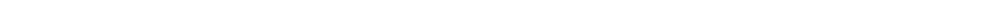


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ACA PRESENTATION
MARCH 27 2025

SUMMARY
REPORT

Lucia Tramonte
Sophie Baker
Herb Emery



This brief results-report presents original analyses conducted on the public-use international datasets of PISA 2022.

It is important to note that the researchers were not granted access to the Canadian version of the PISA 2022 dataset, which contains additional information on programs of study, French immersion, student indigenous identity, as well as events and resources related to career advising.

Moreover, explicit and implicit strata for sampling design for each data cycle were not available to the researchers.

This round of PISA was scheduled to take place in 2021, but was delayed by one year given the events and disruption of the Covid 19 pandemic.

Several countries, including Canada, were still experiencing closure or issues at that time.

For Netherlands, Newfoundland and Labrador, Alberta, Hong Kong (China), Manitoba, United States, Latvia, Scotland, Quebec, New Zealand, United Kingdom, Northern Ireland, England, Wales, Denmark, Ontario, Panama, Nova Scotia, Australia, British Columbia, Ireland, Jamaica and Canada, caution is required when interpreting estimates because one or more PISA sampling standards were not met (see PISA Reader's Guide, Annexes A2 and A4).

In a follow up report, the researchers discuss time trends to put into perspective the results of 2022.

PISA data for Canada and Provinces

Created by the Organisation for Economic Co-operation and Development (OECD), PISA tests the skills and knowledge of 15-year-old students in mathematics, reading and science.

Launched in 2000, the PISA programme now involves more than eighty countries and economies, that participated with different frequencies, every three years.

Canada and its provinces participated in PISA since 2000.

All 10 Canadian provinces have participated in each assessment. Currently, Yukon, Northwest Territories, and Nunavut do not participate in PISA, nor do Indigenous students from band-operated schools. PISA measures the yield of education, and shows the skills and competence of students by the time they reach the end of compulsory education. The results cannot be used to assess individual student achievement or the performance of the schools from where they are drawn.

Approximately 20,000 Canadian 15 year old students, in grade 7 or higher, from about 800 schools, have taken part in each PISA assessment.

Students take a cognitive test and complete a contextual questionnaire during a two-day assessment window. The cognitive test and the student questionnaire are taken in either English or French.

School principals or their delegates complete a school questionnaire about resources, staff, and main school characteristics of the environment where students study and learn.

Schools and the 15 year old students within schools are selected randomly for participation. The analyses are conducted at the student level, meaning that the 15-year-old students, not the schools, are the unit of analysis.

Mean Score and Variation in Reading Performance, PISA 2022

To appreciate the magnitude of provincial mean differences, as well as performance divides within each province, readers should consider that about 20 points on a PISA test scale corresponds to one year of learning. The Atlantic region performs in reading test more than two years behind the top performing provinces in Canada

	Mean score		Standard deviation		Percentiles										Difference (90th - 10th)				
	Mean score	S.E.	S.D.	S.E.	10th	25th	Median (50th)	75th	90th	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score dif.	S.E.
	Mean score	S.E.	S.D.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score dif.	S.E.	
AB*	525	(6.3)	112	(3.8)	378	(8.9)	449	(8.0)	528	(7.4)	605	(7.2)	666	(9.7)	288	(11.7)			
BC*	511	(5.8)	107	(2.8)	370	(8.2)	439	(7.3)	514	(6.6)	587	(6.4)	646	(6.9)	276	(8.2)			
MB*	486	(3.8)	103	(2.5)	352	(6.7)	417	(5.1)	487	(4.4)	556	(4.2)	617	(5.6)	265	(7.9)			
NB	469	(4.0)	106	(2.7)	330	(8.2)	398	(6.6)	472	(5.6)	541	(5.3)	604	(6.8)	274	(10.6)			
NFLD	478	(7.1)	103	(3.2)	347	(10.7)	406	(8.1)	478	(7.4)	549	(9.7)	612	(8.4)	266	(10.6)			
NS*	489	(6.2)	106	(2.4)	351	(8.8)	415	(7.9)	488	(7.6)	564	(7.4)	625	(8.5)	274	(8.3)			
ON*	512	(3.8)	108	(2.1)	371	(4.6)	438	(4.7)	516	(5.0)	587	(5.3)	646	(5.0)	276	(6.0)			
PEI	496	(10.3)	103	(5.5)	355	(17.8)	428	(13.8)	505	(11.9)	572	(14.5)	623	(20.8)	268	(24.1)			
QB*	501	(4.6)	109	(2.3)	358	(6.7)	429	(5.5)	506	(5.3)	577	(5.2)	635	(5.8)	277	(7.2)			
SK	484	(4.1)	101	(2.4)	353	(6.0)	416	(5.0)	488	(4.4)	554	(5.4)	611	(6.5)	257	(7.6)			

Top and bottom deciles of students performance in Canada are spread apart by about 10 years of learning. NB has the lowest performance in terms of reading score average in the bottom decile and in the top decile, showing both the weakest as well as the strongest students in the province do the worst in Canada.

Mean Score and Variation in Math Performance, PISA 2022

To appreciate the magnitude of provincial mean differences, as well as performance divides within each province, readers should consider that about 20 points on a PISA test scale corresponds to one year of learning. The Atlantic region performs in the mathematics test approximately two years behind the top performing provinces in Canada.

	Mean score		Standard deviation		Percentiles											
					10th		25th		Median (50th)		75th		90th		Difference (90th - 10th)	
	Mean score	S.E.	S.D.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score dif.	S.E.
AB	504	(5.7)	98	(2.6)	376	(6.5)	432	(6.9)	502	(6.6)	571	(7.4)	633	(9.5)	257	(9.2)
BC*	496	(4.4)	93	(1.9)	377	(6.5)	431	(5.5)	495	(5.5)	560	(5.0)	617	(5.2)	240	(6.8)
MB*	470	(2.7)	86	(1.7)	360	(4.6)	411	(3.4)	470	(3.1)	530	(3.0)	582	(4.2)	222	(5.5)
NB	468	(3.1)	90	(2.2)	355	(5.2)	404	(4.3)	466	(4.7)	529	(4.0)	585	(6.3)	230	(7.5)
NFLD	459	(5.5)	86	(2.4)	349	(7.3)	398	(7.2)	458	(6.5)	517	(7.2)	573	(8.0)	224	(8.8)
NS*	470	(3.6)	91	(2.4)	355	(5.6)	403	(5.1)	467	(5.1)	533	(5.4)	590	(5.8)	235	(8.3)
ON*	495	(3.0)	93	(1.6)	376	(3.5)	431	(3.1)	493	(3.4)	556	(4.3)	616	(4.7)	240	(4.9)
PEI	478	(6.6)	88	(3.9)	363	(11.7)	412	(9.4)	478	(11.0)	542	(9.3)	591	(11.0)	228	(15.2)
QB*	514	(3.9)	94	(1.9)	390	(5.3)	450	(4.8)	517	(4.7)	581	(4.6)	631	(4.3)	241	(6.0)
SK	468	(2.6)	86	(1.9)	358	(4.8)	407	(3.9)	466	(3.0)	527	(4.3)	581	(5.2)	223	(6.7)

Top and bottom deciles of students performance in Canada are spread apart by about 10 years of learning. NFLD has the lowest performance in terms of mathematics score average in the bottom decile and in the top decile, showing both the weakest as well as the strongest students in the province do the worst in Canada.

Based on public-used data, and using a school-based variable reporting the population size where the school attended by the student is located, researchers computed mean performance scores in reading, mathematics and science by size of the locality, for all Canadian Provinces.

The four provinces in the Atlantic Region are shown in colour.

The three spider charts show that the largest divides in performance between the Atlantic Region and the other Canadian provinces are in rural areas. The bigger the locality where the 15-year-olds attend school, the narrower the performance gap is between the Atlantic region and the rest of Canada.

It is important to note that these results are not accounted for students socioeconomic status, or for school socioeconomic status.

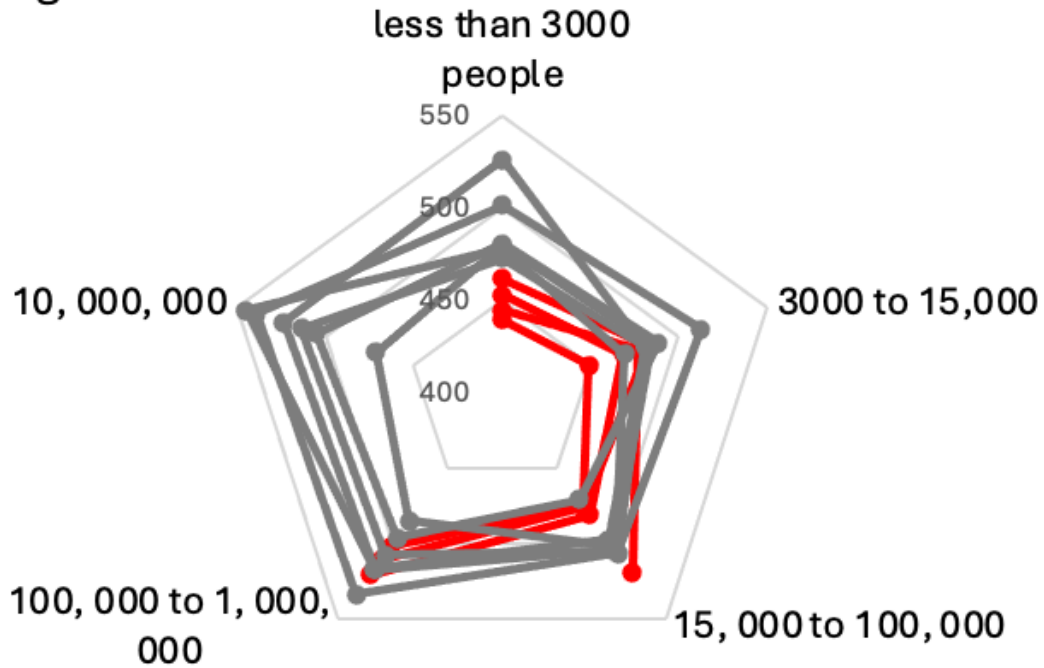
Additionally, the population size of the school locality cannot be accompanied in these analyses by finer considerations about the influence of Metropolitan zones and the resources provided by nearby city-based services.

Access to Canadian PISA datasets and knowledge of the sampled schools would allow a finer reclassification of urbanicity and rurality, which could offer much more meaningful comparisons across provinces.

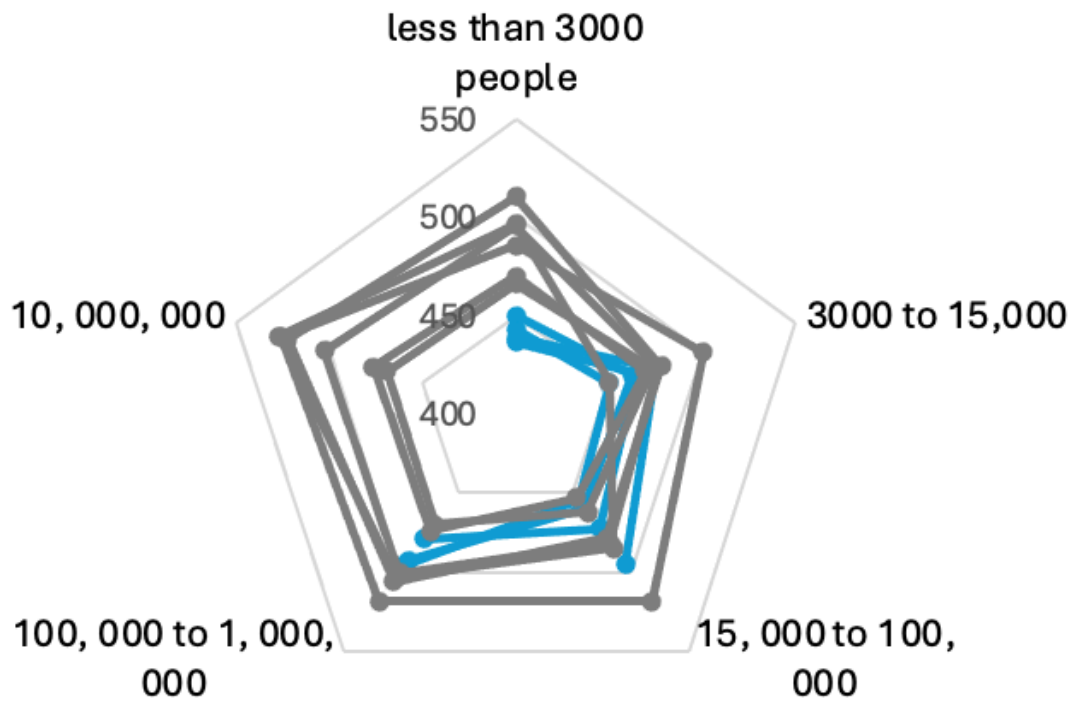
The following results should therefore be considered correct, and a very general indication of urban/rural skills' and competencies' divides.

PISA scores by Province based on Urban vs Rural Areas (Atlantic Provinces Highlighted)

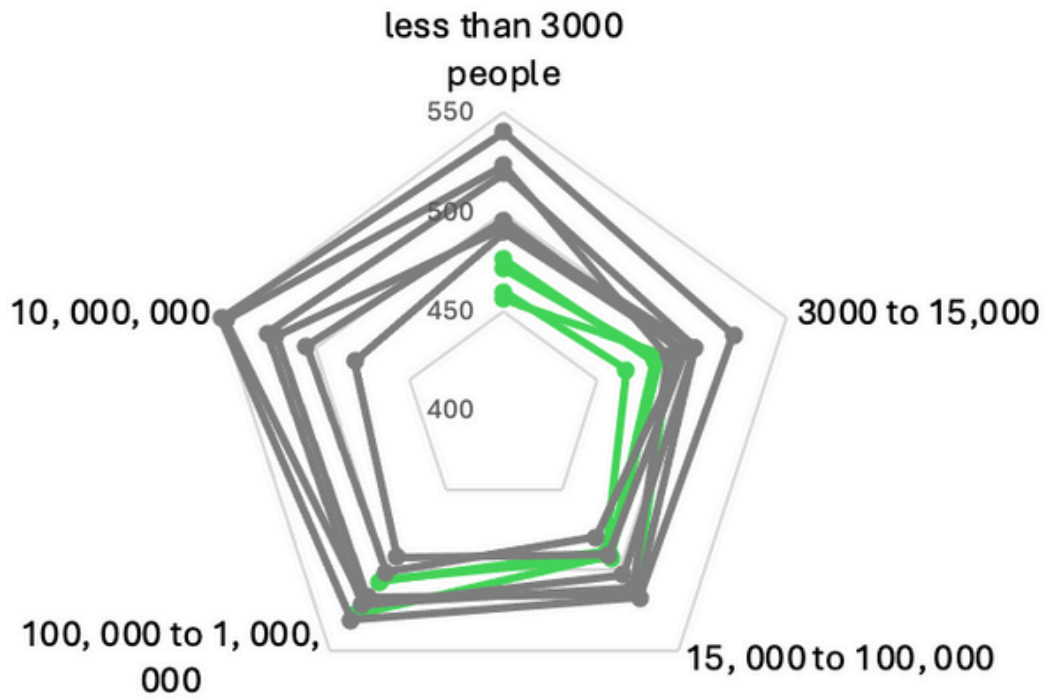
Reading mean scores



Mathematics' mean scores

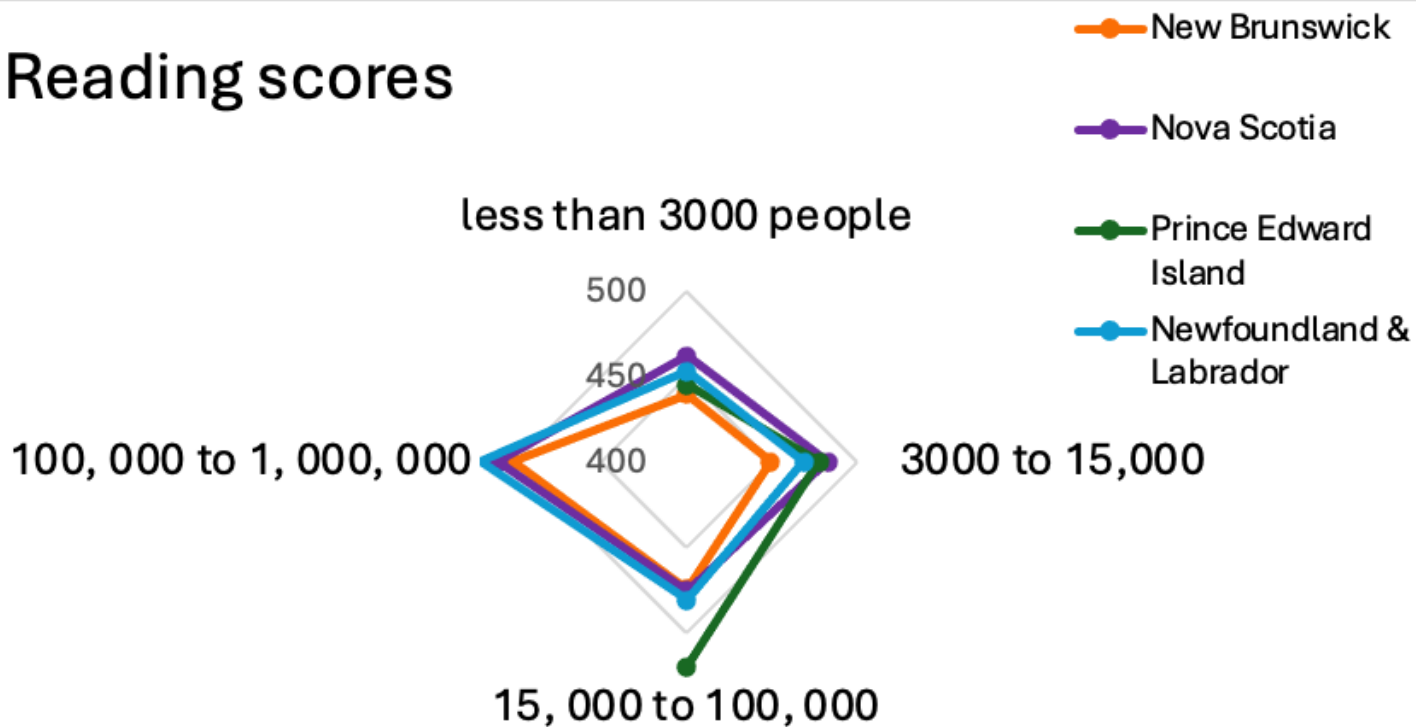


Science mean scores

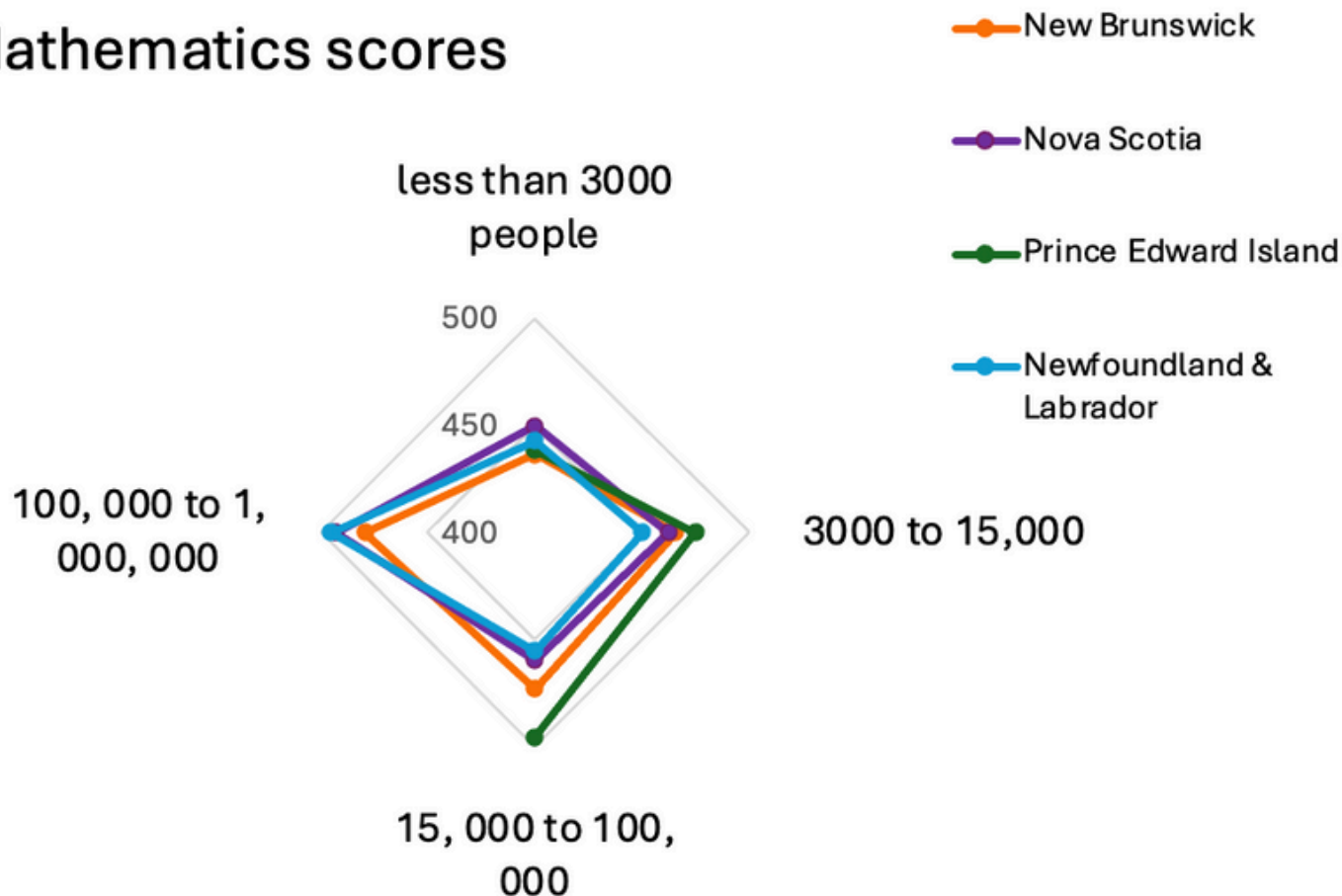


PISA Scores in Atlantic Provinces based on Urban vs Rural Areas

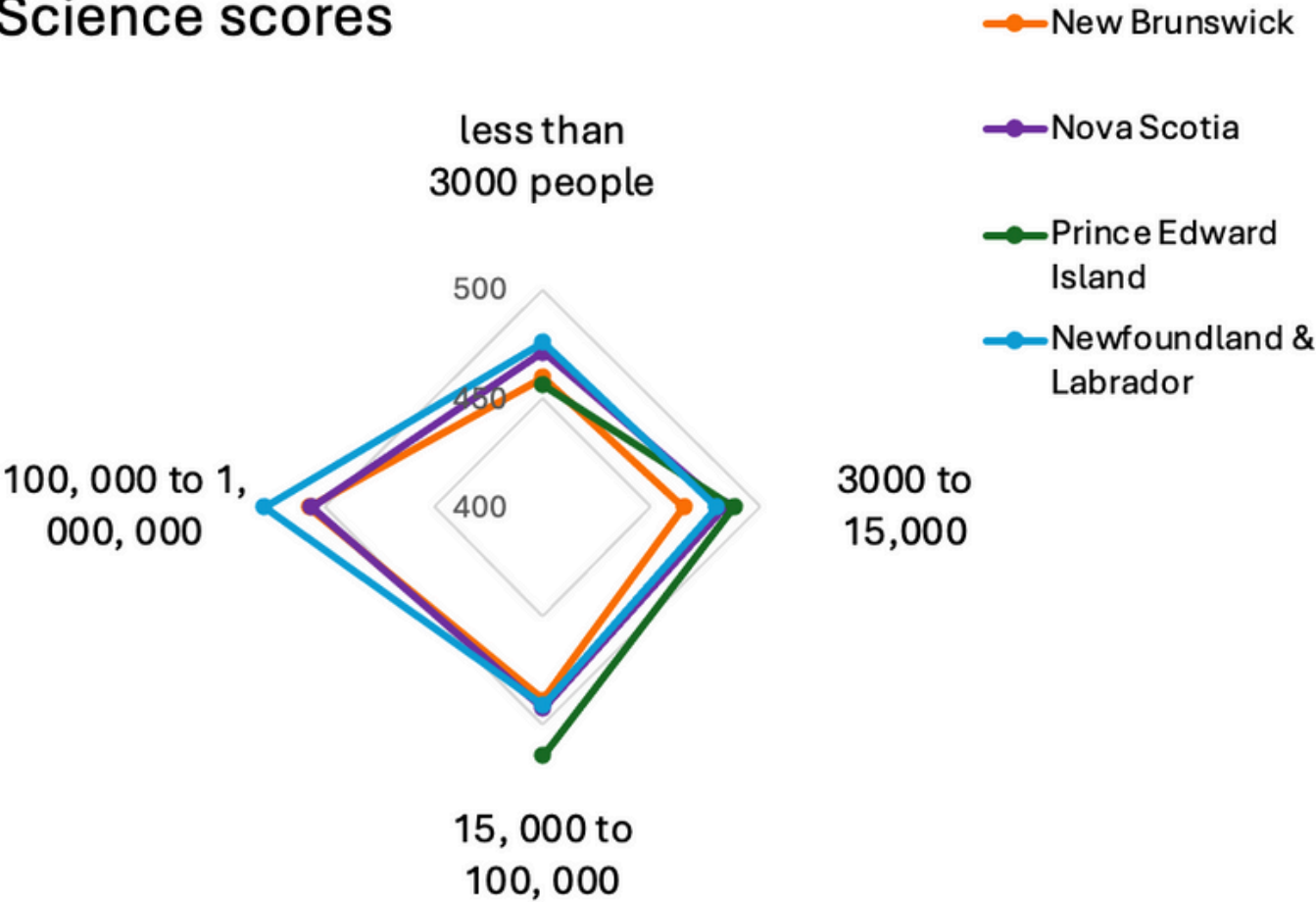
Reading scores



Mathematics scores



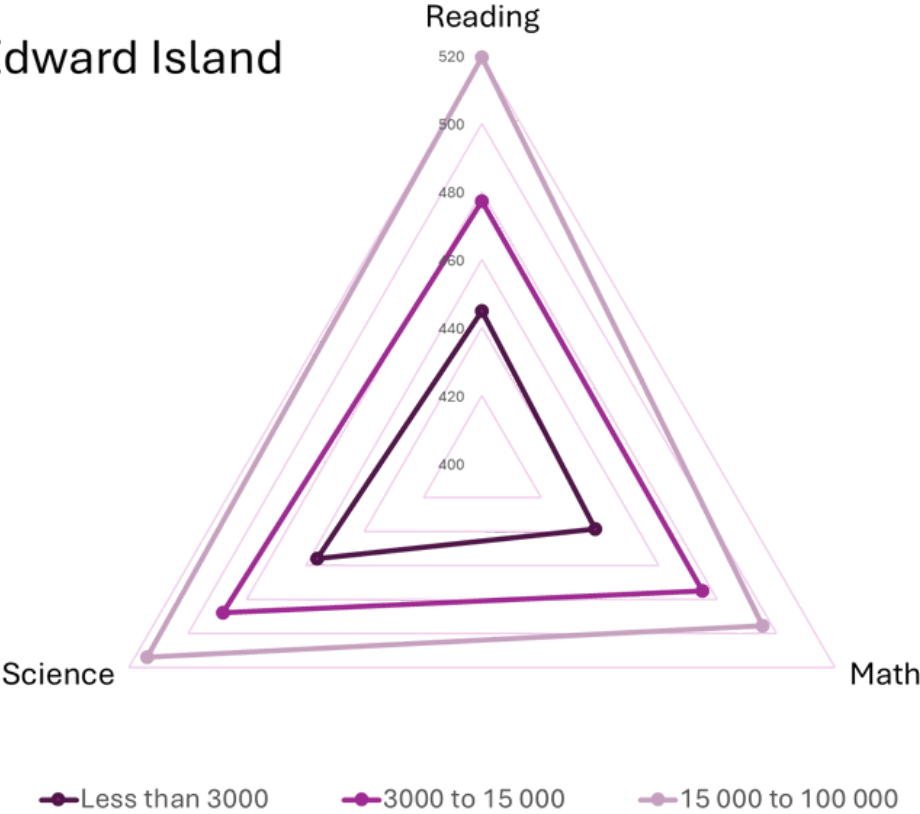
Science scores



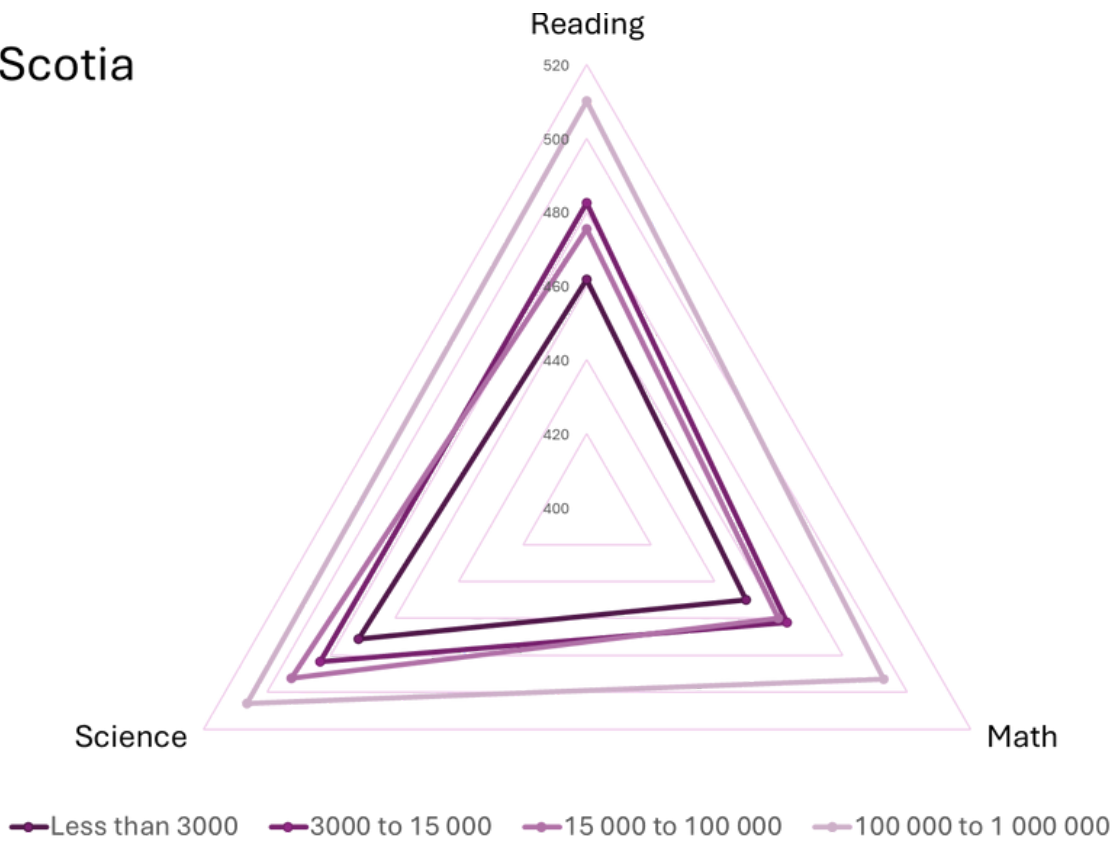
Province by province, variation of performance by size of school location

The spider charts below, one per Atlantic province, display average performance scores in the three PISA domains. Darker color lines connect reading, mathematics, and science average provincial scores in very small school localities, while lighter color lines show the average performance in the three domains in larger communities or cities.

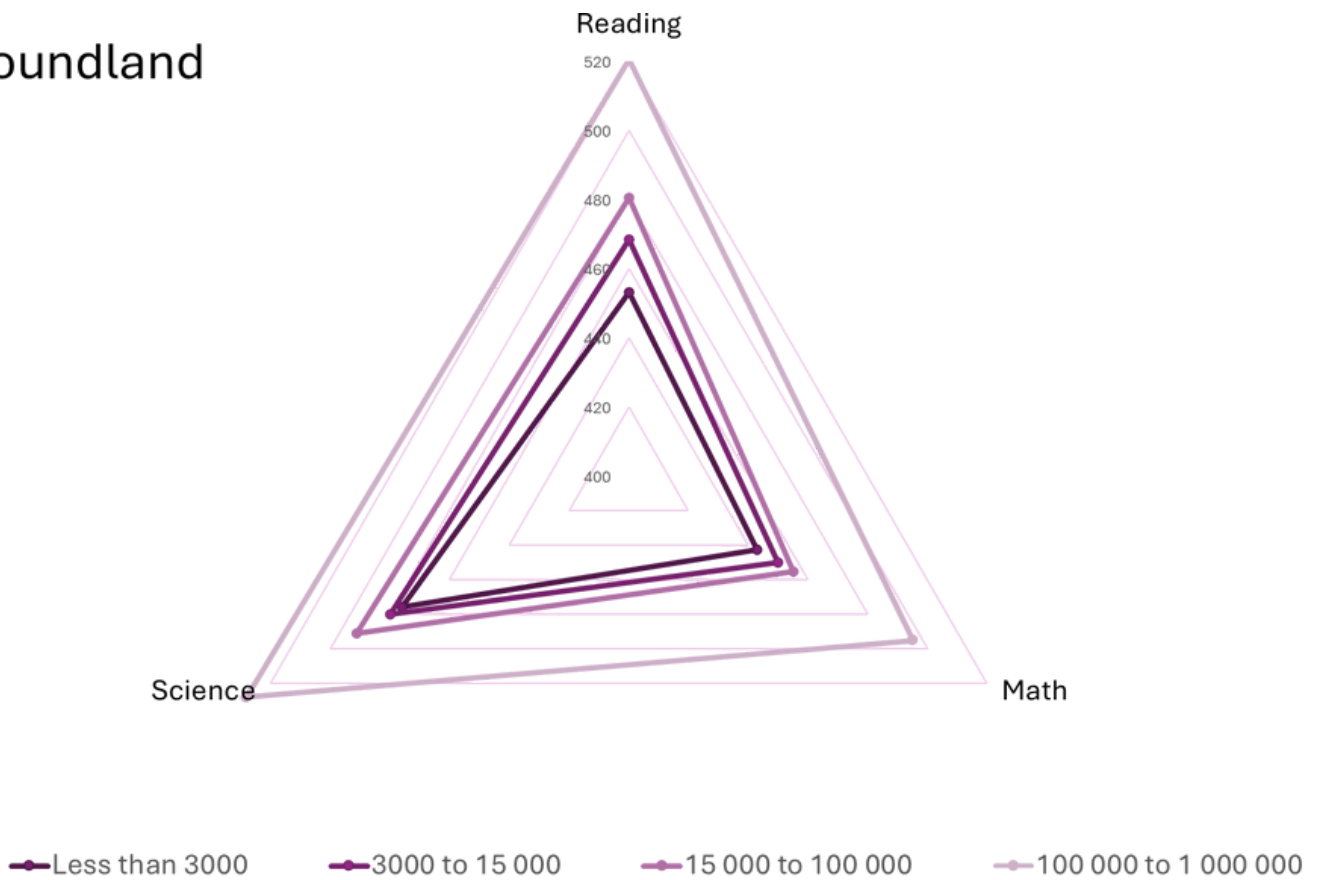
Prince Edward Island



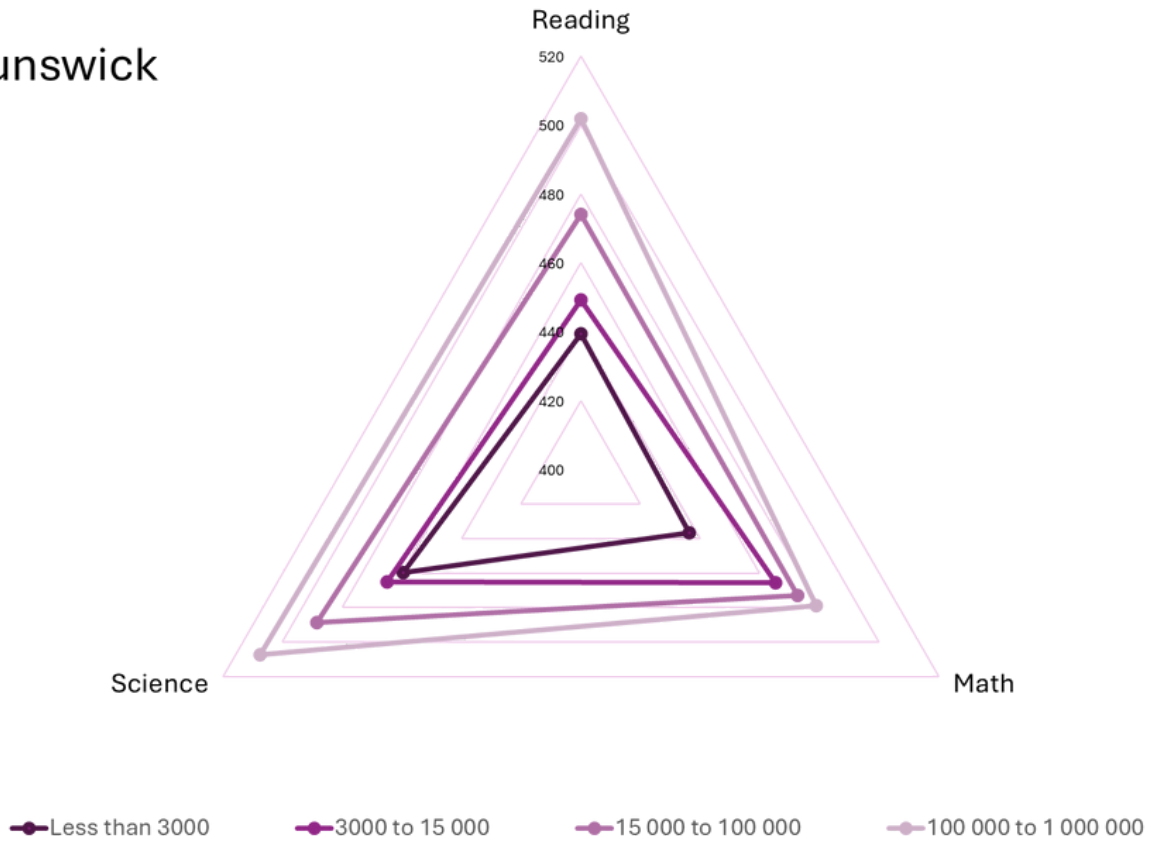
Nova Scotia



Newfoundland

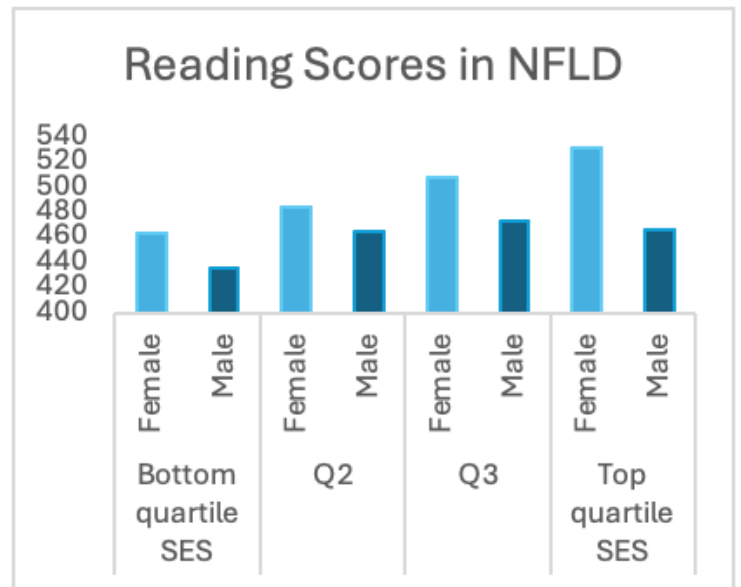
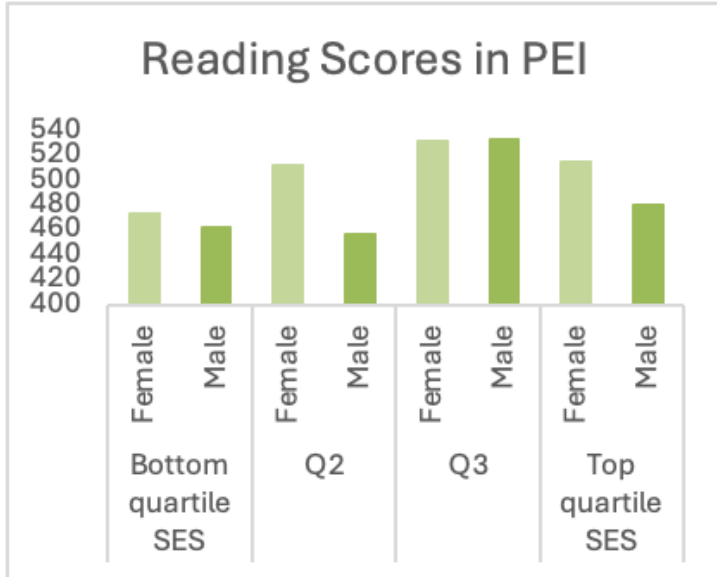
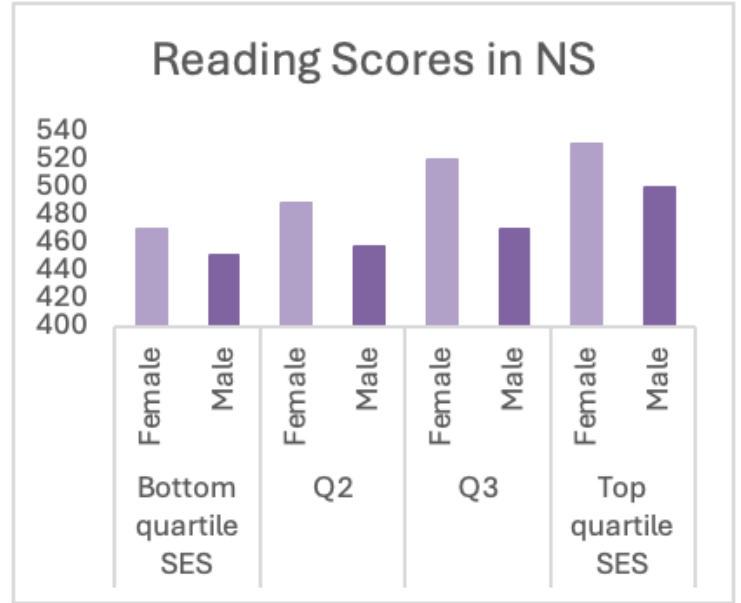
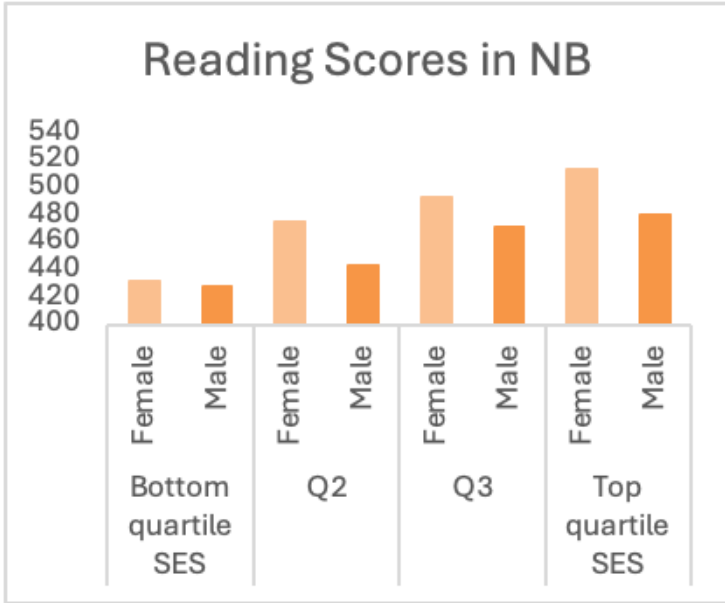


New Brunswick



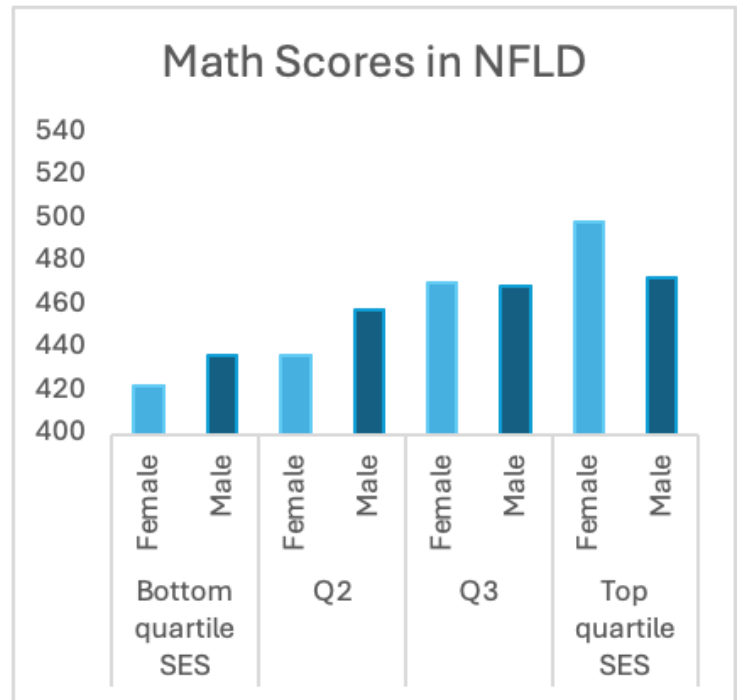
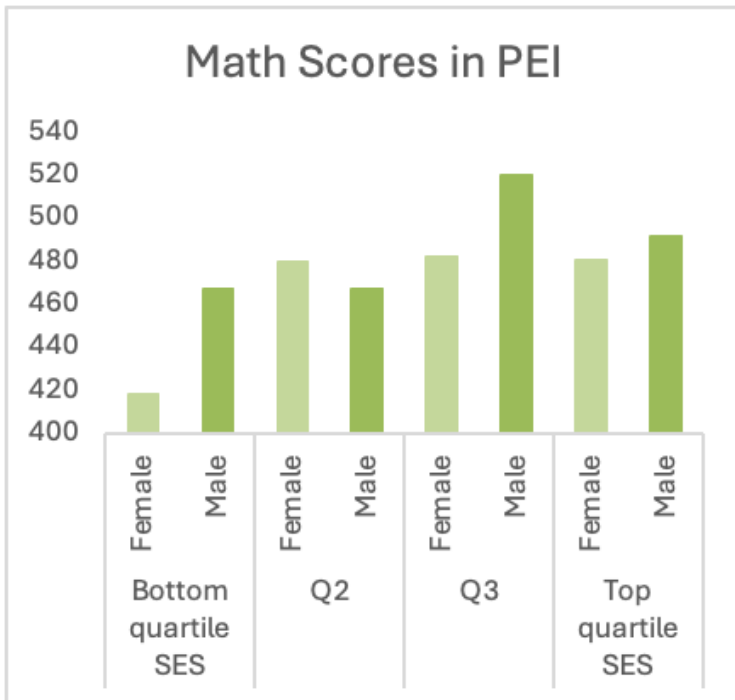
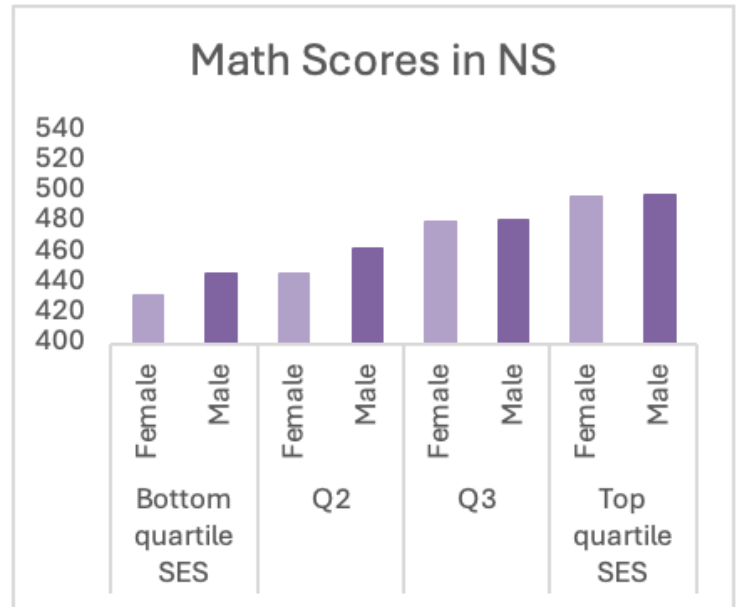
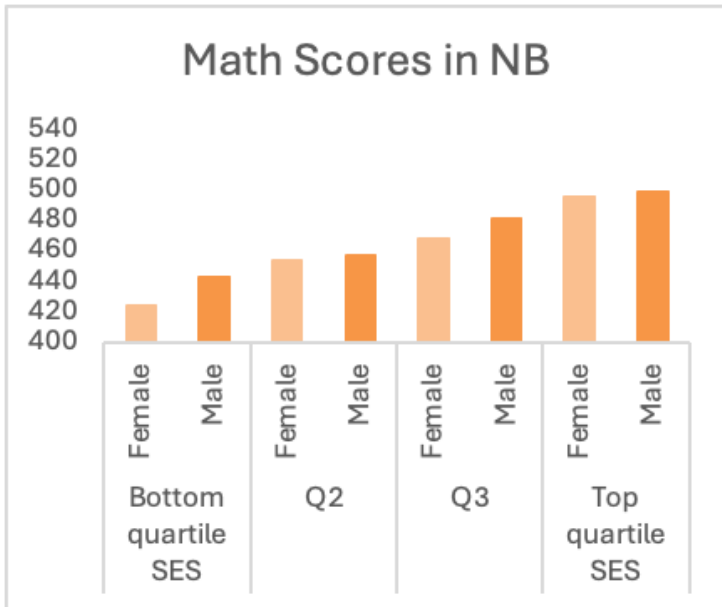
Reading Scores based on SES

These figures show how performance divides are embedded in gender and socioeconomic inequalities. In all provinces, males underperform in reading. In NB, overall, students perform the worst in reading, across all quartiles of socioeconomic status. In NFLD, the gender divides are the largest.



Mathematic Scores based on SES

In mathematics, gender divides are statically significant only in PEI, but are consistent in all provinces across quartiles of socioeconomic status.



Behind average scores.

What can our students do ?

Proficiency and skills in reading and mathematics

The following diagrams describe what 15 year old students in grade 7 or higher can do if they score at each proficiency level in the PISA tests.

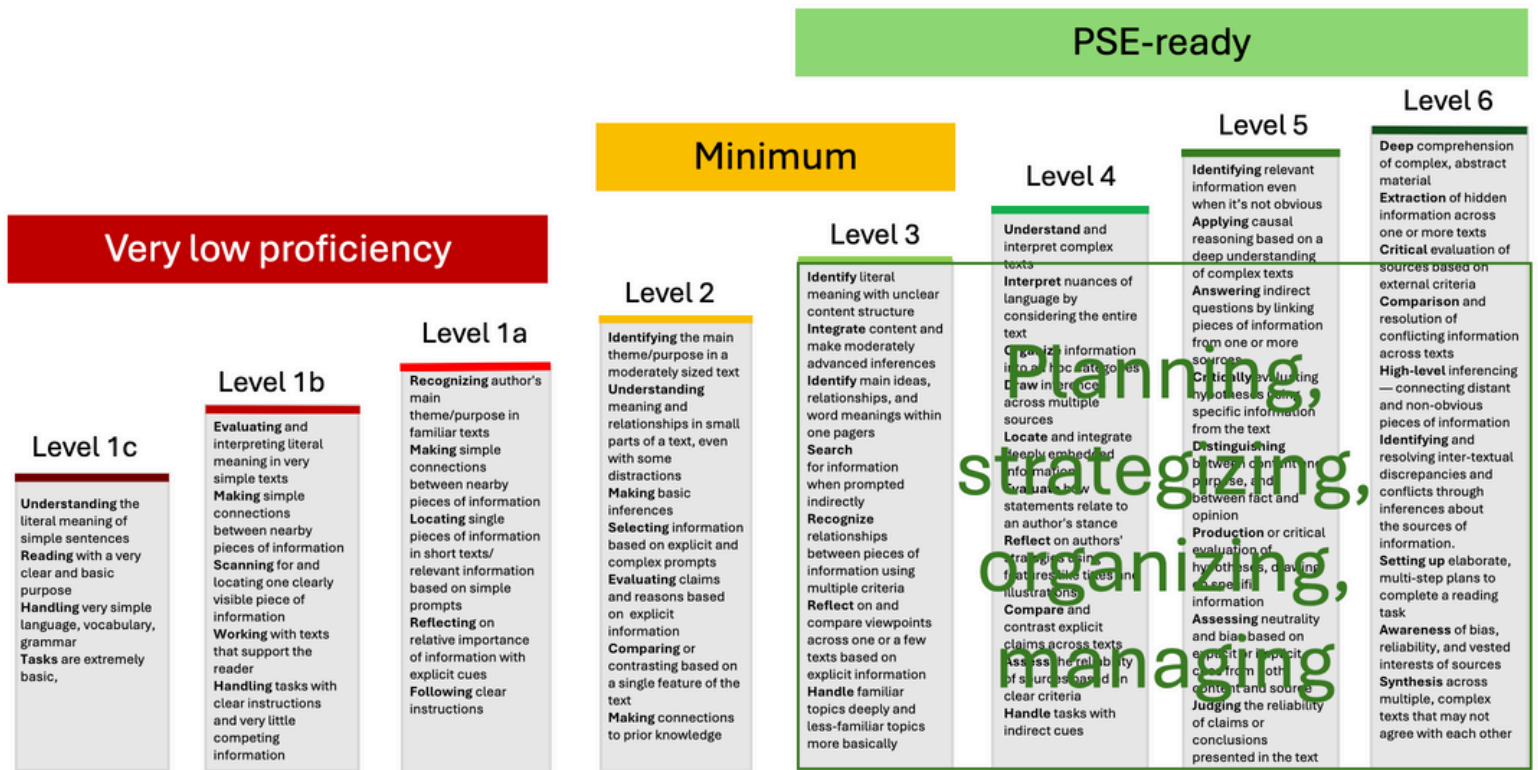
Students at level 1 have very low proficiency in reading or mathematics. They could be considered functionally illiterate in reading and numeracy, or extremely vulnerable.

Level 2 corresponds to the minimum level of proficiency that by 2030 all countries should be able to guarantee for their students, as established in the SDG4.

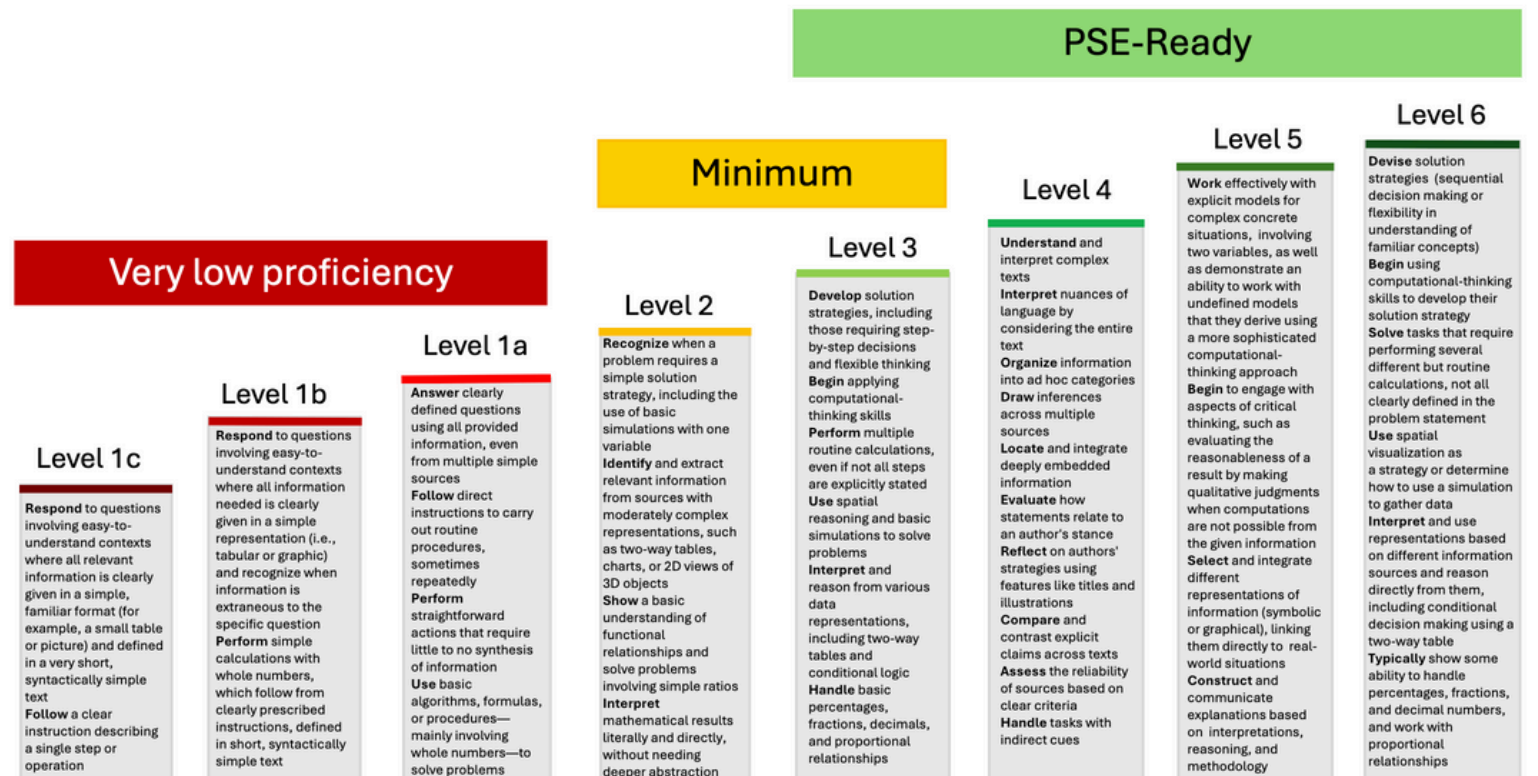
Students should be at least able to score at level of proficiency 3 to be ready for the demands of post secondary education or employment. Competence and performance at level 3 or higher in reading or mathematics involves planning, managing, strategizing and organizing as key and consistent skills to possess and deploy for life-long learning.

Definitions of proficiency levels

Reading skills and ready to learn



Mathematic skills and ready to learn

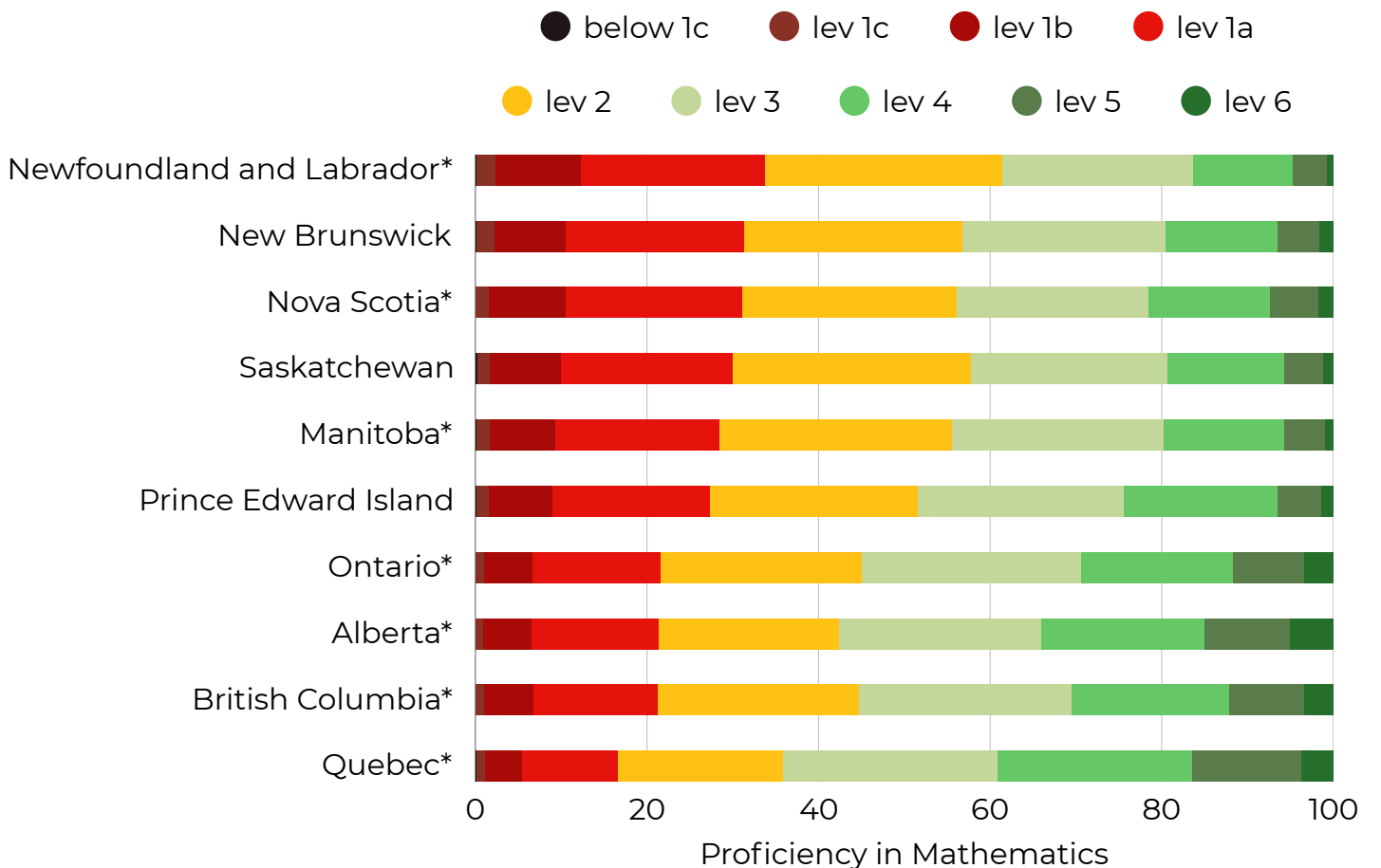
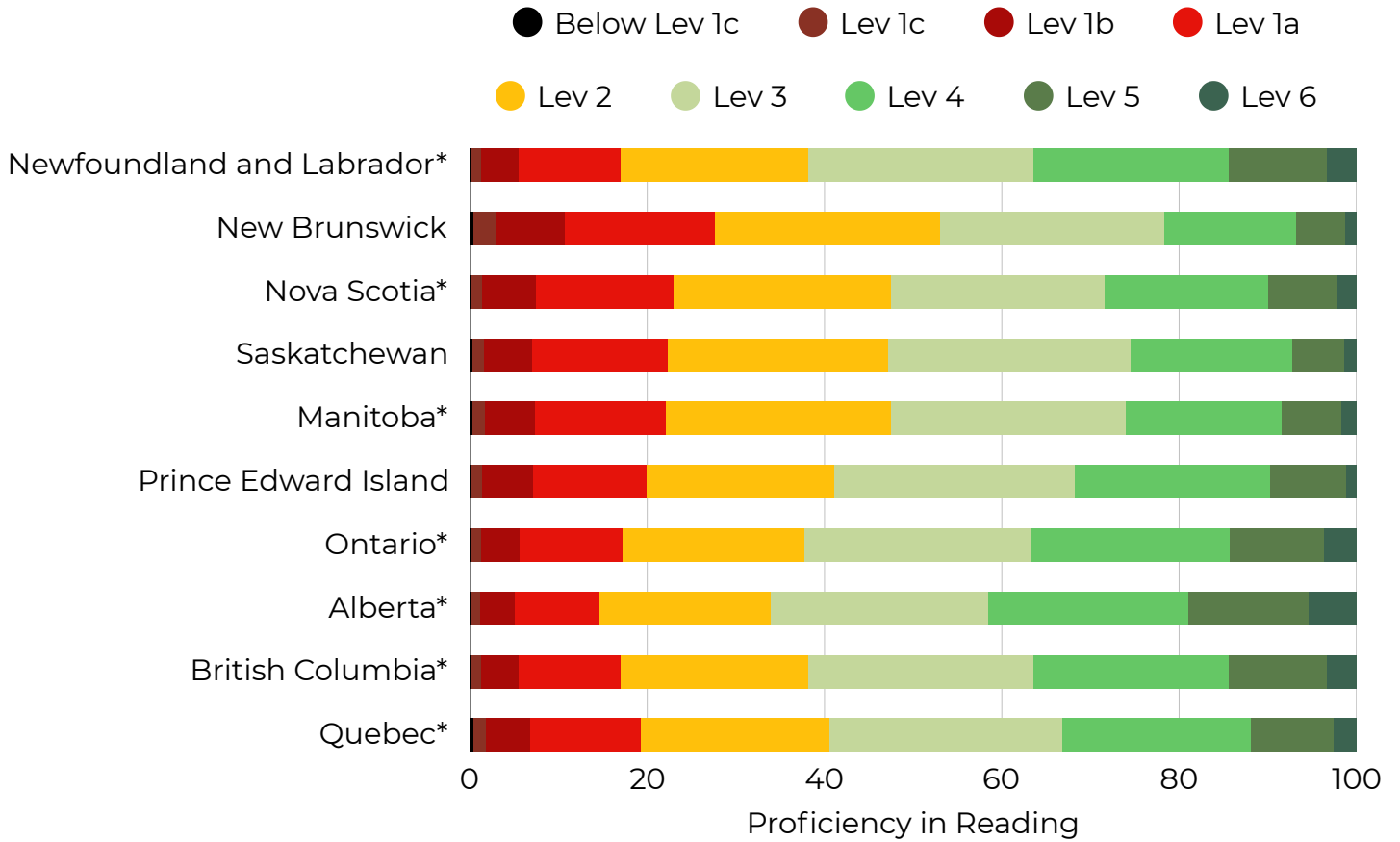


The following figures show the percentage of students at each proficiency level in reading and mathematics for each province. The figures were produced based on data from Appendix B of the PISA results 2022, Volume I.

Results show that the Atlantic region has close to one third of students who are vulnerable in reading, and more than one third who are vulnerable in mathematics.

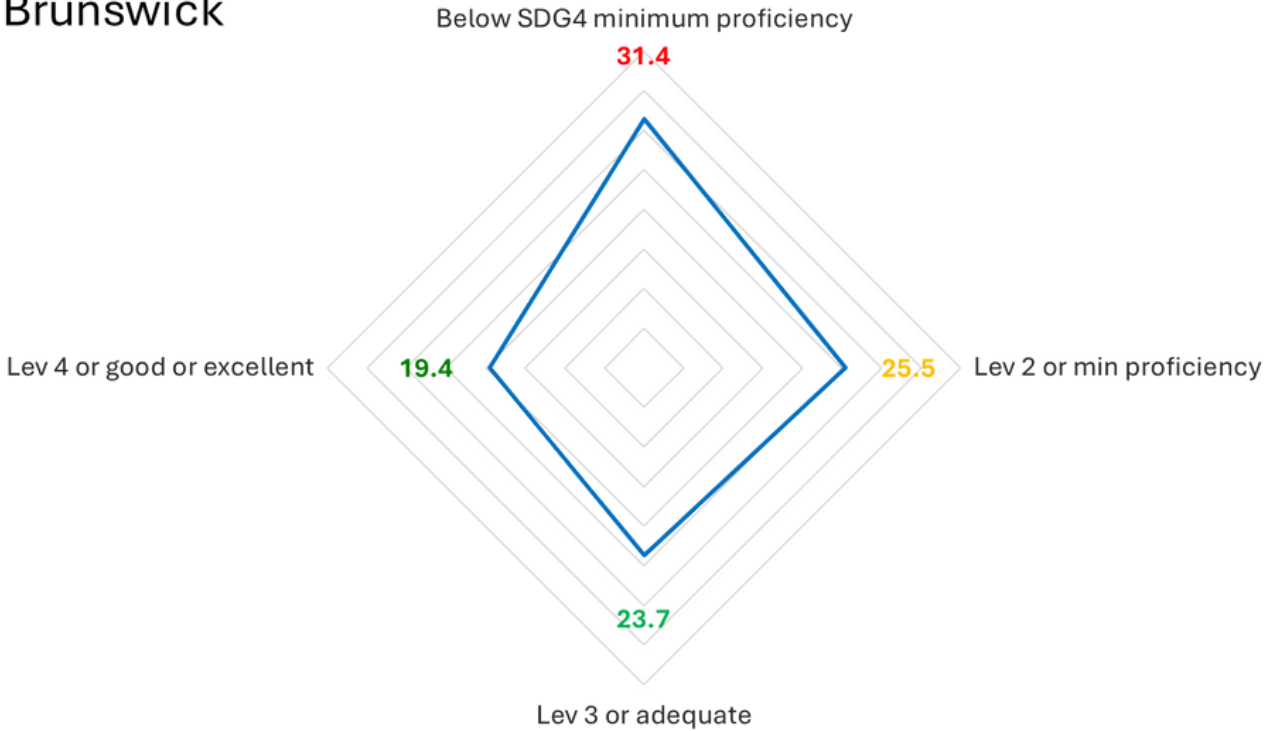
Students who perform below 407 in reading and below 420 in mathematics will fall into level 1 proficiency. Students must perform at or above 480 in reading or mathematics to be ready for the demands of post secondary education or employment.

Levels of proficiency based on province

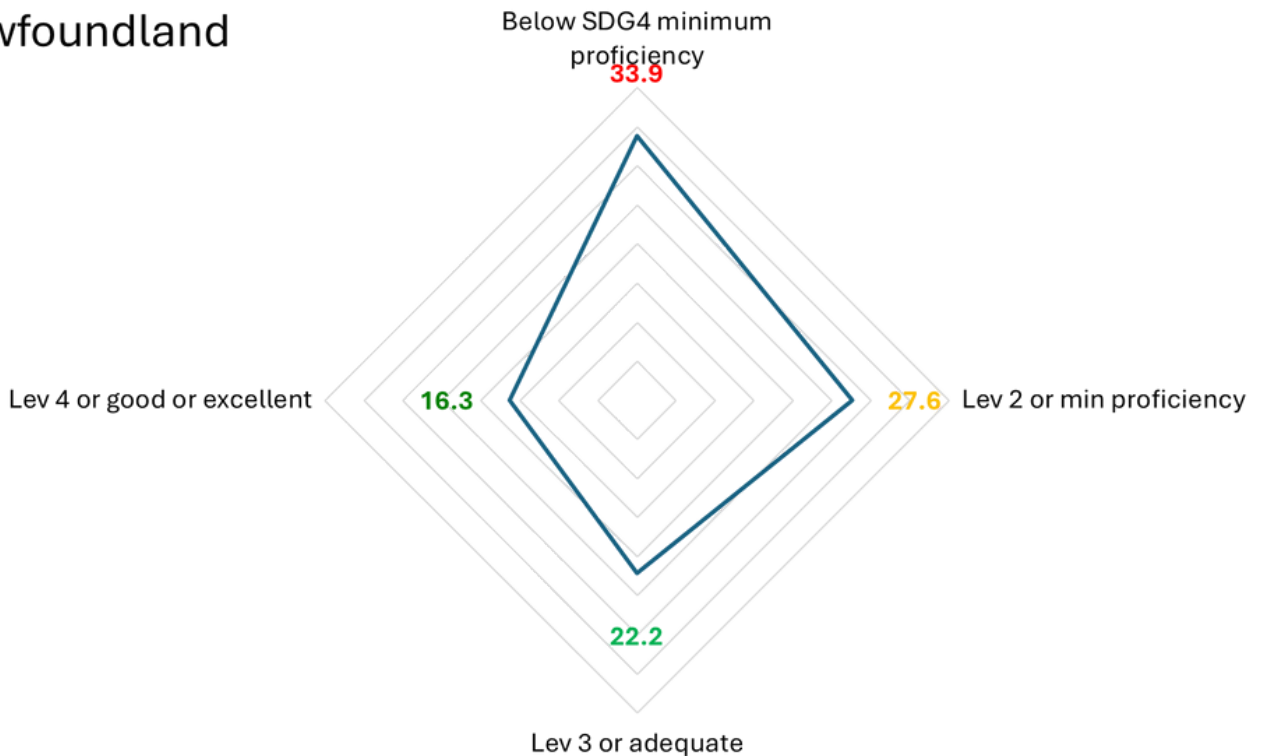


Focus on mathematics by province

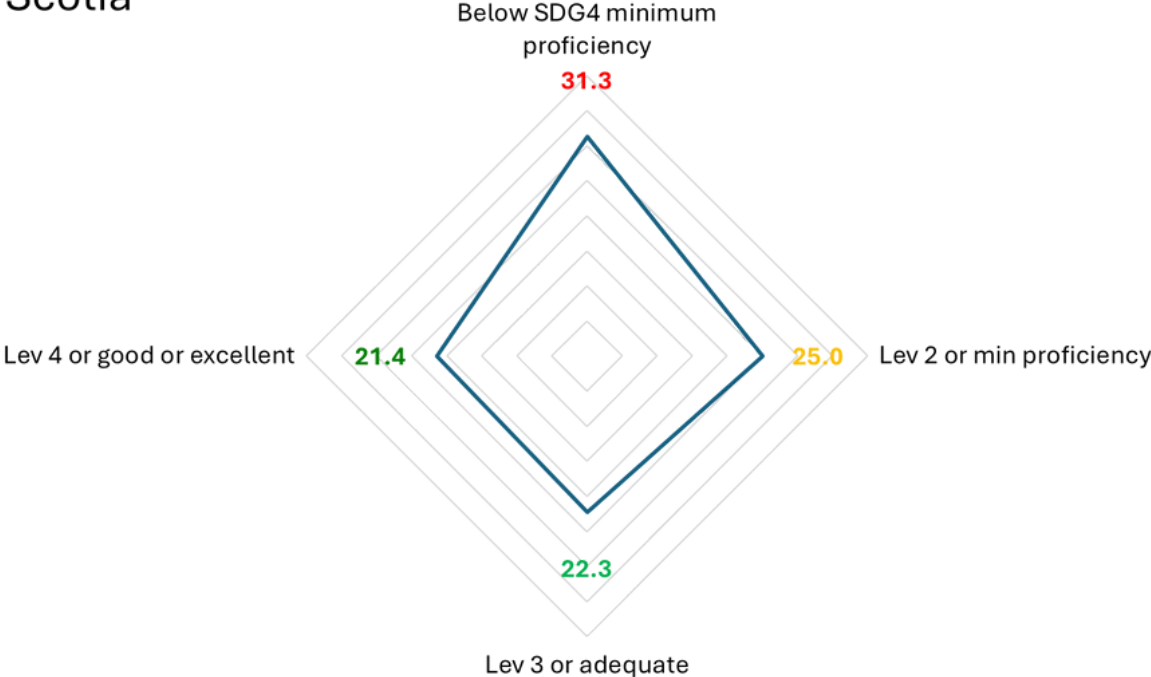
New Brunswick



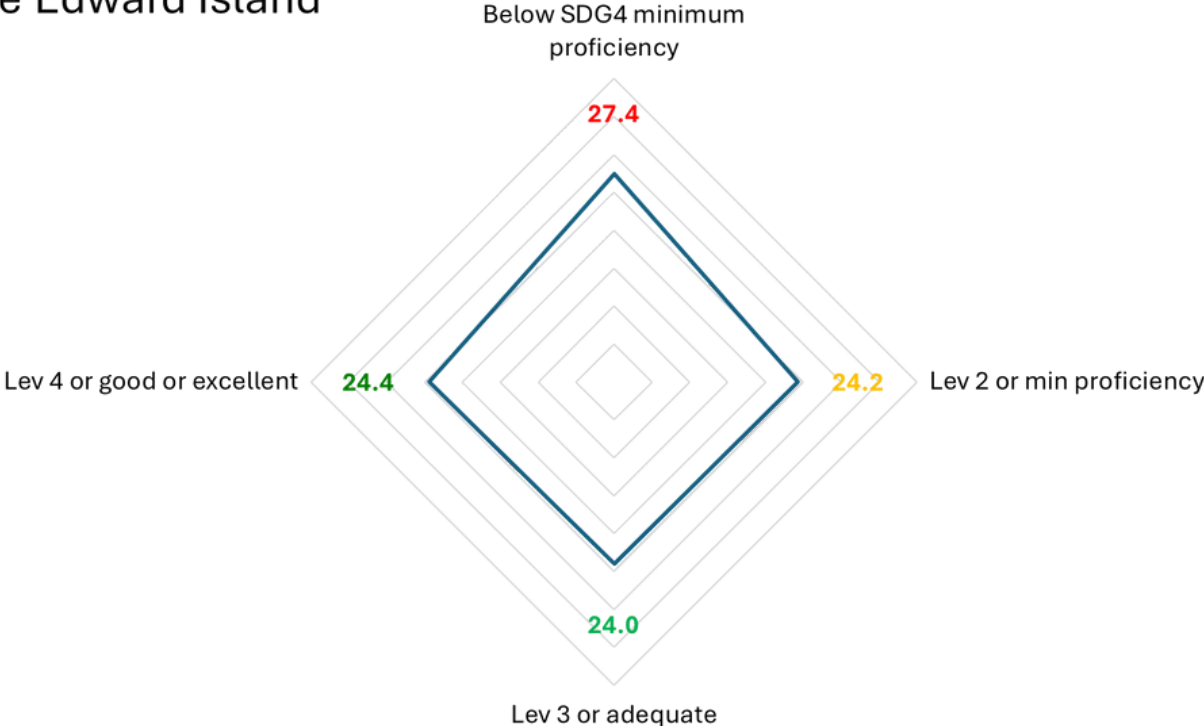
Newfoundland



Nova Scotia



Prince Edward Island



Let's focus on the ~30% students who do not meet SDG4 goal: by 2030, the Minimum proficiency should be at level 2 or higher

Students who do not reach min proficiency lev 2 can be observed more closely using math test subscales.

We focus on processes involved in thinking mathematically.

These processes can be associated with key, needed skills to learn, to work, to function in society.

The following table and subsequent figures show the percentage of 15-year old students who are below the minimum acceptable threshold of competence, in each process domain.

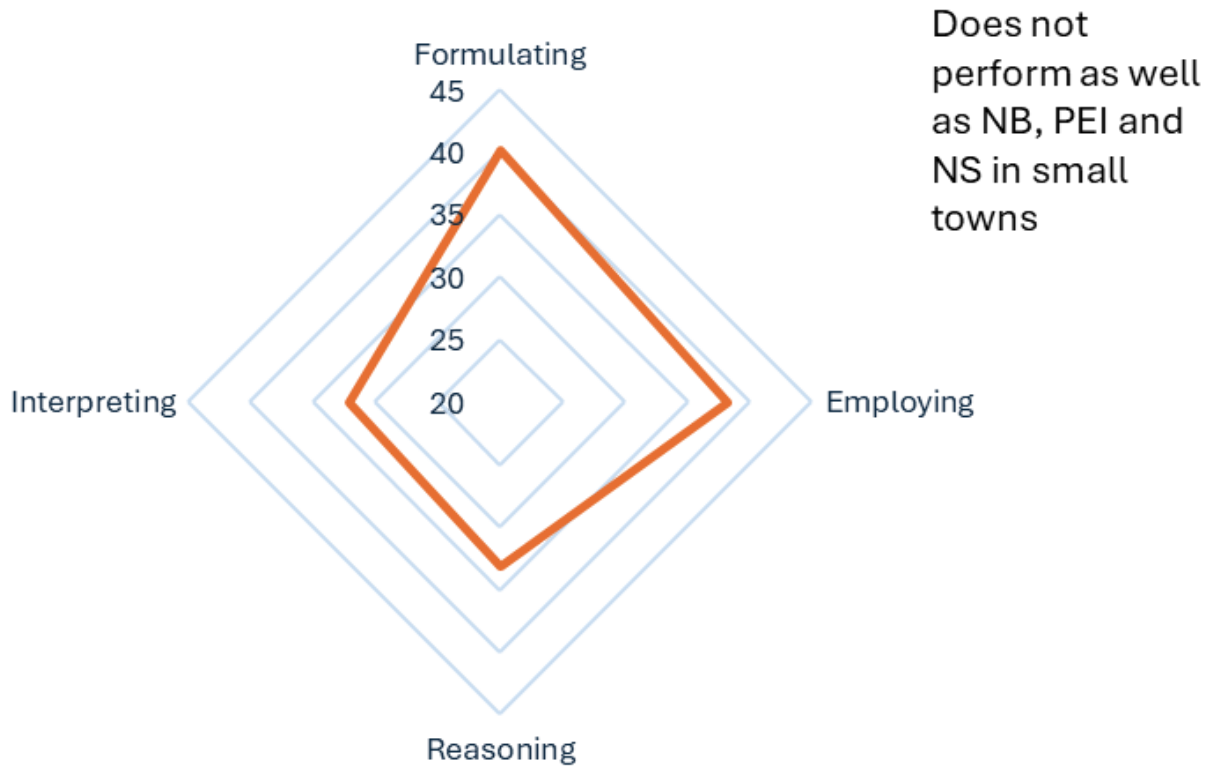
Any visible difference between processes in mathematical reasoning?

The higher the percentage, the greater the share of vulnerable (lev 1) of 15 year old students in that sub-domain.

	Formulating	Employing	Reasoning	Interpreting
New Brunswick	35.6	33.8	31.8	30.6
Newfoundland and Labrador*	40.1	38.2	33.2	32.1
Nova Scotia*	34.0	34.6	29.0	31.0
Prince Edward Island	29.9	29.9	27.2	27.8
Alberta*	25.0	24.0	20.3	21.3
British Columbia*	24.7	26.2	21.2	22.6
Manitoba*	33.3	31.1	28.6	28.9
Ontario*	26.8	25.3	21.7	22.7
Quebec*	20.5	18.9	18.6	19.1
Saskatchewan	36.1	33.0	29.3	31.3

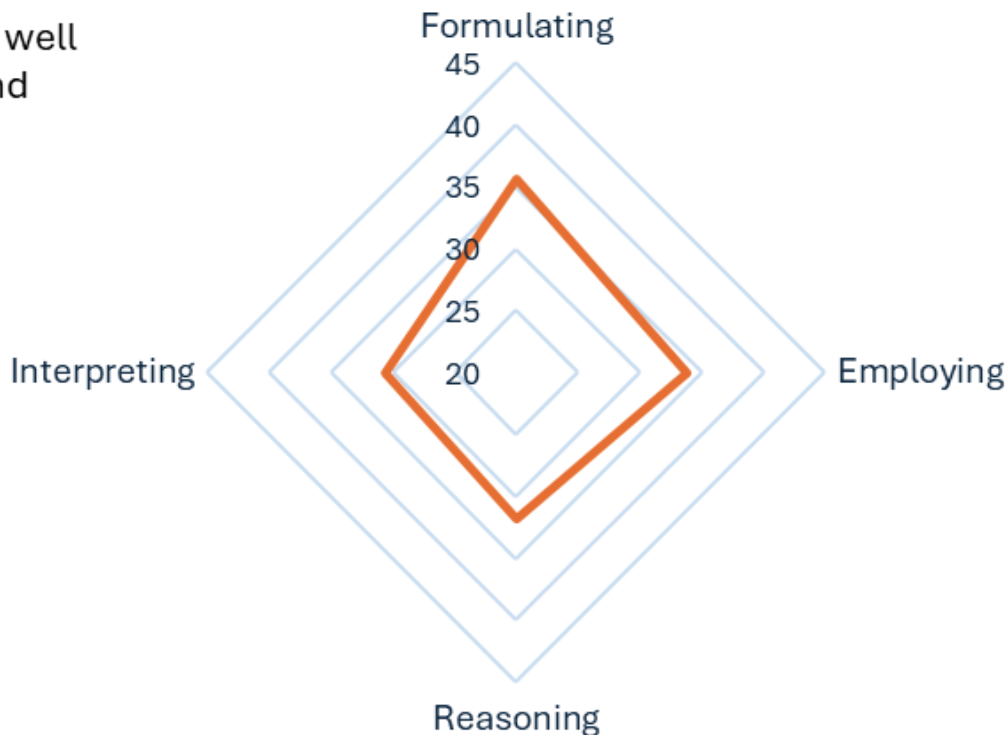
Percentage of vulnerable 15 year olds (at lev 1) in mathematical reasoning

Newfoundland and Labrador

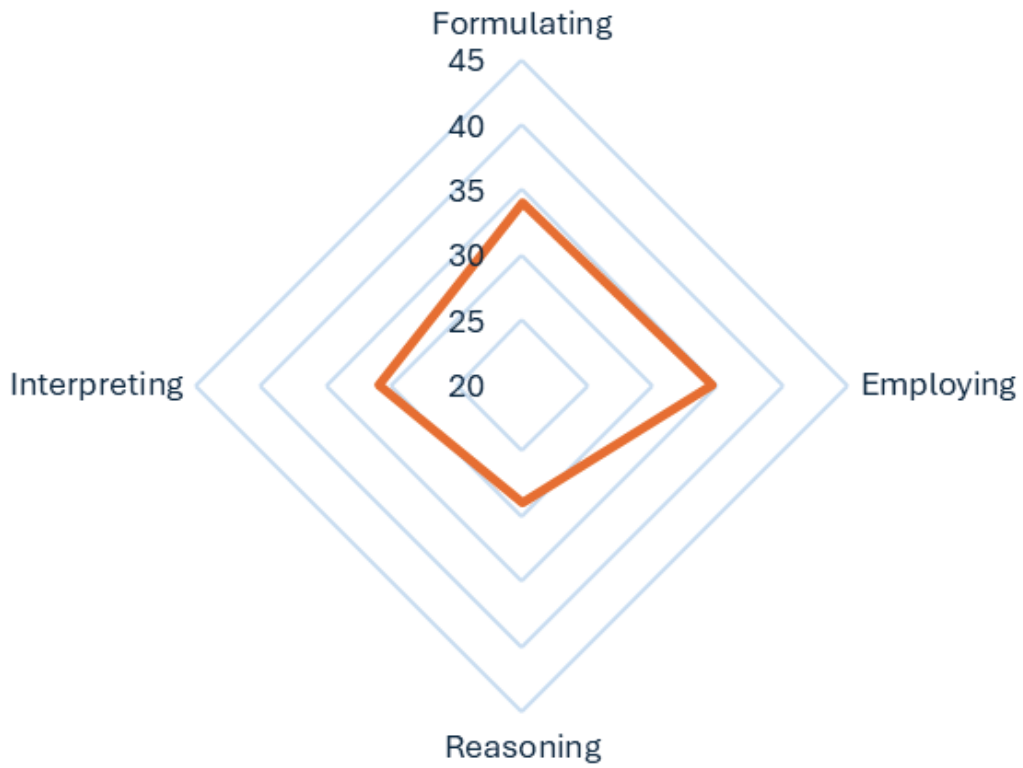


New Brunswick

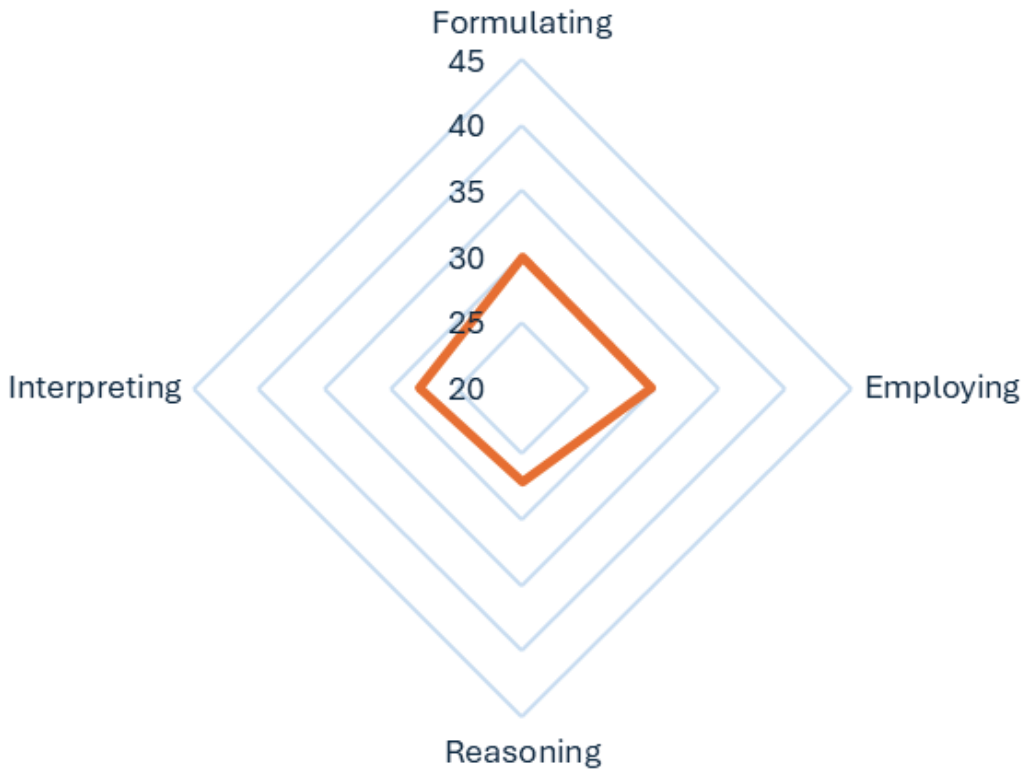
Does not perform as well as NFLD and NS in cities



Nova Scotia*



Prince Edward Island



Take away

- The gap in performance between the highest- and lowest-performing countries is 153 score points in mathematics among OECD countries and 238 points among all education systems that took part in PISA 2022.
- The gap between the 90th percentile of mathematics performance (the score above which only 10% of students scored) and the 10th percentile of performance (the score below which only 10% of students scored) is more than 135 score points in all countries and economies. On average across OECD countries, 235 score points separate these extremes. In most Canadian provinces it is even bigger, close to or greater than 270 points.
- Some 69% of students attained at least baseline proficiency Level 2 in mathematics on average across OECD countries. Over 85% of students in Estonia, Hong Kong (China), Japan, Macao (China), Singapore and Chinese Taipei performed at this proficiency level or above.
- Roughly three out of four students attained at least baseline proficiency Level 2 in reading on average across OECD countries.
- On average across OECD countries, some 9% of students attained the highest proficiency levels, Level 5 or 6, in mathematics. In 16 out of 81 countries and economies participating in PISA 2022, more than 10% of students attained Level 5 or 6 proficiency; by contrast, in 42 countries and economies, less than 5% of students attained Level 5 or 6 proficiency in mathematics.
- Some 7% of students attained the highest proficiency levels, Level 5 or 6, in reading on average across OECD countries.
- The Atlantic region shows a disproportional presence of students at Level 1 in both reading and mathematics, compared to other Canadian provinces and internationally.
- Provincial-focused analyses pointed to a persistent underperformance of the Atlantic Region in supporting and boosting the skills of 15 year olds in smaller communities.
- Gender and socioeconomic divides overlap with geographical underperformance of the system.
- NB has the lowest reading performances, and especially male students underperform at all levels.

Appendix

Read ([Description of the PISA reading literacy proficiency levels: 2022](#))

Proficiency Level	Task Description
Level 6	<p>Readers at Level 6 can comprehend lengthy and abstract texts in which the information of interest is deeply embedded and only indirectly related to the task. They can compare, contrast and integrate information representing multiple and potentially conflicting perspectives, using multiple criteria and generating inferences across distant pieces of information to determine how the information may be used. Readers at Level 6 can reflect deeply on the text's source in relation to its content, using criteria external to the text. They can compare and contrast information across texts, identifying and resolving inter-textual discrepancies and conflicts through inferences about the sources of information, their explicit or vested interests, and other cues as to the validity of the information. Tasks at Level 6 typically require the reader to set up elaborate plans, combining multiple criteria and generating inferences to relate the task and the text(s). Materials at this level include one or several complex and abstract text(s), involving multiple and possibly discrepant perspectives. Target information may take the form of details that are deeply embedded within or across texts and potentially obscured by competing information.</p>
Level 5	<p>Readers at Level 5 can comprehend lengthy texts, inferring which information in the text is relevant even though the information of interest may be easily overlooked. They can perform causal or other forms of reasoning based on a deep understanding of extended pieces of text. They can also answer indirect questions by inferring the relationship between the question and one or several pieces of information distributed within or across multiple texts and sources. Reflective tasks require the production or critical evaluation of hypotheses, drawing on specific information. Readers can establish distinctions between content and purpose, and between fact and opinion as applied to complex or abstract statements. They can assess neutrality and bias based on explicit or implicit cues pertaining to both the content and/or source of the information. They can also draw conclusions regarding the reliability of the claims or conclusions offered in a piece of text.</p>
Level 4	<p>At Level 4, readers can comprehend extended passages in single or multiple-text settings. They interpret the meaning of nuances of language in a section of text by taking into account the text as a whole. In other interpretative tasks, students demonstrate understanding and application of ad hoc categories. They can compare perspectives and draw inferences based on multiple sources.</p> <p>Readers can search, locate and integrate several pieces of embedded information in the presence of plausible distractors. They can generate inferences based on the task statement in order to assess the relevance of target information. They can handle tasks that require them to memorise prior task context. In addition, students at this level can evaluate the relationship between specific statements and a person's overall stance or conclusion about a topic. They can reflect on the strategies that authors use to convey their points, based on salient features of texts (e.g., titles and illustrations). They can compare and contrast claims explicitly made in several texts and assess the reliability of a source based on salient criteria. Texts at Level 4 are often long or complex, and their content or form may not be standard. Many of the tasks are situated in multiple-text settings. The texts and the tasks contain indirect or implicit cues.</p>
Level 3	<p>Readers at Level 3 can represent the literal meaning of single or multiple texts in the absence of explicit content or organisational clues. Readers can integrate content and generate both basic and more advanced inferences. They can also integrate several parts of a piece of text in order to identify the main idea, understand a relationship or construe the meaning of a word or phrase when the required information is featured on a single page.</p> <p>They can search for information based on indirect prompts, and locate target information that is not in a prominent position and/or is in the presence of distractors. In some cases, readers at this level recognise the relationship between several pieces of information based on multiple criteria.</p> <p>Level 3 readers can reflect on a piece of text or a small set of texts, and compare and contrast several authors' viewpoints based on explicit information. Reflective tasks at this level may require the reader to perform comparisons, generate explanations or evaluate a feature of the text. Some reflective tasks require readers to demonstrate a detailed understanding of a piece of text dealing with a familiar topic, whereas others require a basic understanding of less-familiar content.</p> <p>Tasks at Level 3 require the reader to take many features into account when comparing.</p>

<p>Level 2</p>	<p>Readers at Level 2 can identify the main idea in a piece of text of moderate length. They can understand relationships or construe meaning within a limited part of the text when the information is not prominent by producing basic inferences, and/or when the text(s) include some distracting information.</p> <p>They can select and access a page in a set based on explicit though sometimes complex prompts, and locate one or more pieces of information based on multiple, partly implicit criteria.</p> <p>Readers at Level 2 can, when explicitly cued, reflect on the overall purpose, or on the purpose of specific details, in texts of moderate length. They can reflect on simple visual or typographical features. They can compare claims and evaluate the reasons supporting them based on short, explicit statements.</p> <p>Tasks at Level 2 may involve comparisons or contrasts based on a single feature in the text.</p> <p>Typical reflective tasks at this level require readers to make a comparison or several connections between the text and outside knowledge by drawing on personal experience and attitudes.</p>
<p>Level 1a</p>	<p>Readers at Level 1a can understand the literal meaning of sentences or short passages. Readers at this level can also recognise the main theme or the author's purpose in a piece of text about a familiar topic, and make a simple connection between several adjacent pieces of information, or between the given information and their own prior knowledge.</p> <p>They can select a relevant page from a small set based on simple prompts, and locate one or more independent pieces of information within short texts.</p> <p>Level 1a readers can reflect on the overall purpose and on the relative importance of information (e.g. the main idea vs. non-essential detail) in simple texts containing explicit cues.</p> <p>Most tasks at this level contain explicit cues regarding what needs to be done, how to do it, and where in the text(s) readers should focus their attention.</p>
<p>Level 1b</p>	<p>Readers at Level 1b can evaluate the literal meaning of simple sentences. They can also interpret the literal meaning of texts by making simple connections between adjacent pieces of information in the question and/or the text.</p> <p>Readers at this level can scan for and locate a single piece of prominently placed, explicitly stated information in a single sentence, a short text or a simple list. They can access a relevant page from a small set based on simple prompts when explicit cues are present.</p> <p>Tasks at Level 1b explicitly direct readers to consider relevant factors in the task and in the text. Texts at this level are short and typically provide support to the reader, such as through repetition of information, pictures or familiar symbols. There is minimal competing information.</p>
<p>Level 1c</p>	<p>Readers at Level 1c can understand and affirm the meaning of short, syntactically simple sentences on a literal level, and read for a clear and simple purpose within a limited amount of time.</p> <p>Tasks at this level involve simple vocabulary and syntactic structures.</p>

Math (Description of the PISA mathematics literacy proficiency levels: 2022)

Proficiency Level	Task Description
Level 6	<p>At Level 6, students can work through abstract problems and demonstrate creativity and flexible thinking to develop solutions. For example, they can recognize when a procedure that is not specified in a task can be applied in a non-standard context or when demonstrating a deeper understanding of a mathematical concept is necessary as part of a justification. They can link different information sources and representations, including effectively using simulations or spreadsheets as part of their solution. Students at this level are capable of critical thinking and have a mastery of symbolic and formal mathematical operations and relationships that they use to clearly communicate their reasoning. They can reflect on the appropriateness of their actions with respect to their solution and the original situation.</p>
Level 5	<p>At Level 5, students can develop and work with models for complex situations, identifying or imposing constraints, and specifying assumptions. They can apply systematic, well-planned problem-solving strategies for dealing with more challenging tasks, such as deciding how to develop an experiment, designing an optimal procedure, or working with more complex visualizations that are not given in the task. Students demonstrate an increased ability to solve problems whose solutions often require incorporating mathematical knowledge that is not explicitly stated in the task. Students at this level reflect on their work and consider mathematical results with respect to the real-world context.</p>
Level 4	<p>At Level 4, students can work effectively with explicit models for complex concrete situations, sometimes involving two variables, as well as demonstrate an ability to work with undefined models that they derive using a more sophisticated computational-thinking approach. Students at this level begin to engage with aspects of critical thinking, such as evaluating the reasonableness of a result by making qualitative judgements when computations are not possible from the given information. They can select and integrate different representations of information, including symbolic or graphical, linking them directly to aspects of real-world situations. At this level, students can also construct and communicate explanations and arguments based on their interpretations, reasoning, and methodology.</p>
Level 3	<p>At Level 3, students can devise solution strategies, including strategies that require sequential decision-making or flexibility in understanding of familiar concepts. At this level, students begin using computational-thinking skills to develop their solution strategy. They are able to solve tasks that require performing several different but routine calculations that are not all clearly defined in the problem statement. They can use spatial visualization as part of a solution strategy or determine how to use a simulation to gather data appropriate for the task. Students at this level can interpret and use representations based on different information sources and reason directly from them, including conditional decision-making using a two-way table. They typically show some ability to handle percentages, fractions and decimal numbers, and to work with proportional relationships.</p>
Level 2	<p>At Level 2, students can recognize situations where they need to design simple strategies to solve problems, including running straightforward simulations involving one variable as part of their solution strategy. They can extract relevant information from one or more sources that use slightly more complex modes of representation, such as two-way tables, charts, or two-dimensional representations of three dimensional objects. Students at this level demonstrate a basic understanding of functional relationships and can solve problems involving simple ratios. They are capable of making literal interpretations of results.</p>

Level 1a	<p>At Level 1a, students can answer questions involving simple contexts where all information needed is present, and the questions are clearly defined. Information may be presented in a variety of simple formats and students may need to work with two sources simultaneously to extract relevant information. They are able to carry out simple, routine procedures according to direct instructions in explicit situations, which may sometimes require multiple iterations of a routine procedure to solve a problem. They can perform actions that are obvious or that require very minimal synthesis of information, but in all instances the actions follow clearly from the given stimuli. Students at this level can employ basic algorithms, formulae, procedures, or conventions to solve problems that most often involve whole numbers.</p>
Level 1b	<p>At Level 1b, students can respond to questions involving easy to understand contexts where all information needed is clearly given in a simple representation (i.e., tabular or graphic) and, as necessary, recognize when some information is extraneous and can be ignored with respect to the specific question being asked. They are able to perform simple calculations with whole numbers, which follow from clearly prescribed instructions, defined in short, syntactically simple text.</p>
Level 1c	<p>At Level 1c, students can respond to questions involving easy to understand contexts where all relevant information is clearly given in a simple, familiar format (for example, a small table or picture) and defined in a very short, syntactically simple text. They are able to follow a clear instruction describing a single step or operation.</p>