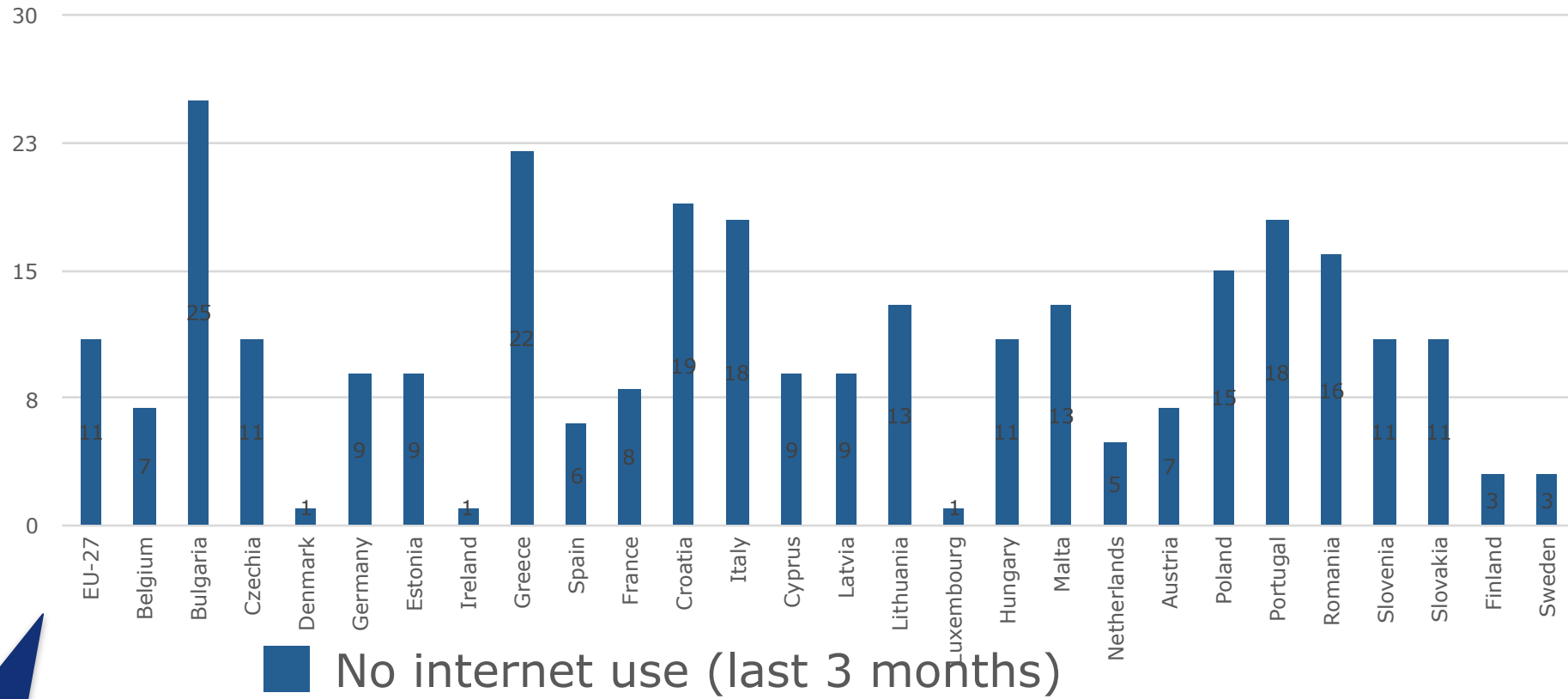
Not using internet – why?

Digital Skills Indicator 2021
datasource: Eurostat ISOC_SK_DSKL_I21

Legend:
- Above basic level (5/5 above basic)
- Basic level (5/5 basic or above basic)
- Low overall level (4/5)
- Narrow overall level (3/5)
- Limited overall level (2/5)
- No overall level (0-1/5)
- No internet use (last 3 months)

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Data pilot: Brazil

Steps for calculations

- Identify variables to be used among collected data
    - In Brazil some variables were not collected in 2021 or before

- Calculate the indicators at microdata level
    - Area levels of skills calculated for each respondent
    - Each area skill become a new variable in the micro dataset
        - ✓None (no activity at all)
        - ✓Basic (at least one activity)
        - ✓Above basic (two or more activities)

- Adjustments concerning lack of information

Steps for skills calculations
Areas, indicators and dataset variables

Information / data literacy	Dataset var.
1. Verifying the reliability of information	Not collected
2. Getting information about goods or services	C8_A
3. Reading or downloading newspapers, etc	C9_D
4. Seeking health-related information	C8_B

Communication / collaboration	Dataset var.
1. Sending messages (e.g. email, messaging service, SMS) with attached files	I1_C
2. Making calls (Telephoning over the Internet	C7_C
3. Participating in social networks	C7_D1
4. Taking part in consultation or voting via Internet	G4_D,G4_E

Steps for skills calculations
Areas, indicators and dataset variables

Digital content creation	Dataset var.
1. Using copy and paste tools	I1_B
2. Creating electronic presentations	I1_G
3. Using basic arithmetic formula in a spreadsheet	I1_D
4. Writing a computer program	I1_I
5. Editing online text, spreadsheets, presentations	C11_B
6. Uploading self/user-created content	C11_C

Safety	Dataset var.
1. Changing privacy settings	Not
2. Setting up effective security measures	Collected

Steps for skills calculations
Areas, indicators and dataset variables

| Problem solving	Dataset var.
1. Finding, downloading, installing and configuring software	I1_F
2. Connecting and installing new devices	I1_E
3. Transferring files or applications between devices	I1_H
4. Electronic financial transactions	C8_H
5. Doing an online course	C10_B
6. Purchasing or ordering goods or services	H2

Some results: skills per DigComp areas (1)

Information and data literacy

- 19% Not Internet users
- 20% None
- 17% Basic
- 44% Above basic
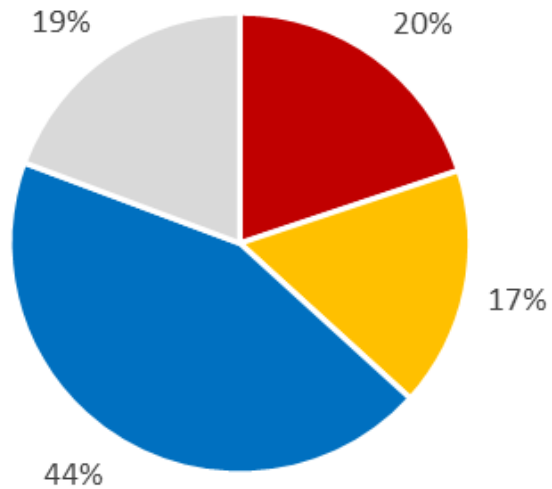
Legend: ■ Above basic ■ Basic ■ None ■ Not Internet users

Communication and collaboration

- 5% None
- 19% Not Internet users
- 17% Basic
- 59% Above basic
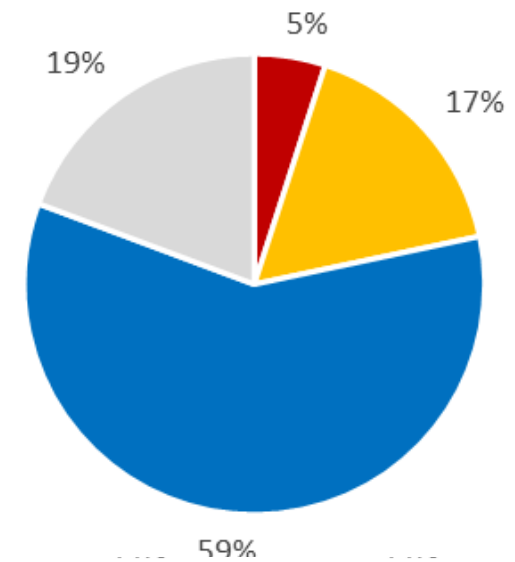
Legend: ■ Above basic ■ Basic ■ None ■ Not Internet users

# Some results: skills per DigComp areas (2)

Digital content creation

- 19% Not Internet users
- 41% None
- 22% Above basic
- 18% Basic
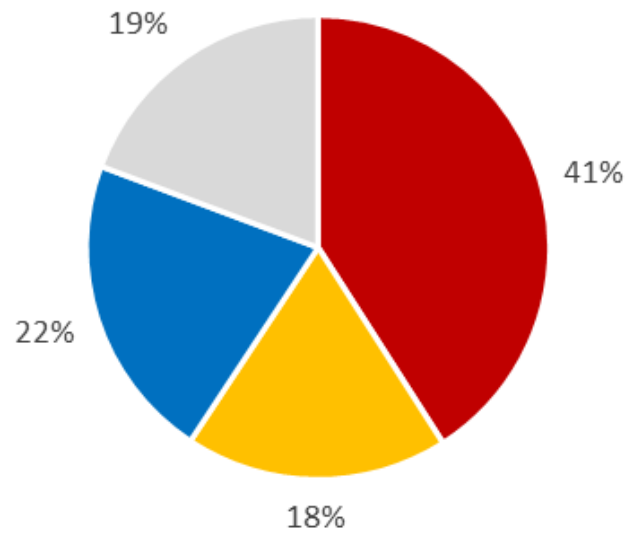
Legend: ■ Above basic ■ Basic ■ None ■ Not Internet users

Problem solving

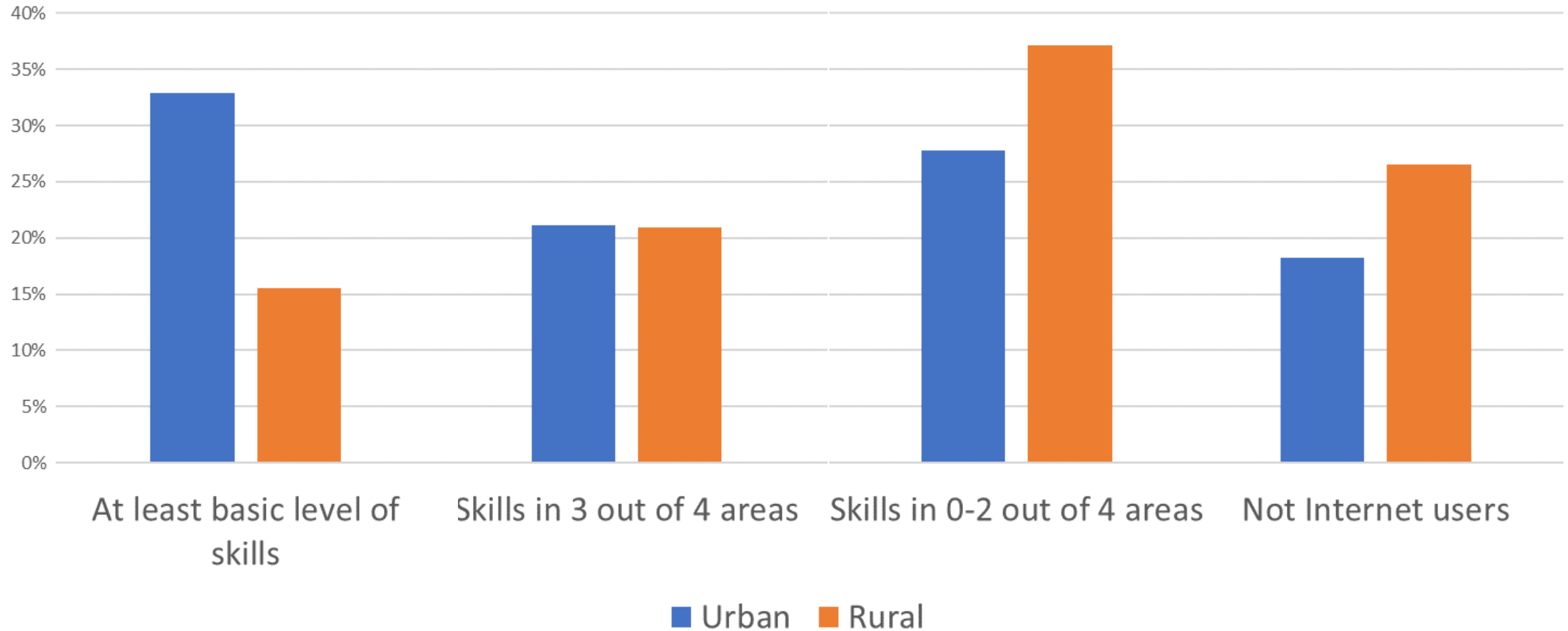- 19% Not Internet users
- 30% None
- 34% Above basic
- 17% Basic
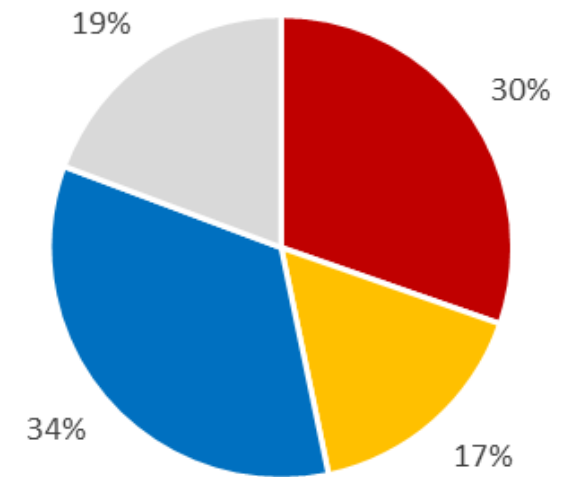
Legend: ■ Above basic ■ Basic ■ None ■ Not Internet users

Some results:
the overall level of ICT skills of individuals in Brazil (2021)
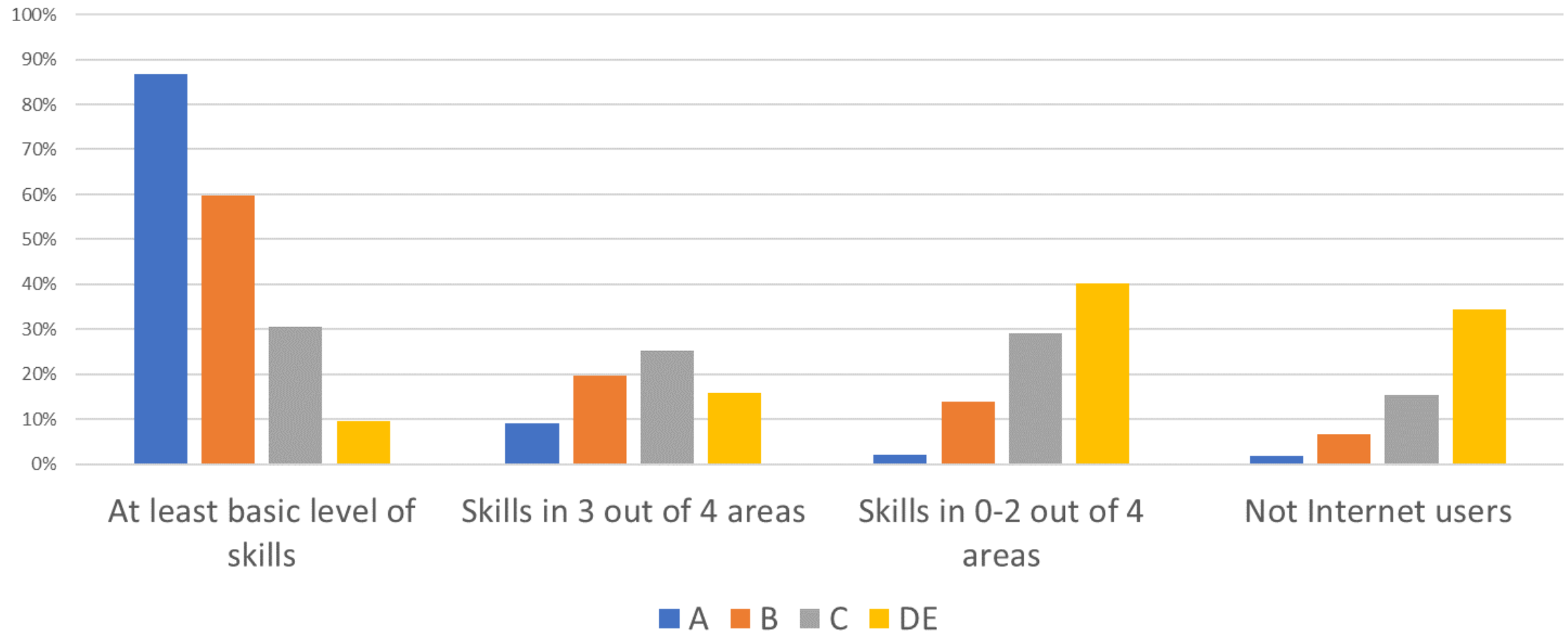

19%

29%

31%

21%
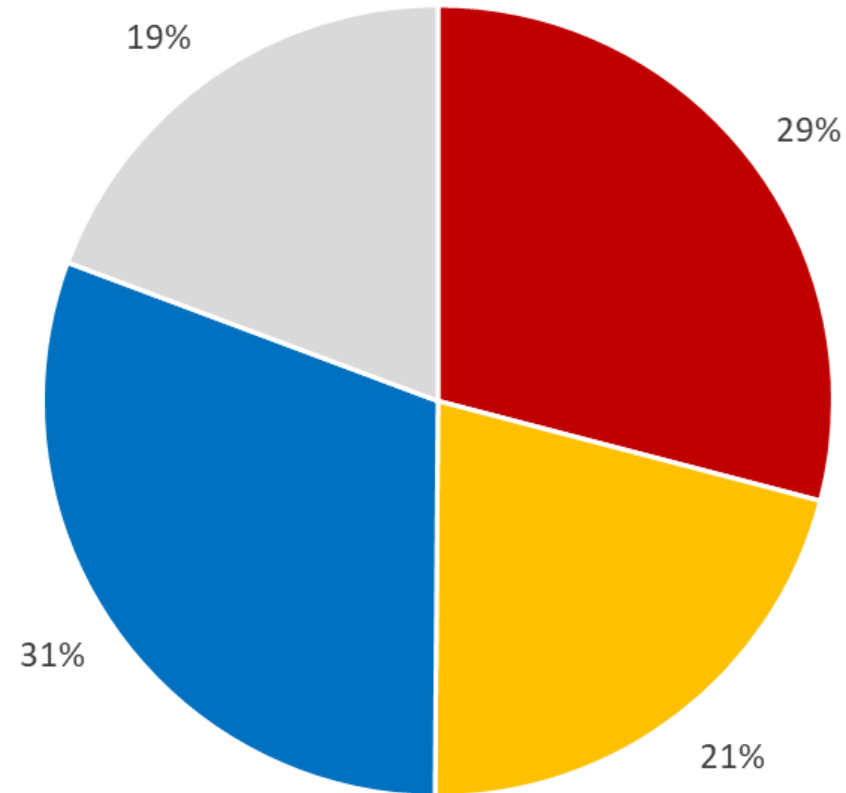
■ At least basic level of skills ■ Skills in 3 out of 4 areas ■ Skills in 0-2 out of 4 areas ■ Not Internet users
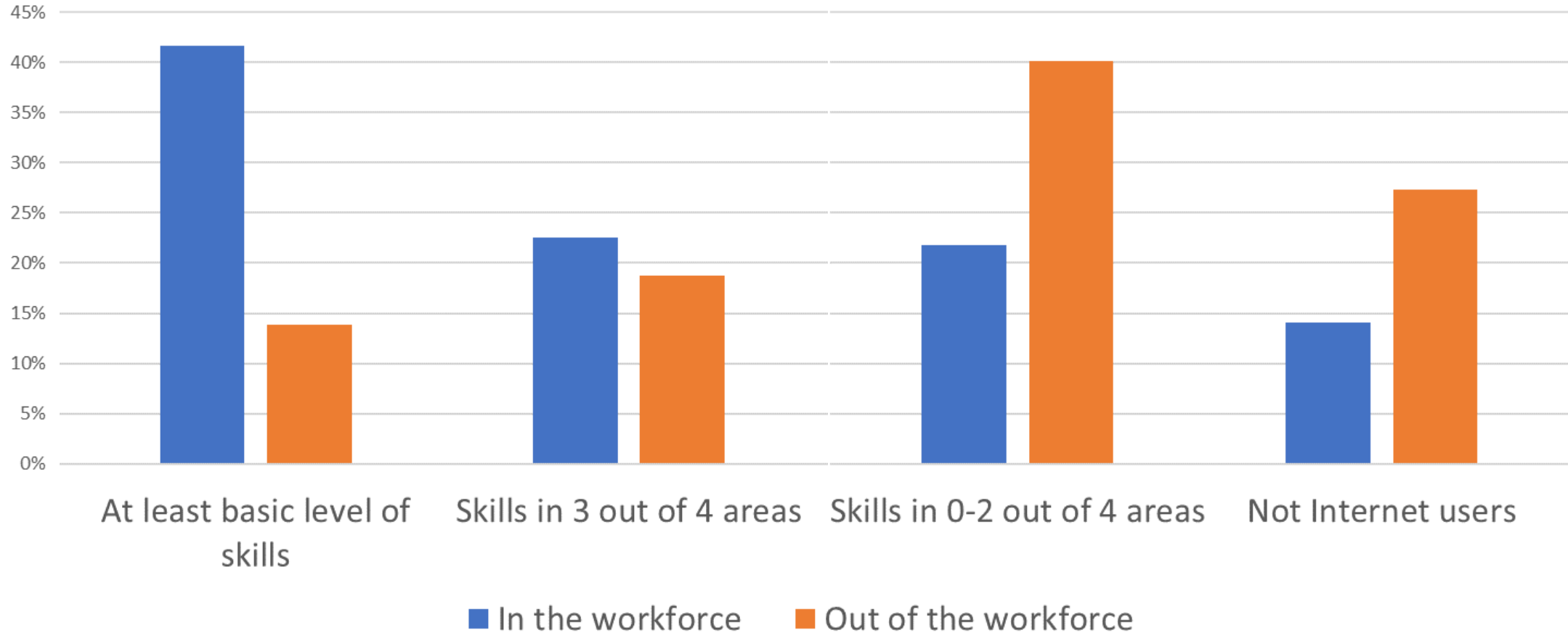
Some results: ICT skills by urban/rural

Some results – ICT Skills by Social Status

Some results – ICT Skills Workforce Status

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Discussion on the data pilot