EGH ICT Skills Subgroup

21 September 2023

Agenda

- *Introduction and background*
- *Purpose of national data pilots*
- *Data pilot: Canada – StatCan*
- *Proposed recommendations*

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
- 2022 – Reorganized indicators into Skills areas, added HH9, data pilots

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*

Aim for 2022

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

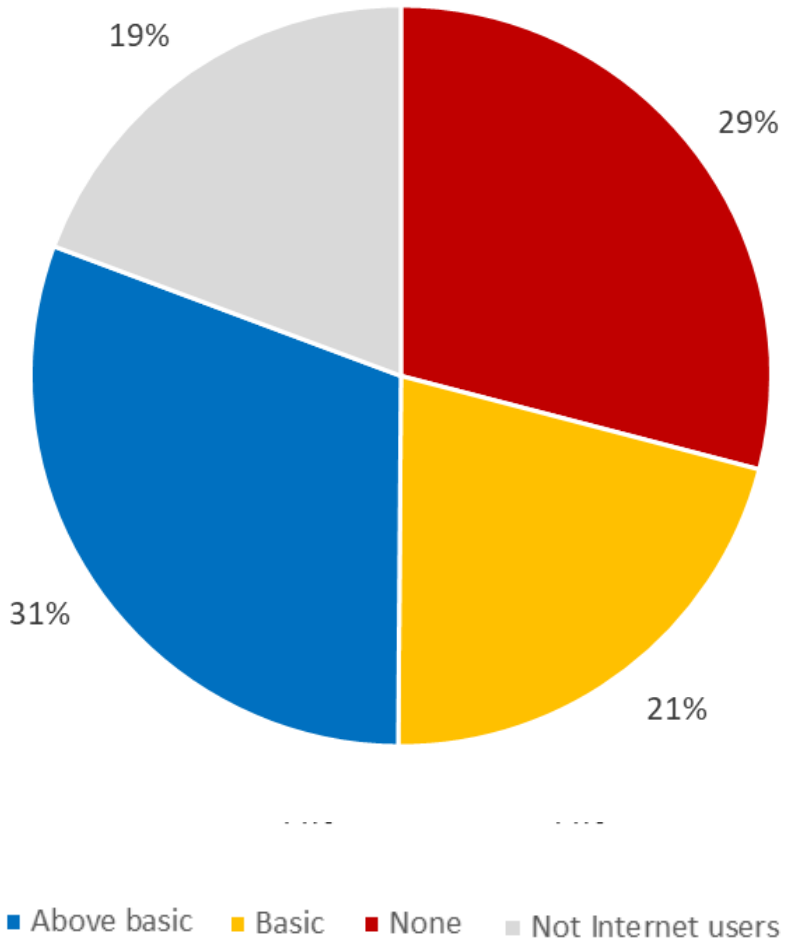
2022: HH9 indicators ★ added to the data model

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. Making calls (Telephoning over the Internet ★	2. Creating electronic presentations	2. Setting up effective security measures	2. Connecting and installing new devices
3. Reading or downloading newspapers, etc ★	3. Participating in social networks ★	3. Using basic arithmetic formula in a spreadsheet		3. Transferring files or applications between devices
4. Seeking health-related information ★	4. Taking part in consultation or voting via Internet ★	4. Writing a computer program		4. Electronic financial transactions ★
		5. Using software over the Internet for editing text, spreadsheet, presentations ★		5. Doing an online course ★
		6. Uploading self/user-created content ★		6. Purchasing or ordering goods or services ★

2022: Hands-on

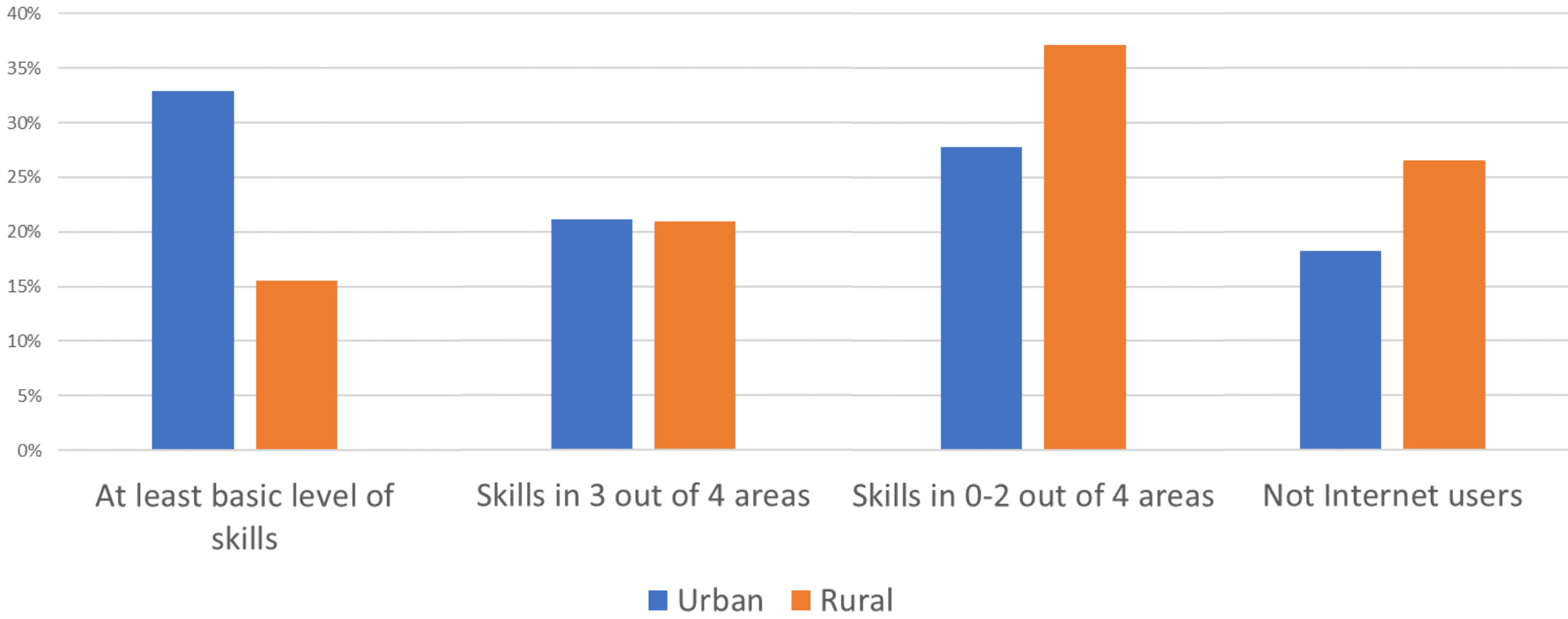
- *A data pilot inspired by the empirical work and method used in the Digital Skills Indicator (DSI) by Eurostat*

Some results from 2022: the overall level of ICT skills of individuals in Brazil (2021)



- ✓Above basic (two or more activities in all 4 areas)
- ✓Basic (at least one activity in all 4 areas)

Some results: ICT skills by urban/rural



Aim for 2023

- *To investigate the feasibility of aggregating skills data at the individual level by examining further country examples*
- *To consider the differences in data availability on the comparability of aggregates across countries*

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2023

Purpose of the national data pilots

In order to use the new method to aggregate data at the individual level

1. *An audit of data availability and data gaps*

2. *Is there enough capacity at the country level and what are possible needs for support*

3. *Hands-on computations*

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1. Data audit and gaps

the 2022 data model

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 content	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

Missing indicators by skill area for data audit countries

Country	Information/ data literacy	Communication/ collaboration	Digital content creation	Safety	Problem solving
Brazil	*Verifying information**			**Not collected***	
Canada	*Verifying information**	*Sending messages w/attached files*	*Using online SW for editing*		(1) *Finding SW* (2) *Connecting new devices* (3) *Transferring files*
Ghana	**Not collected**	**(1) *Making calls*** **(2) *Social networks*** **(3) *Online consultation or voting***	(1) *Using online SW for editing* (2) *Uploading content*	**Not collected**	(1) *Online banking* (2) *Online course* (3) *Purchasing*
Philippines	**(1) *Verifying information*** **(2) *Goods/ services info*** **(3) *Health info***	*Online consultation or voting*	*Using online SW for editing*	**Not collected**	*Connecting new devices*
United Kingdom	*Verifying information*	(1) *Sending messages w/attached files* (2) *Online consultation or voting*	**Not collected**		*Finding SW*

* Planned for future survey

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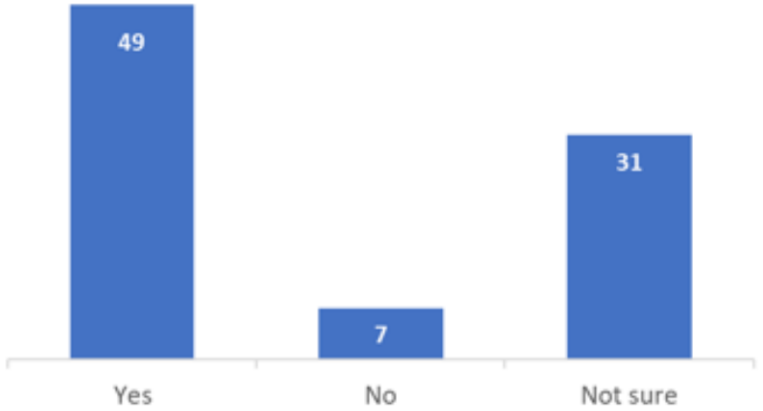
2. Capacity

2 pilot countries in 2023

- *Canada and the Philippines joined the national data pilots*
- *Confirmation of low technical difficulty of calculating ICT skills aggregates at the individial levels from those implementing the new method*
- *Support material available: e.g. reuse of R code created by Brazil; worked example by the JRC (EC)*

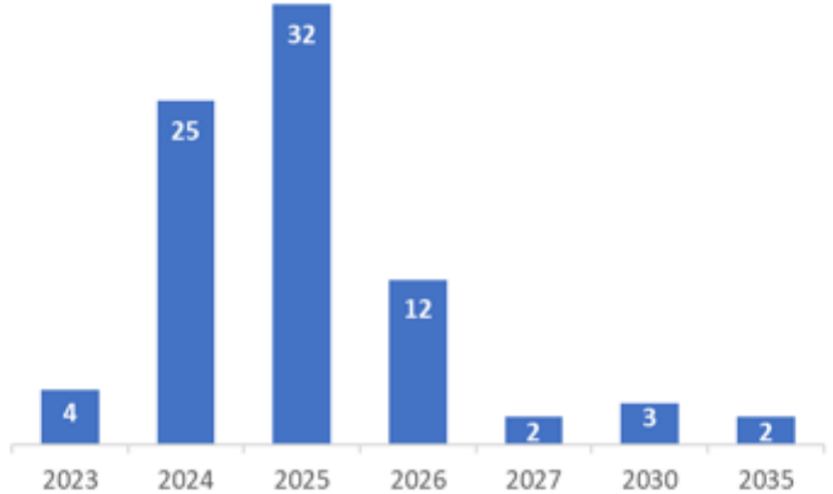
A survey (n=91 countries)

Figure 1
Does your country have the capacity to implement this recommendation?



Note: Question asked to the 87 countries indicating that they collect or could collect in the future ICT skills indicators

Figure 2
What is your estimate of the earliest year that such a recommendation could be implemented if a clear methodology was provided in September 2023?



Note: Question asked to the 80 countries indicating that they could or possibly could implement the recommended approach to aggregate ICT skills indicators at the individual level

For more info, see p. 3 of the report and Annex 3

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3. Hands-on

Data pilot explored an aggregate indicator of ICT Skills *at the individual level*

Raw data — **Scores converted to skills groups**

	Raw data																				Raw scores converted to levels					
Person	Information and Data (INFO)				Communication & Collaboration (COM)				Content creation (CONT)						Safety (SAFE)		Problem solving (PROB)						INFO	COM	CONT	SAFE	PROB	OVERALL
A	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	2	2	2	2	2	Above basic
B	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	1	1	1	Basic
C	1	0	0	1	1	0	0	1	1	0	0	1	0	0	1	0	1	0	0	1	1	0	2	2	1	2	2	Basic
D	1	1	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0	2	2	1	0	2	4 out of 5
E	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	0	1	1	3 out of 5
F	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	2 out of 5
G	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1 out of 5
H	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	0	0 out of 5

Criteria 1: Individuals should be assessed on the number of activities **within a skill area** they report having done in the last three months

Criteria 2:

None	Basic	Above basic
0 activities	1 activity	More than 1 activity

European Commission

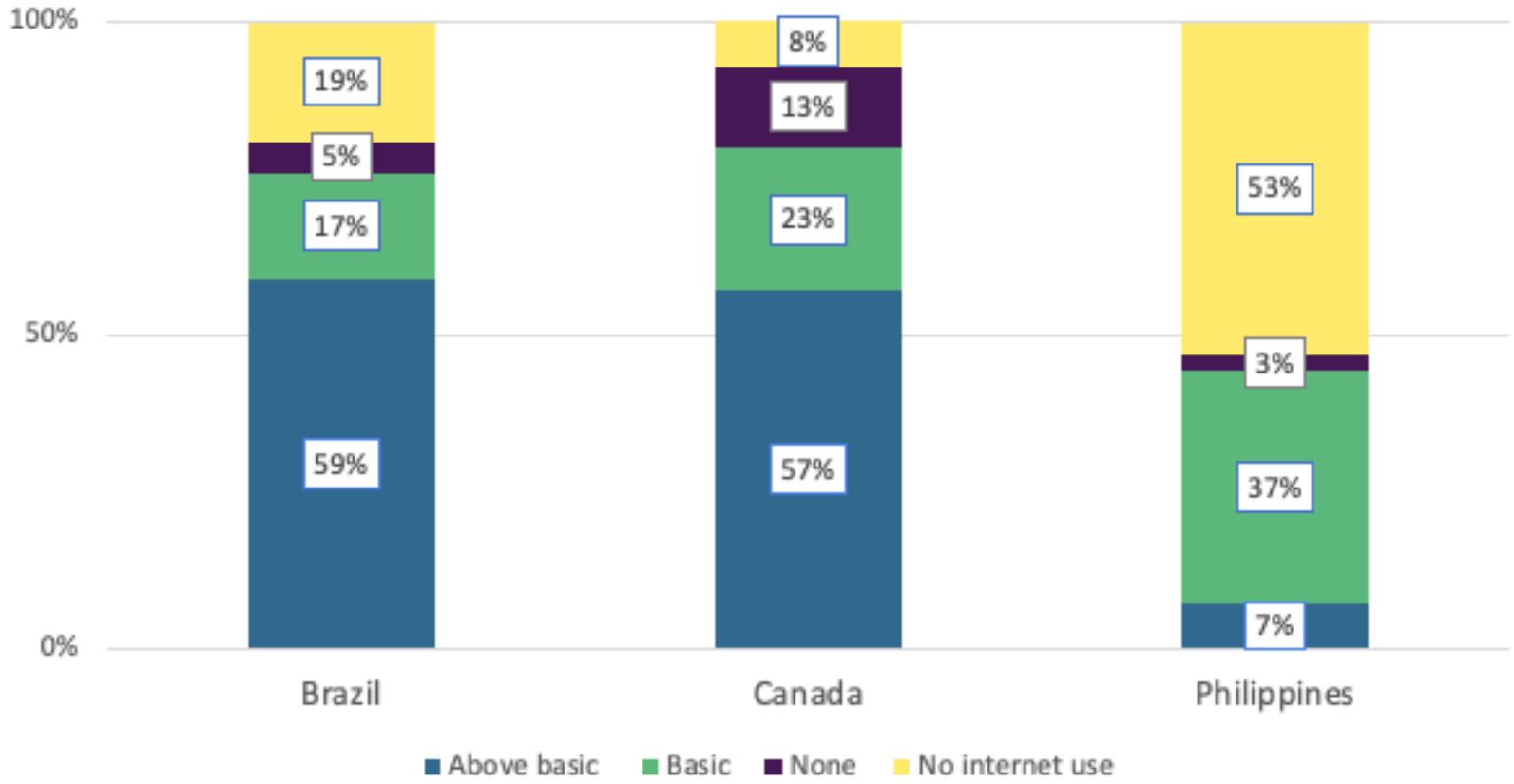
Piloted approach: individuals by skills area

	Communication & Collaboration (COM)			
	Sending messages (e.g. email, messaging service, SMS) with attached files	Making calls (Telephoning over the Internet)	Participating in social networks	Taking part in consultation or voting via Internet
Brazil	1	1	1	1
Canada		1	1	1
Philippines	1	1	1	

Criteria 3: Skill levels should not be assessed in skill areas where fewer than two indicators are collected

Piloted approach: individuals by skills area

Figure 13.
Share of individuals with ICT *Communication and collaboration* skills, by country



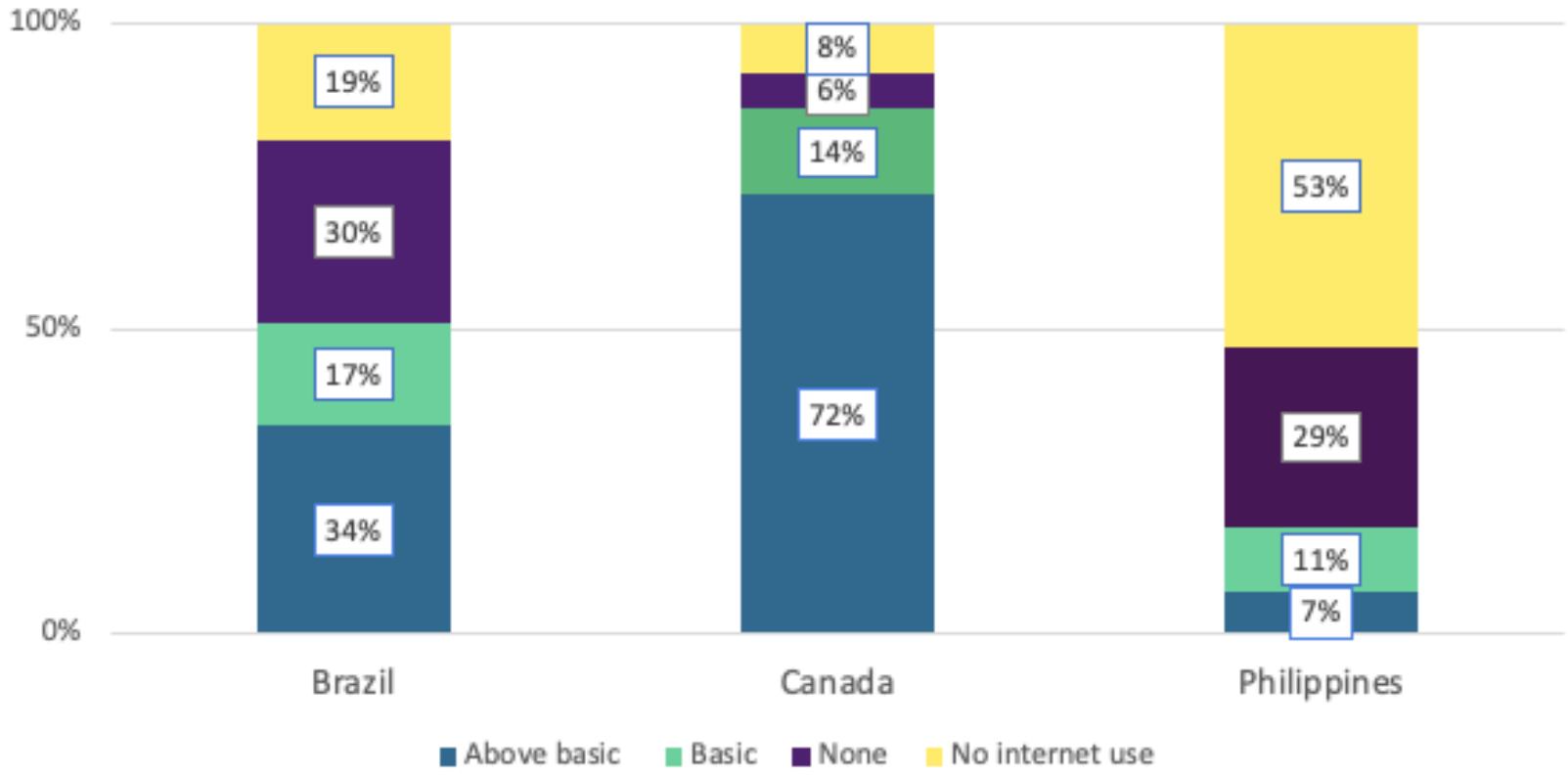
Note: Data for Brazil (2021), for Canada (2020) and Philippines (2019).

Piloted approach example 2

	Problem solving (PROB)					
	Finding, downloading, installing and configuring software	Connecting and installing new devices	Transferring files or applications between devices	Electronic financial transactions	Doing an online course	Purchasing or ordering goods or services
Brazil	1	1	1	1	1	1
Canada				1	1	1
Philippines	1		1	1	1	1

Piloted approach example 2

Figure 14.
Share of individuals with ICT *Problem solving* skills by skill area and country



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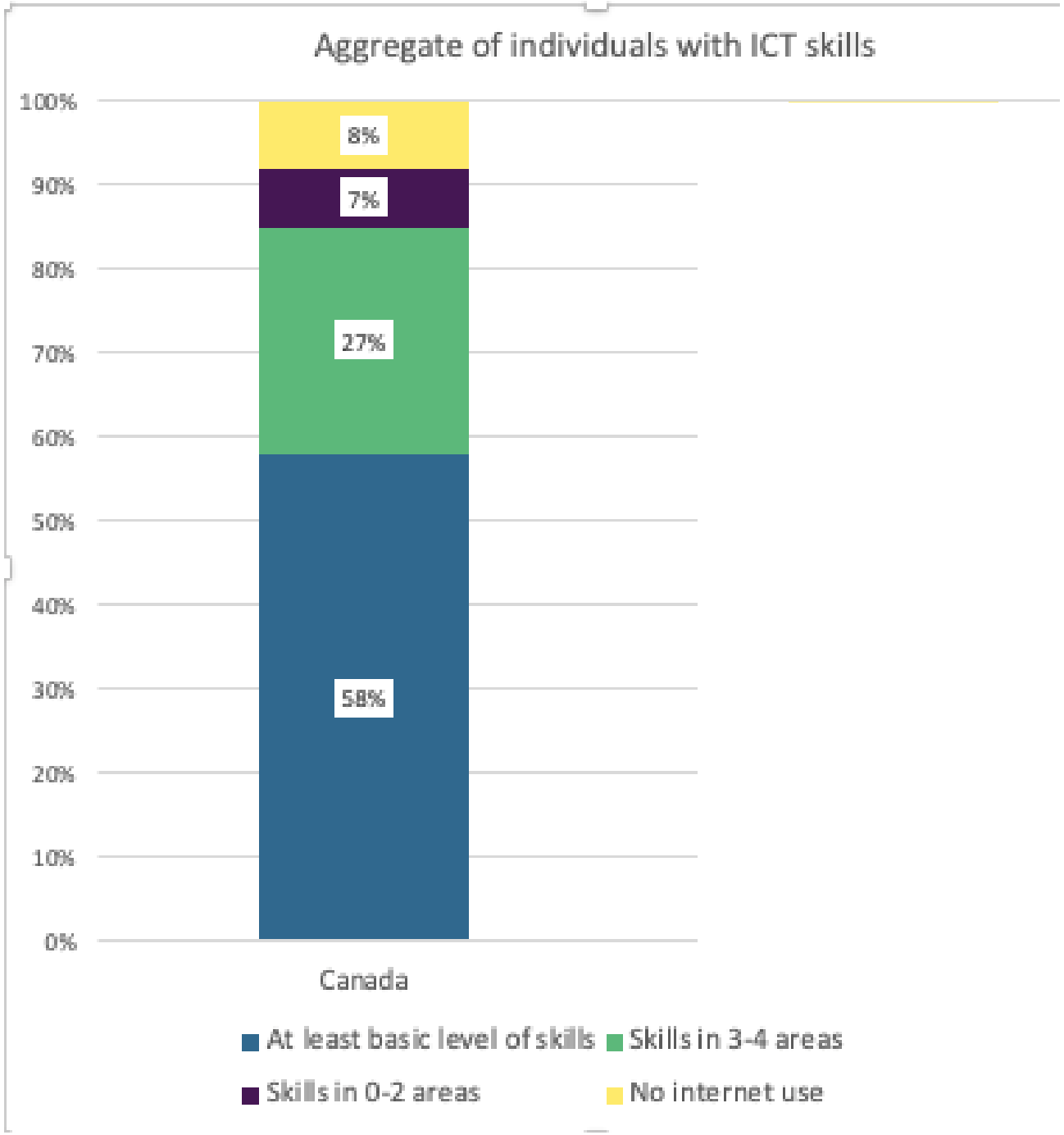
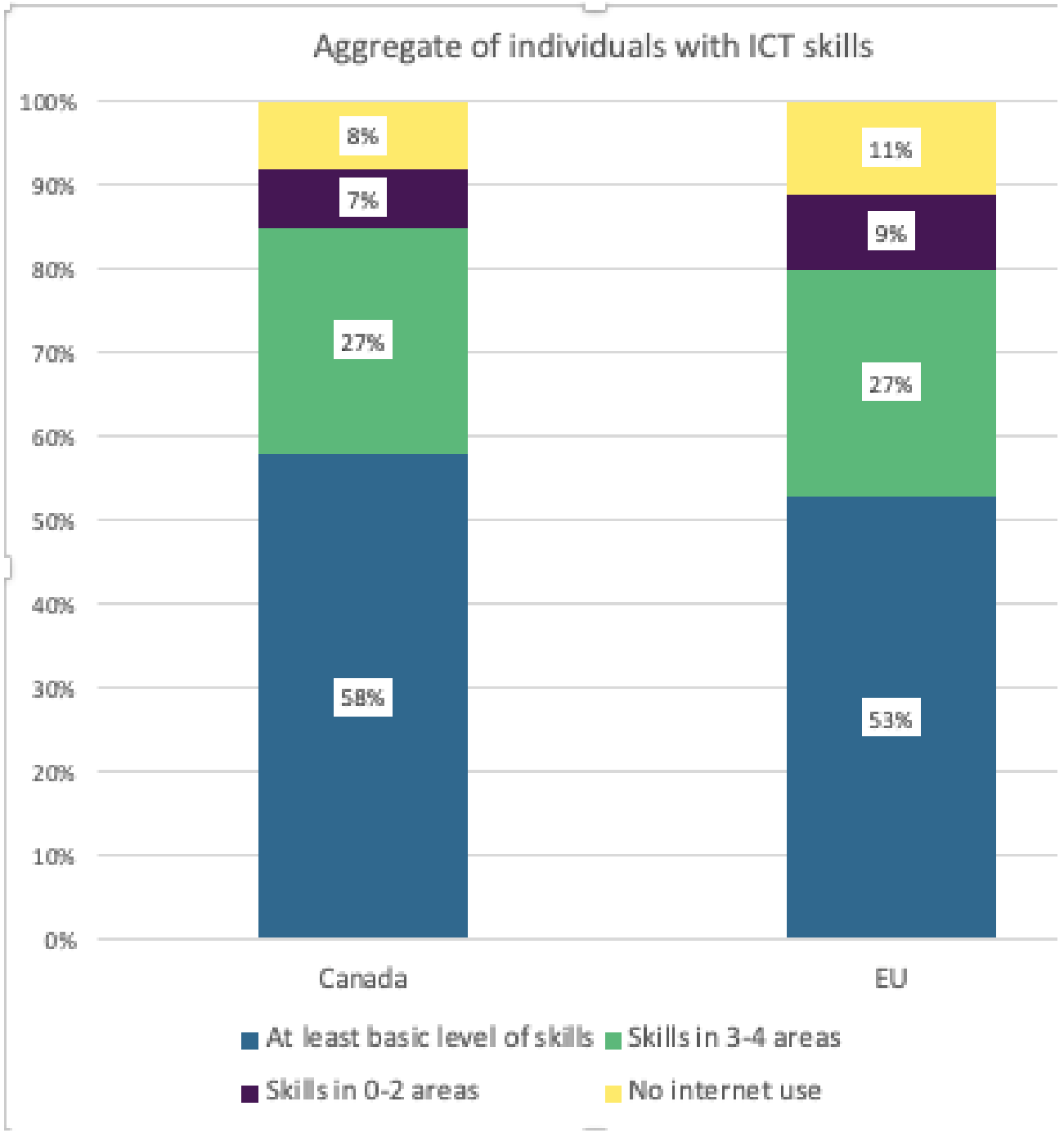
Piloted approach example 3



Piloted approach example 3



Comparability with some caveats:

The same method, however Canada used fewer indicators than the EU

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EGH ICT Skills Subgroup

Data pilot: Canada

Measurement of ICT skills using the 2020 Canadian Internet Use Survey (CIUS)

An application of the EGH ICT Skills subgroup's recommended methodology

21 September 2023

Delivering insight through data for a better Canada

Statistics Canada Statistique Canada

Canada

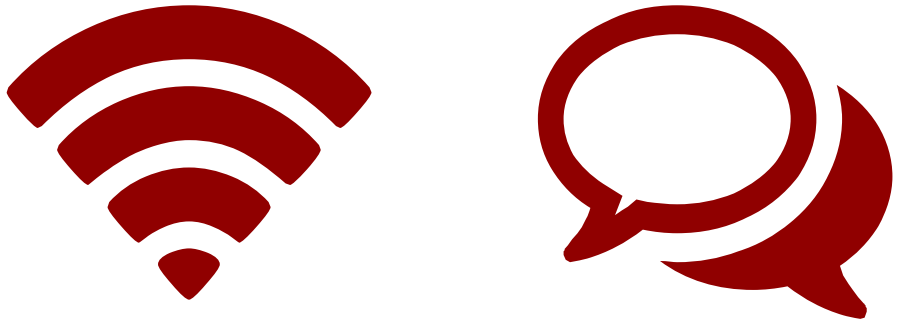
History of the CIUS

The CIUS is a voluntary social ICT use survey conducted by

Statistics Canada

on behalf of

Innovation, Science and Economic Development Canada (Department of Industry)



History:

- First launched in 2005
- Underwent major redesigns in 2010 and 2018
- Most recent iteration published for 2022 (after the subgroup's work was completed for 2023)

Purpose:

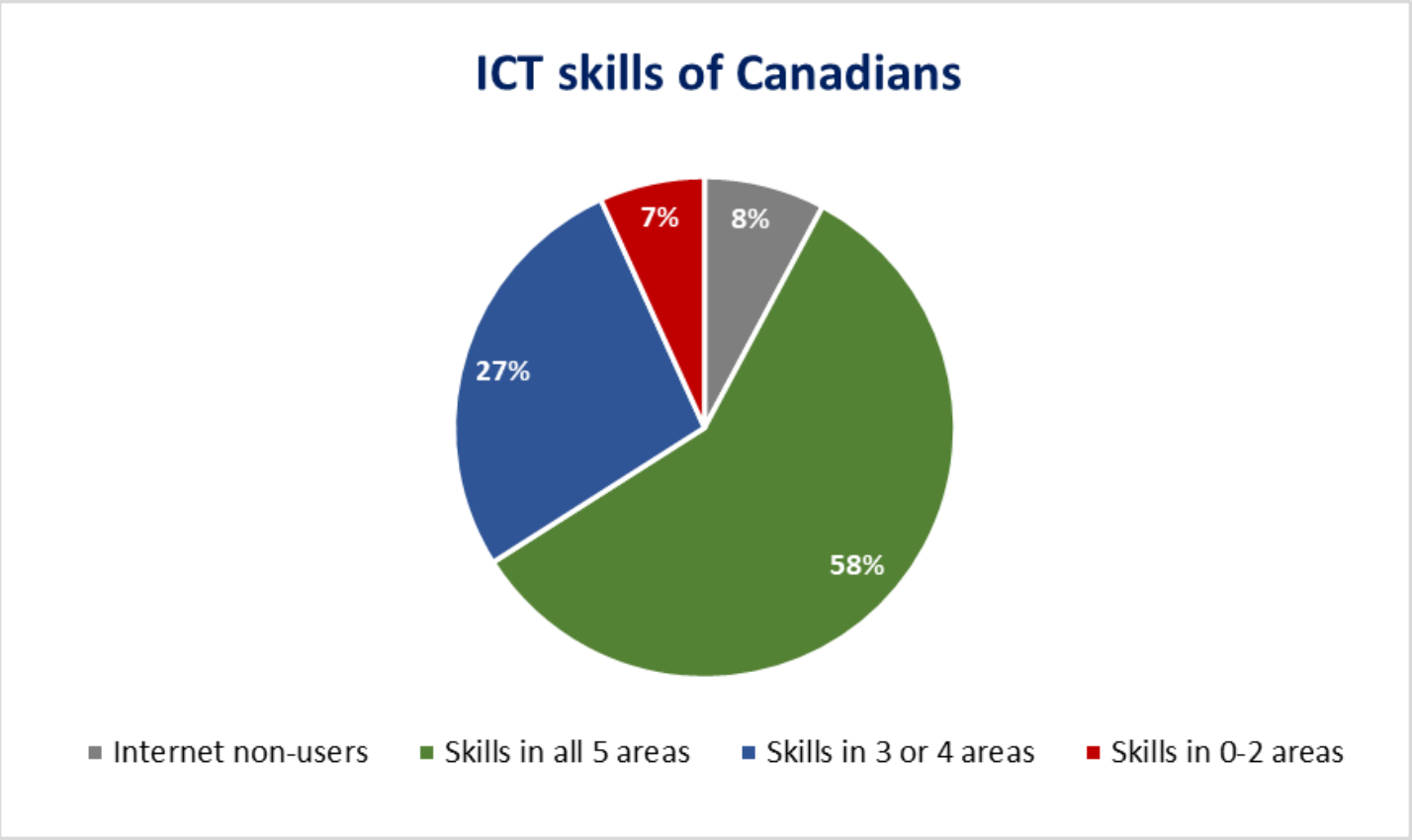
- Collected data are used to inform evidence-based domestic policymaking, as well as to allow for research and program development related to the digital economy.
- The CIUS also provides internationally comparable statistics on the use of digital technologies.

Missing indicators for 2020 ICT skills calculation

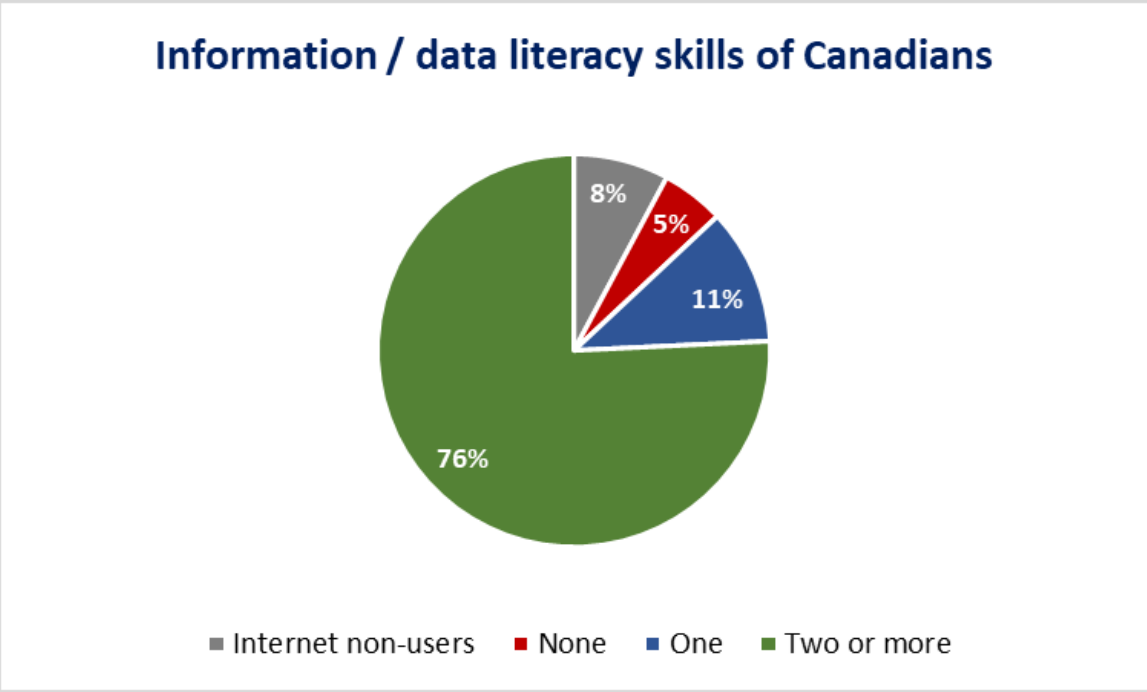
- **Information / data literacy:**
  - (1) Verifying the reliability of information*
- **Communication / collaboration:**
  - (1) Sending messages with attached files
- **Digital content creation:**
  - (5) Using software over the Internet for editing text, spreadsheets, or presentations
- **Problem solving:**
  - (1) Finding, downloading, installing and configuring software
  - (2) Connecting and installing new devices
  - (3) Transferring files or applications between devices

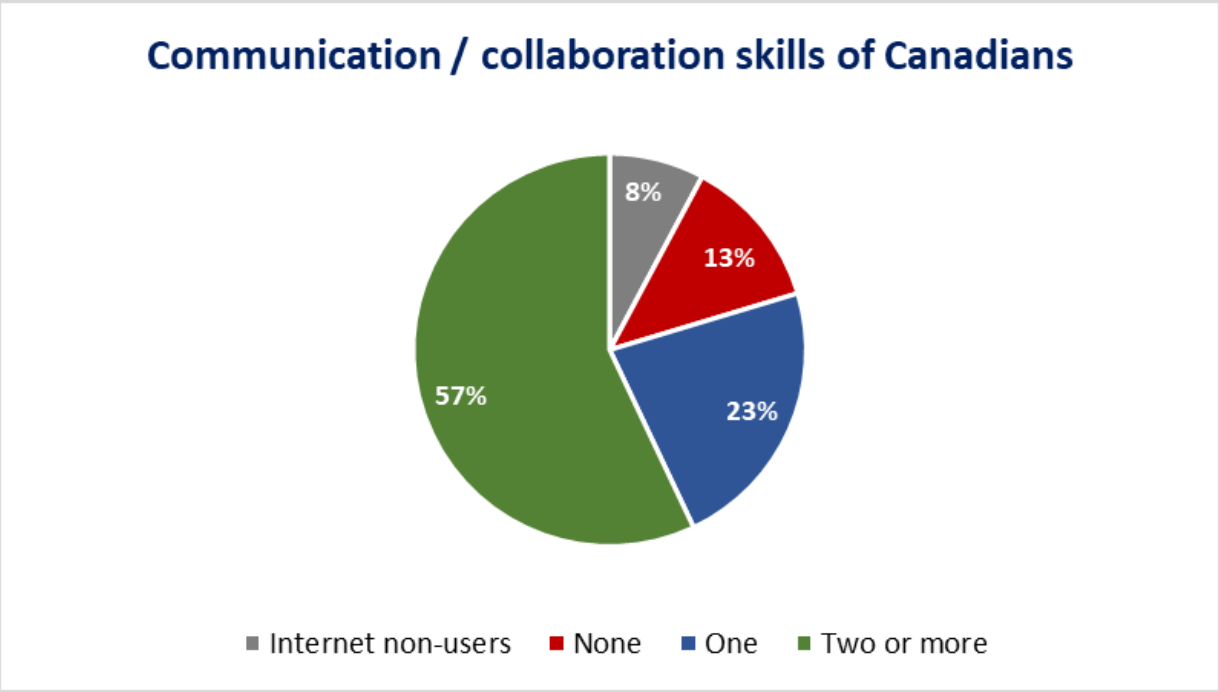
*Available for reference year 2022

2020 results

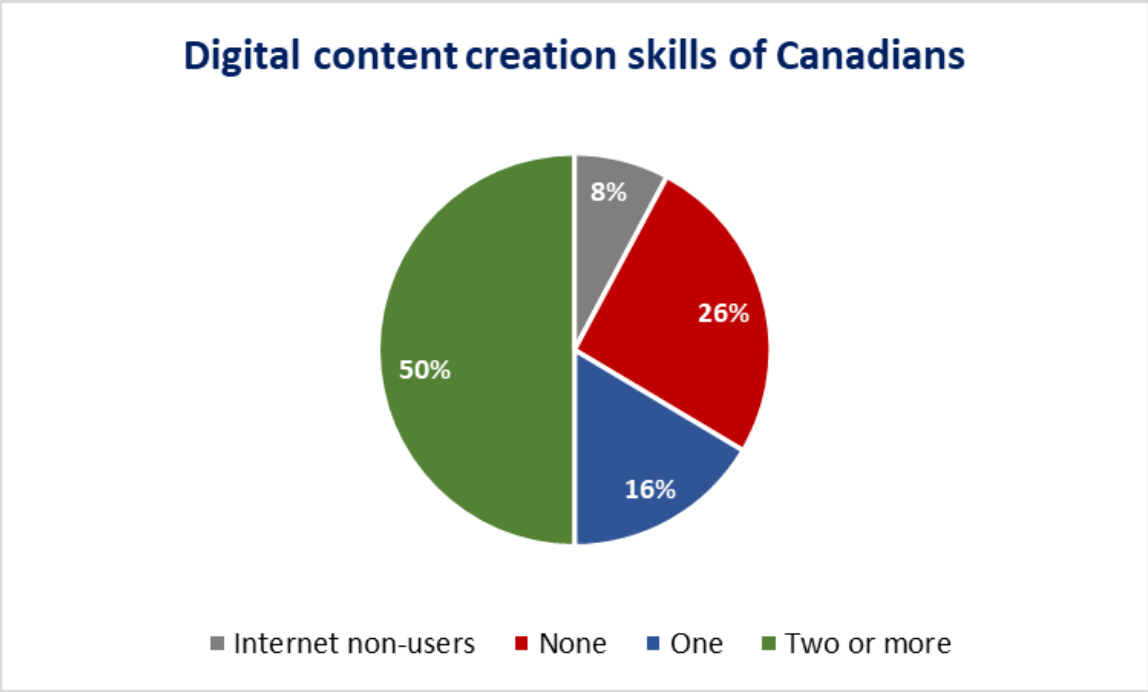


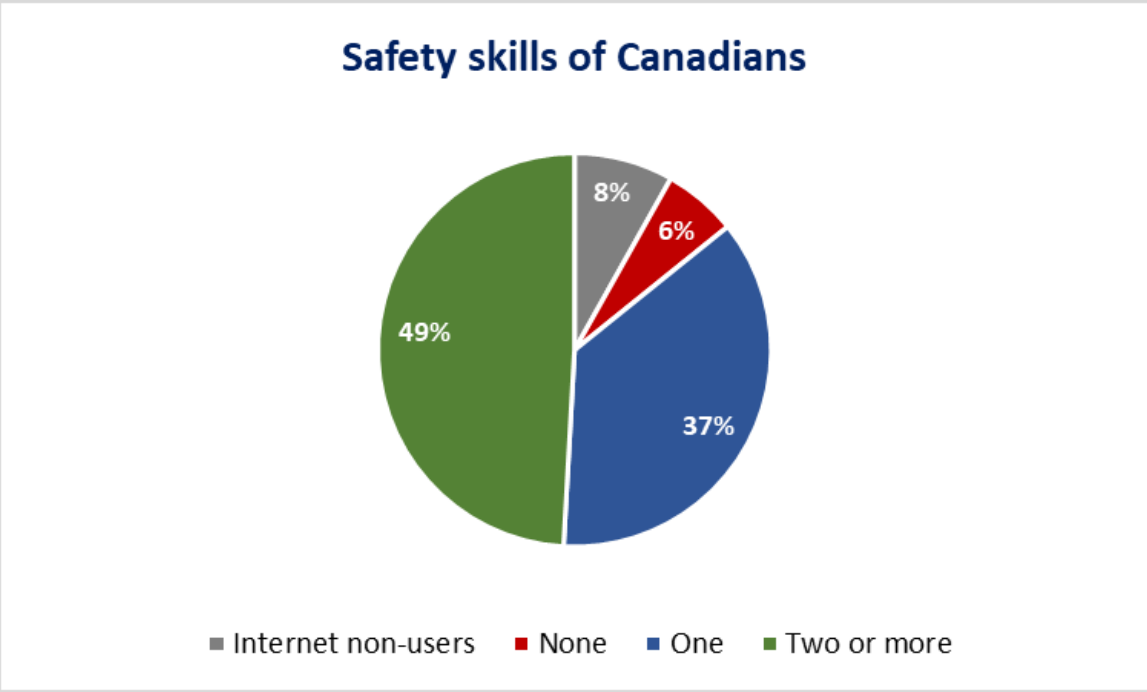
2020 results (continued)



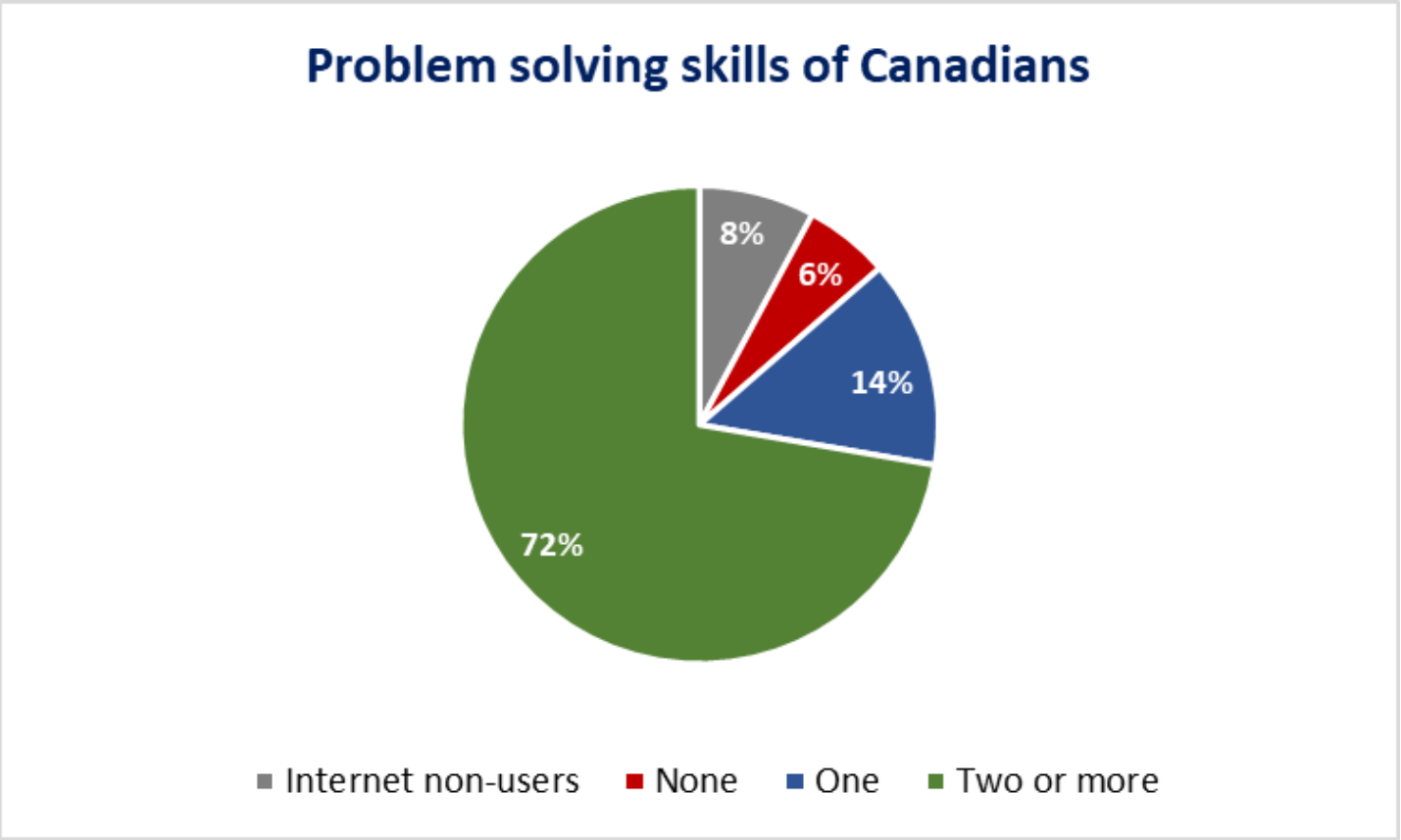


2020 results (continued)





2020 results (continued)



Caveats

- The results are weighted using person weights which were calibrated to province/age/sex projections based on the Canadian Census of Population.
- The CIUS does not conduct imputation in cases of non-response for most survey questions. Instead, non-responses are typically dropped from aggregate calculations.
  - For derived variables, respondents are only dropped if they didn't respond to **all** of the survey questions that make up the derived variable.
  - Therefore, for derived ICT skills calculations, some respondents were classified as having fewer skills due to non-response to some survey questions.

Thank You

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Recommendations

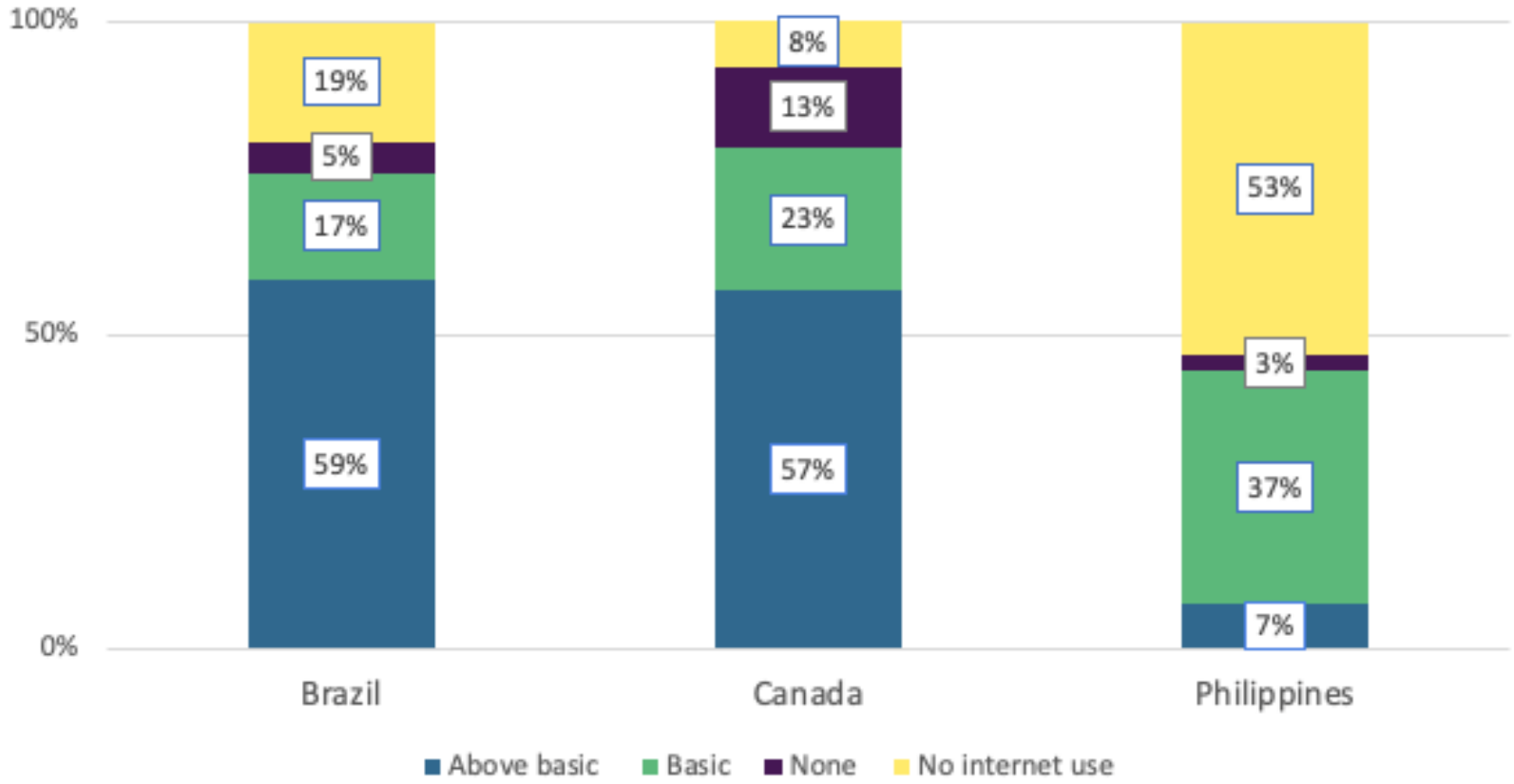
Recommendation 1

To transition from current reporting to reporting individual level aggregates

- A new method of computing data at the national level is needed and feasible
- As an interim step a suggestion of aggregating individuals' skills ***by skill area only*** until overall data availability improves
- A minimum of ***at least 2 indicators*** within the area is proposed to get countries on board (e.g. duration 1-3 y)

Piloted approach: individuals by skills area

Figure 13.
Share of individuals with ICT *Communication and collaboration* skills, by country



Note: Data for Brazil (2021), for Canada (2020) and Philippines (2019).

Countries with ***at least 2 indicators*** *within an area can assign a skill level to individuals*

Recommendation 1 from 2024 for the duration of 1-3 years)

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 content	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

Recommendation 2

To increase comparability across countries

- **Two specific required indicators** within each skill area should be defined in the future (e.g. 2026 onwards)

- While two specific indicators by skill area would be recommended as a minimum in the future, all skills indicators should still be collected

Recommendation 3

- The overall goal is to provide users with an **aggregated indicator** of ICT skills **including all 5 skills areas.**
- Countries should make efforts to collect as many ICT skills indicators as possible **to improve comparability**
- It is recommended that EGH assesses progress **after two or three years** to determine if sufficient countries are implementing the recommendations and if data availability for these indicators is improving.

Recommendations 4

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

Proposal for 2024

- The subgroup should investigate how the set of ICT skills indicators could be made more robust and resilient to technological changes
- More data pilots across income groups
- Consider mandatory indicators for each skill area
- Further conceptual considerations, e.g. interim steps to arrive at an overall ICT skills aggregate might exclude the area of Safety?

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