

## SKILLS MATTER: ADDITIONAL RESULTS FROM THE SURVEY OF ADULT SKILLS

# Mexico

### Key issues

- Adults in Mexico have low proficiency in literacy, numeracy and problem solving in technology-rich environments compared to other countries and economies participating in the survey. The proportion of adults proficient at the highest three levels of literacy is 12%, similar to the levels observed in Turkey or other Latin-American participating countries such as Chile, Ecuador and Peru.
- In Mexico, the gap in average literacy scores between 25-34 year-olds and 55-65 year-olds is only slightly larger than the OECD average.
- For the average Mexican, numeracy engagement in everyday life or at work is lower than the OECD average, but higher than in Ecuador, Kazakhstan or Peru.
- Mexican adults with stronger numeracy proficiency and higher educational attainment enjoy higher wages but not a higher probability of being employed, other personal and job-related features held constant.
- The link between higher literacy and social outcomes is positive but weaker in Mexico than in most other countries and economies, with the exception of the association to health levels.

### Box 1. The Survey of Adult Skills

The Survey of Adult Skills (PIAAC) provides a picture of adults' proficiency in three key information-processing skills:

- literacy – the ability of understand and respond appropriately to written texts;
- numeracy – the ability to use numerical and mathematical concepts; and
- problem solving in technology-rich environments – the capacity to access, interpret and analyse information found, transformed and communicated in digital environments.

Proficiency is described in terms of a scale of 500 points divided into levels. Each level summarises what a person with a particular score can do. Six proficiency levels are defined for literacy and numeracy (Levels 1 through 5 plus below Level 1) and four for problem solving in technology-rich environments (Levels 1 through 3 plus below Level 1).

The survey also provides a rich array of information regarding respondents' use of skills at work and in everyday life, their education, their linguistic and social backgrounds, their participation in the labour market and other aspects of their well-being.

**The Survey of Adult Skills was conducted in Mexico from June 2017 to January 2018.  
A total of 6 306 adults aged 16-65 were surveyed.**

## The proportion of adults achieving high proficiency in literacy, numeracy or problem solving in technology-rich environments is one of the lowest among the OECD countries participating in the survey.

**Some 0.8% of adults in Mexico (aged 16-65) attain the two highest levels of proficiency in literacy (Level 4 or 5)** compared with the average of 10.1% of adults in the average OECD country. At Level 4, adults can integrate, interpret and synthesise information from complex or lengthy texts that contain conditional and/or competing information (for more details on what adults can do at each proficiency level, see the table at the end of this note). **Some 10.9% are proficient at Level 3 in literacy** compared to 34.6% of adults on average in an OECD country. Adults performing at this level can understand and respond appropriately to dense or lengthy texts, and can identify, interpret, or evaluate one or more pieces of information and make appropriate inferences using knowledge text structures and rhetorical devices.

**Some 0.7% of adults in Mexico attain Level 4 or 5 in numeracy** compared with the average of 11% of adults on average across all OECD participating countries. At Level 4, adults understand a broad range of mathematical information that may be complex, abstract or found in unfamiliar contexts. **Some 8.2% attain Level 3 proficiency in numeracy** compared to 31.2% of adults in all participating countries. At this level, adults have a good sense of number and space; can recognise and work with mathematical relationships, patterns, and proportions expressed in verbal or numerical form; and can interpret and perform basic analyses of data and statistics in texts, tables and graphs.

10.2% of adults in Mexico are proficient at Level 2 or 3 in problem solving in technology-rich environments, compared to an average of 29.7% of adults on average in the OECD participating countries. Level 3 is the highest proficiency level attainable in problem solving in technology-rich environments; adults at this Level can complete tasks involving multiple computer applications, a large number of steps, and the discovery and use of ad hoc commands in a novel environment. At Level 2, adults can complete problems that involve a small number of computer applications, and require completing several steps and operations to reach a solution.

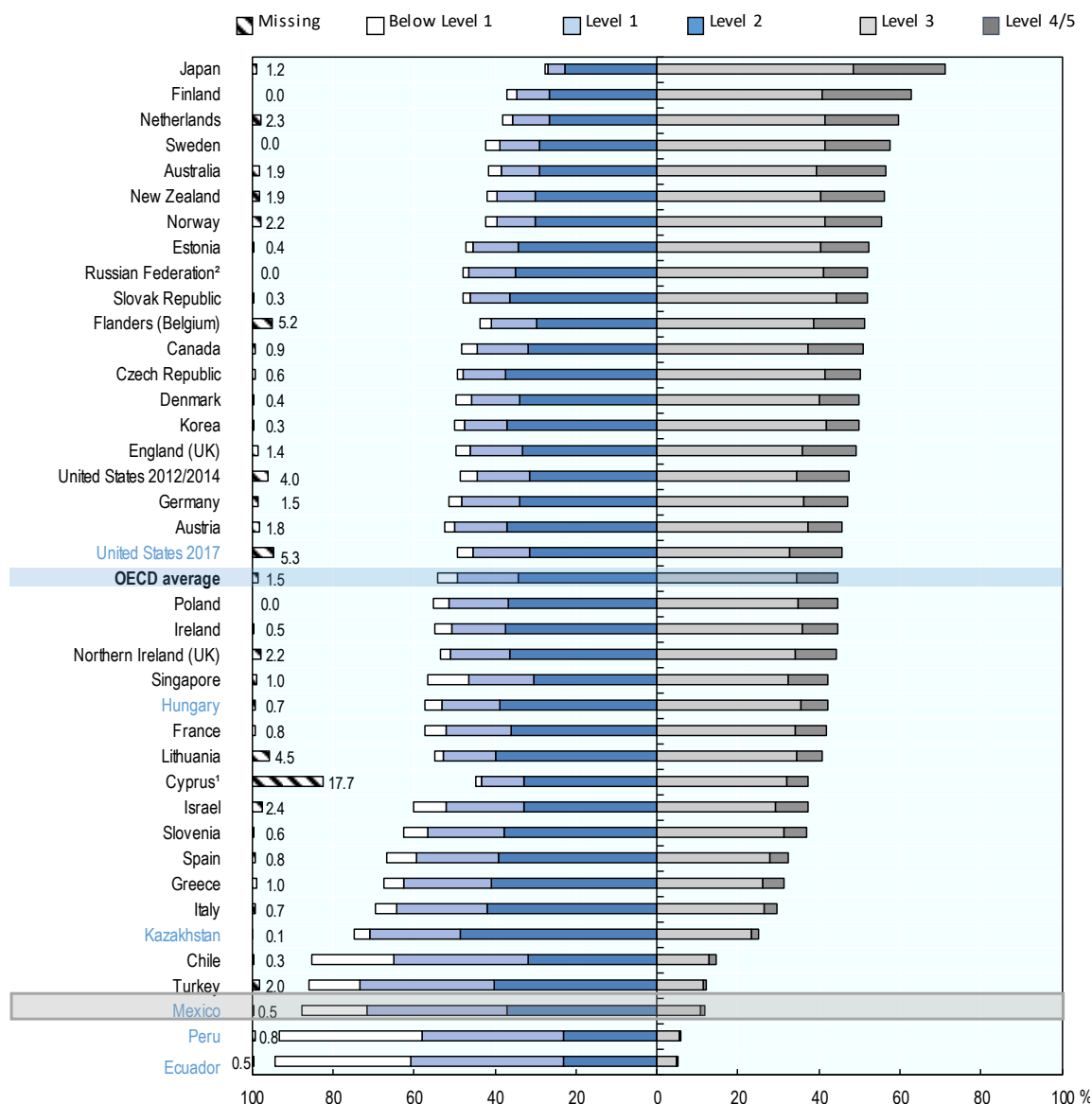
## Large proportions of the adult population in Mexico have poor literacy, numeracy and proficiency in problem solving in technology-rich environments.

Approximately 50.6% of adults attain only Level 1 or below in literacy proficiency (compared with the OECD average of 19.7%) and 60.1% attain Level 1 or below in numeracy (compared with the average 23.5%). These proportions are among the highest observed in the participating countries, and are similar to those found in Chile, Ecuador, Peru and Turkey. At Level 1 in literacy, adults can read brief texts on familiar topics and locate a single piece of specific information identical in form to information in the question or directive. In numeracy, adults at Level 1 can perform basic mathematical processes in common, concrete contexts, for example, one-step or simple processes involving counting, sorting, basic arithmetic operations and understanding simple percentages.

Approximately 39.3% of Mexicans – the second largest proportion among the surveyed countries – lack very basic computer skills or have insufficient computer experience to participate in the assessment of problem solving skills in technology-rich environments. Another 32.1% of adults score at Level 1 or below in problem solving in technology-rich environments. This is lower than the OECD average (43%). At Level 1, adults can only use widely available and familiar technology applications, such as e-mail software or a web browser, to solve problems involving few steps, simple reasoning and little or no navigation across applications.

Figure 1. Literacy proficiency among adults

Percentage of adults scoring at each proficiency level in literacy



Notes: Adults in the missing category were not able to provide enough background information to impute proficiency scores because of language difficulties, or learning or mental disabilities (referred to as literacy-related non-response).

1. Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.”

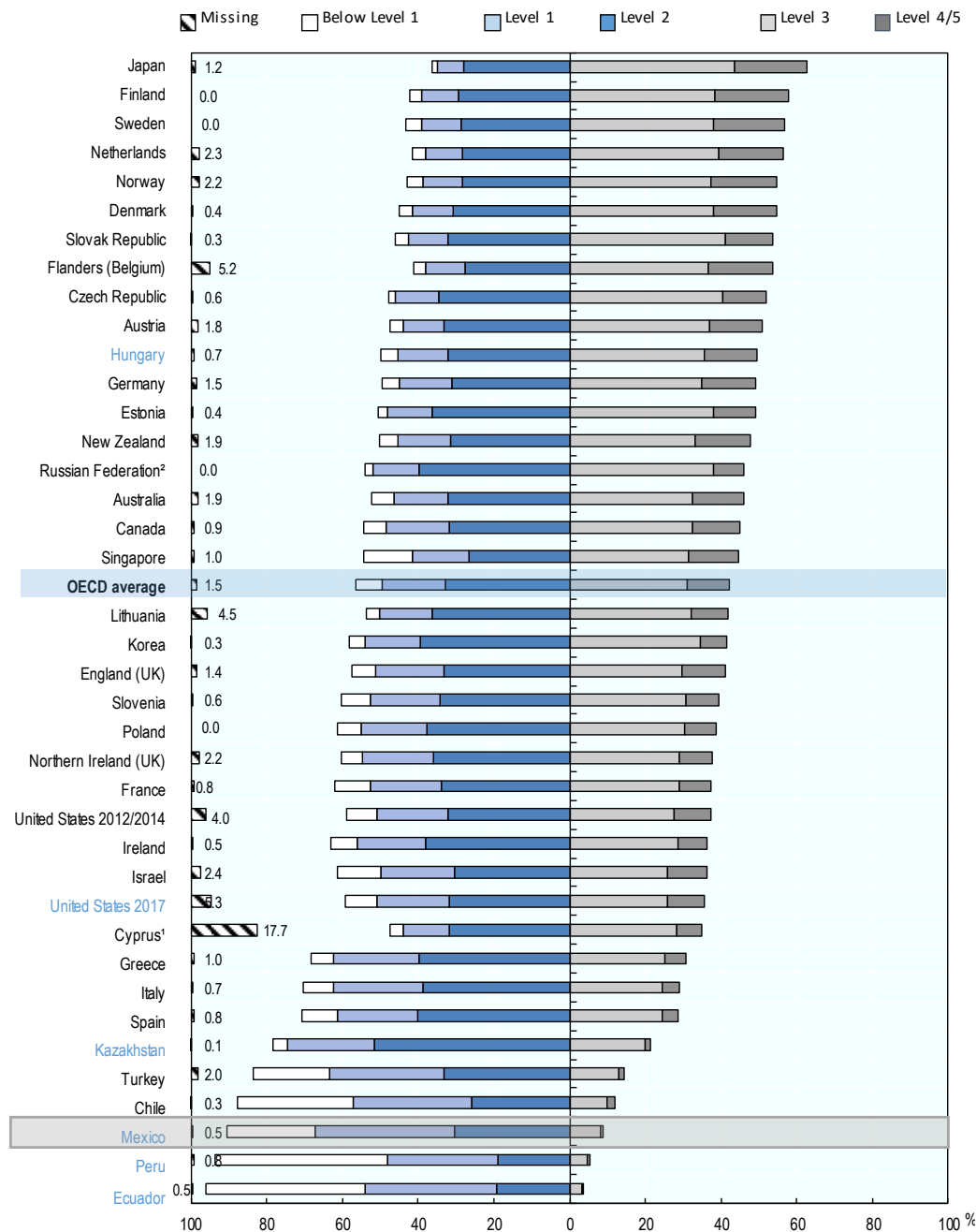
2. The sample for the Russian Federation does not include the population of the Moscow municipal area. More detailed information can be found in the Technical Report of the Survey of Adult Skills, Third Edition (OECD, 2019).

Countries and economies are ranked in descending order of the combined percentages of adults scoring at Level 3 and at Level 4/5.

Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A2.1.

Figure 2. Numeracy proficiency among adults

Percentage of adults scoring at each proficiency level in numeracy



Notes: Adults in the missing category were not able to provide enough background information to impute proficiency scores because of language difficulties, or learning or mental disabilities (referred to as literacy-related non-response).

1. See note 1 under Figure 1.

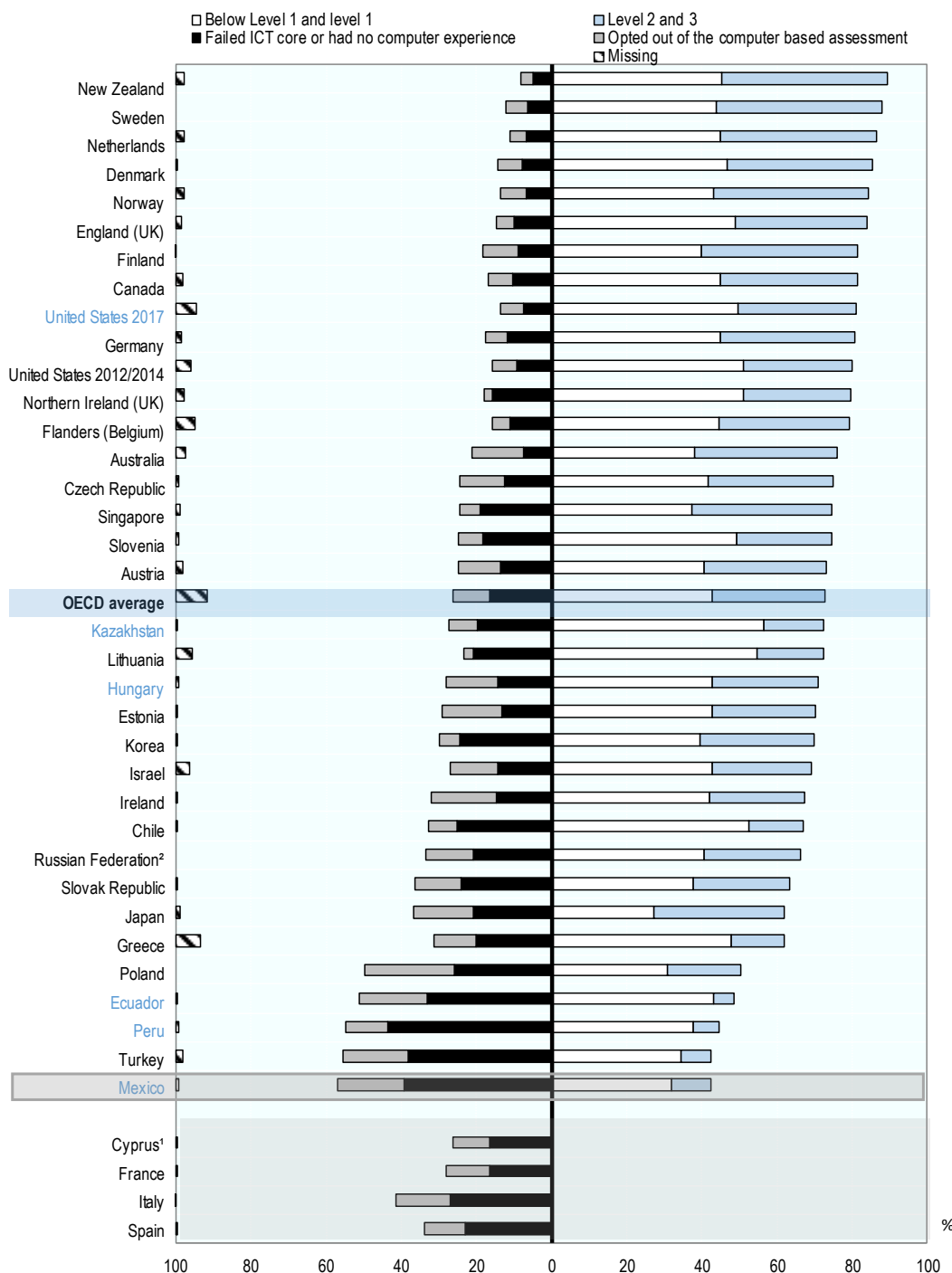
2. See note 2 under Figure 1.

Countries and economies are ranked in descending order of the combined percentages of adults scoring at Level 3 and at Level 4/5.

Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A2.3.

Figure 3. Proficiency in problem solving in technology-rich environments among adults

Percentage of 16-65 year-olds scoring at each proficiency level



Notes: Adults included in the missing category were not able to provide enough background information to impute proficiency scores because of language difficulties, or learning or mental disabilities (referred to as literacy-related non-response). The missing category also includes adults who could not complete the assessment of problem solving in technology-rich environments because of technical problems with the computer used for the survey. Cyprus, France, Italy and Spain did not participate in the problem solving in technology-rich environments assessment.

1. See note 1 under Figure 1.

2. See note 2 under Figure 1.

Countries and economies are ranked in descending order of the combined percentages of adults scoring at Levels 2 and 3, and at or below Level 1.

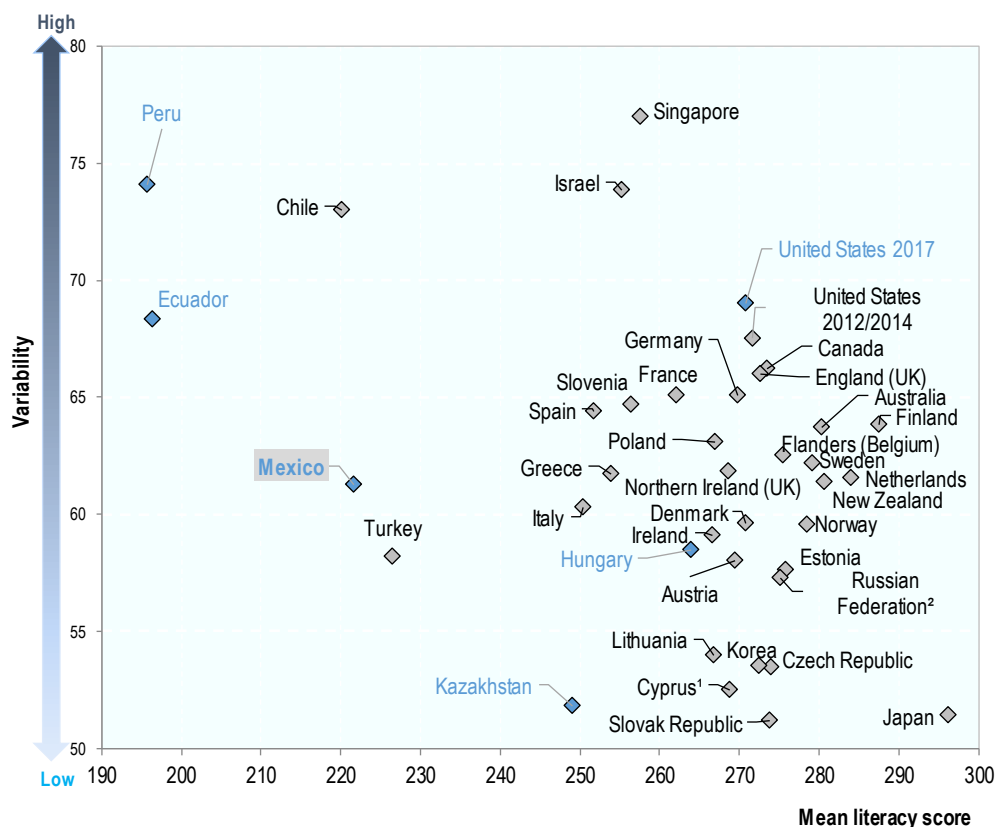
Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A2.7.

The average literacy score in Mexico (222 points) is among the lowest observed in the study. In addition to looking at the average score in a country, it is important to look at the distribution of score – i.e. how big a gap there is

between high and low performers. The gap between the scores of the top and bottom performing 25% of adults in Mexico is at 61 score points, the same as the OECD average. This is lower than the dispersion observed in the US and in other Latin-American countries in the survey (Chile, Ecuador and Peru).

Figure 4. Average and distribution of literacy scores

Relationship between mean literacy proficiency score and variability



Note: The measure of variability used is the interquartile range (difference between the third quartile and the first quartile).  
 Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A2.2.

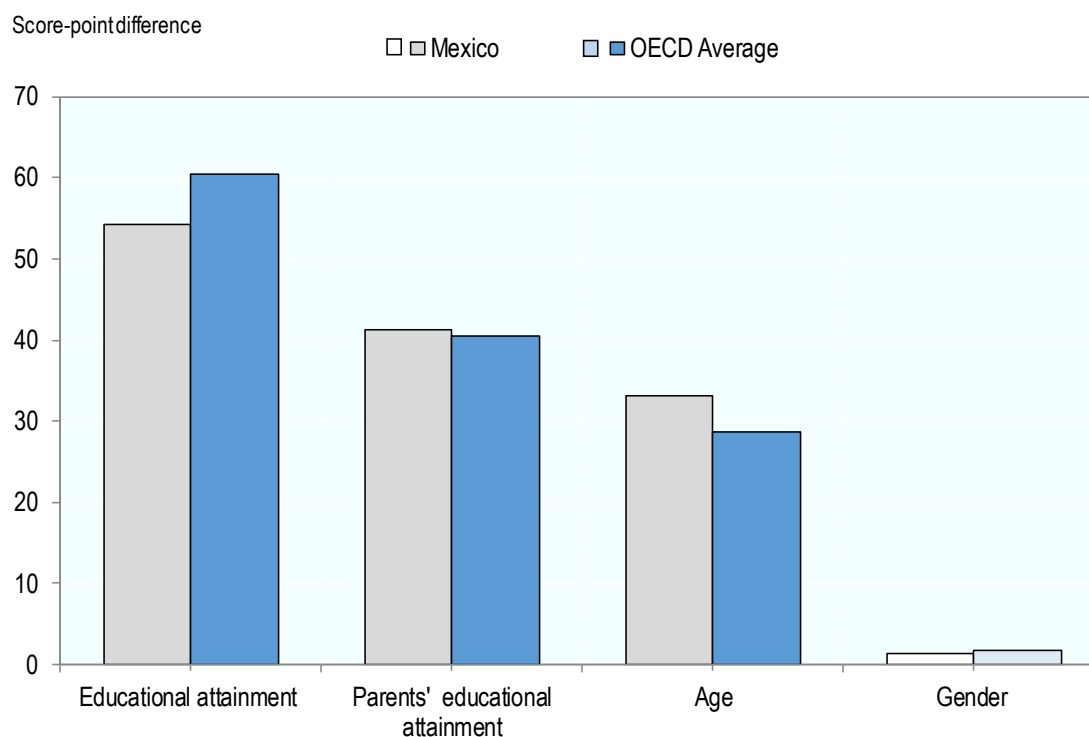
The relationship between socio-demographic characteristics and proficiency is similar to that observed in other countries.

In most countries, including Mexico, there are differences in proficiency in the measured skills related to socio-demographic characteristics, such as age, level of education and social background. In the case of literacy, differences related to gender are not statistically significant, in Mexico or on average in the OECD participating countries and economies.

Across the surveyed countries and economies, proficiency in the skills measured peaks among 25-34 year-olds while the proficiency of 55-64 year-olds is generally the lowest of all age groups. **In Mexico, in contrast, average proficiency is highest among 16-24 year olds and declines with the increasing age of respondents from the age of 25. The gap in average literacy between 25-34 year-olds and 55-65 year-olds exceeds 30 score points, and is slightly larger than the OECD average (29 points).** This pattern is consistent with the fact that upper secondary completion rates have increased only recently in Mexico. 50% of 25-34 year-olds in Mexico have not completed their upper secondary education, compared to 16% of individuals in the same category on average across OECD countries and economies. Conversely, the share of under-25 year-old respondents who have completed upper secondary education in Mexico (36%) is much closer to the OECD average (49%).

The advantage in literacy proficiency of adults who have at least one parent with a tertiary degree relative to adults whose parents did not attain an upper secondary education in Mexico is almost identical to that observed in the average OECD country (41 score points). **In contrast, the gap in literacy scores between tertiary educated and respondents who did not attain upper secondary education is smaller in Mexico than the OECD average (54 vs 61 points).**

**Figure 5. Difference in literacy scores between contrast categories within various socio-demographic groups**



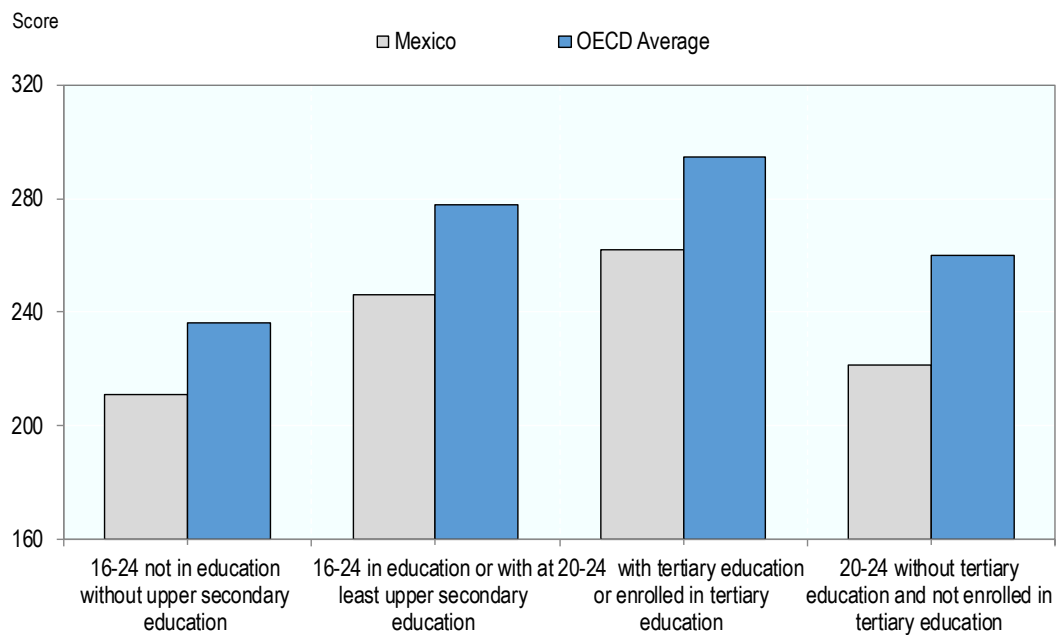
Notes: Statistically significant differences are marked in a darker tone. The estimates show the differences between the two means for each contrast category. The differences are: tertiary minus less than upper secondary (educational attainment), at least one parent attained tertiary minus neither parent attained upper secondary (parents' educational attainment), 25-34 year-olds minus 55-65 year-olds (age) and men minus women (gender). Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Tables A3.1(L), A3.2(L), A3.5(L), A3.8(L), and A3.11(L).

### The average Mexican youth is 10 to 15% less proficient in literacy than the average OECD person in the same age and education category.

Both in Mexico and in the average participating OECD country, young individuals with a tertiary education score higher in literacy than individuals with lower educational attainment. The gap between 20-24 year-olds enrolled or having achieved a tertiary education and individuals of the same age with lower educational attainment reaches 41 score points in literacy. Similarly, young adults who left formal education without achieving an upper secondary qualification (“early school leavers”) score on average 35 points lower than other 16-24 year-olds. However, in all the educational categories considered below, the average Mexican youth is 10 to 15% less proficient in literacy than the average OECD person in the same age and education category.

Figure 6. Youth literacy scores

Mean literacy proficiency scores of 16-24 year-olds, by educational attainment



Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Tables A3.1(L), A3.2(L), A3.5(L), A3.8(L), and A3.11(L).

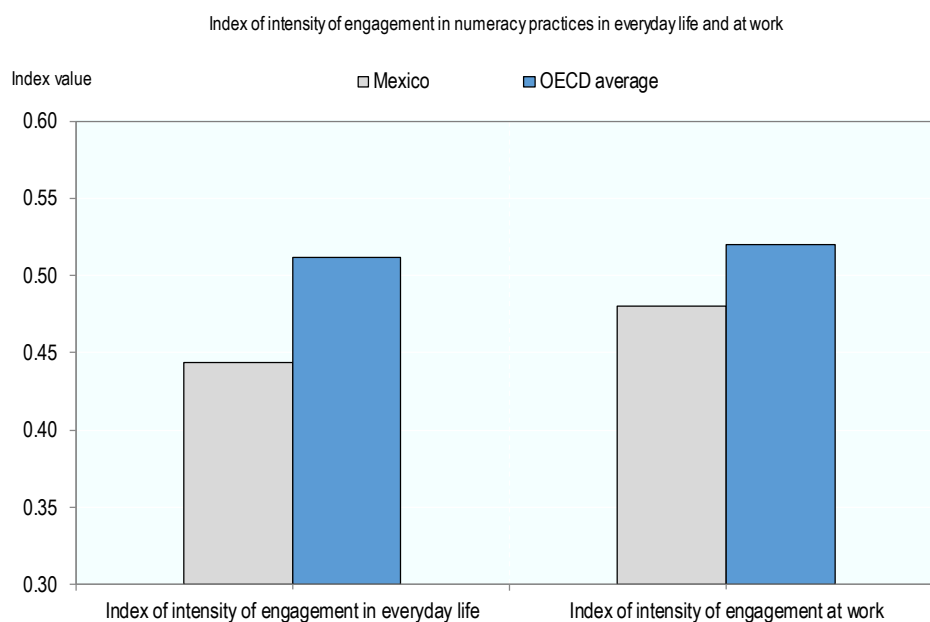
**For the average Mexican, numeracy engagement in everyday life or at work is lower than the OECD average, but higher than in Ecuador, Kazakhstan or Peru.**

The Survey of Adult Skills (PIAAC) collects information about how often adults perform specific tasks in their everyday life and their jobs. The index of numeracy use (also referred to as “engagement in numeracy practices”) summarises information about six activities involving calculations and use of mathematical formulas (use of a calculator; calculation of prices, costs or budgets, etc.), and two further activities which require the interpretation of mathematical information (reading bills, invoices, bank or financial statements; and reading diagrams, maps or schematics).

**For the average Mexican, numeracy engagement in both everyday life and at work is lower than the OECD average.** Educational attainment, among other personal and job-related characteristics, plays an important role in explaining differences in numeracy engagement between countries. **In almost all countries and economies considered, respondents with upper secondary qualifications engage in numeracy practices more intensively than individuals with lower qualifications. In Mexico, in particular, this gap is two to three times higher than the OECD average, accounting for other personal and job-related characteristics.** In a similar way, tertiary graduates engage in numeracy practice more than upper secondary graduates on average.



Figure 7. Index of intensity of engagement in numeracy practices in everyday life and at work



Notes: The index of intensity of engagement is an average across individuals in the country, and ranges between 0 and 1.

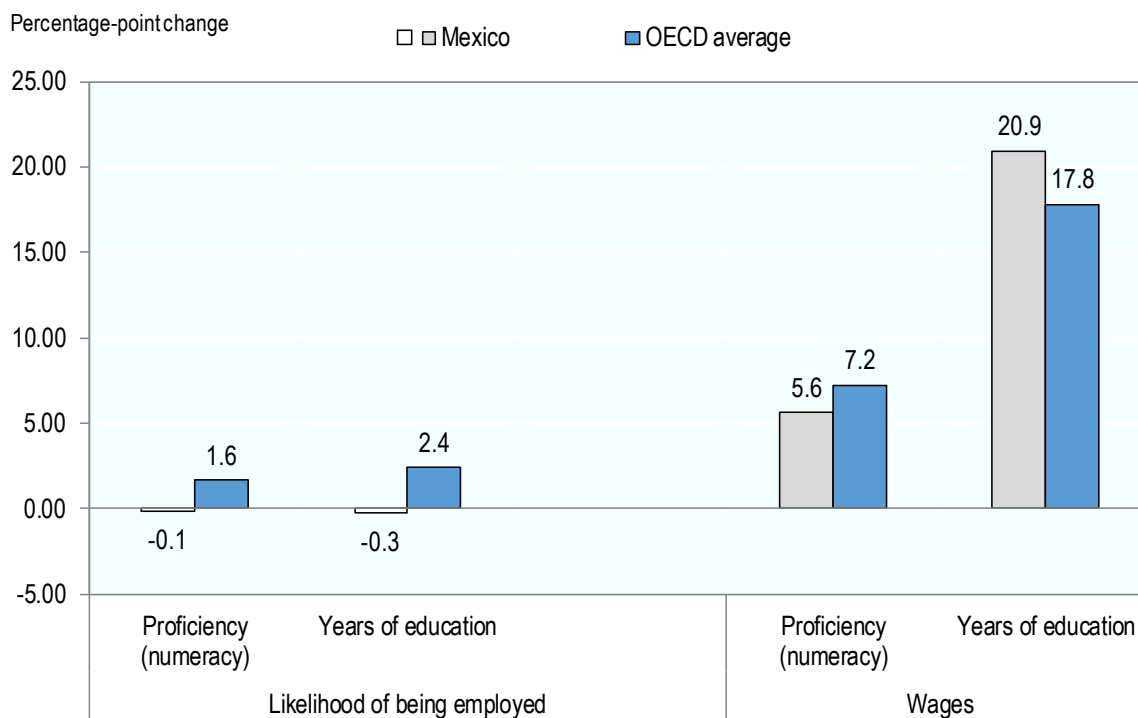
Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A4.2.

### **Mexican adults with higher proficiency in numeracy and higher educational attainment enjoy higher wages but not a higher probability of being employed, other personal and job-related features held constant.**

On average across the OECD participating countries and economies, there is a positive relationship between proficiency and labour force participation and employment, once other factors are taken into account. An increase of one standard deviation on the numeracy scale (around 56 score points) is associated with a 1.6 percentage point increase in the chance of being employed rather than unemployed. At the same time, an increase in one standard deviation in the number of years spent in formal education (around 3.3 years) is associated with a 2.4 percentage-point increase in the individual's chances of being employed, holding every other personal or job-related feature constant. In contrast, in Mexico, neither numeracy proficiency nor educational attainment are related to the probability of being employed. At the same time, wages are higher for workers with higher numeracy proficiency or educational attainment, and the latter relationship is slightly stronger in Mexico than in the average across participating OECD countries.

The absence of a relationship between numeracy proficiency and years of education on employment chances may be related to the absence of a strong social protection system in Mexico, and the consequent need for individuals to take any job on offer. The benefits of higher levels of educational attainment and proficiency would be reflected in higher quality and better-paid jobs, rather than higher chances of employment.

**Figure 8. Marginal effects (as percentage-point change) of one standard-deviation increase in years of education and numeracy on the likelihood of being employed among adults not in formal education, and on wages**



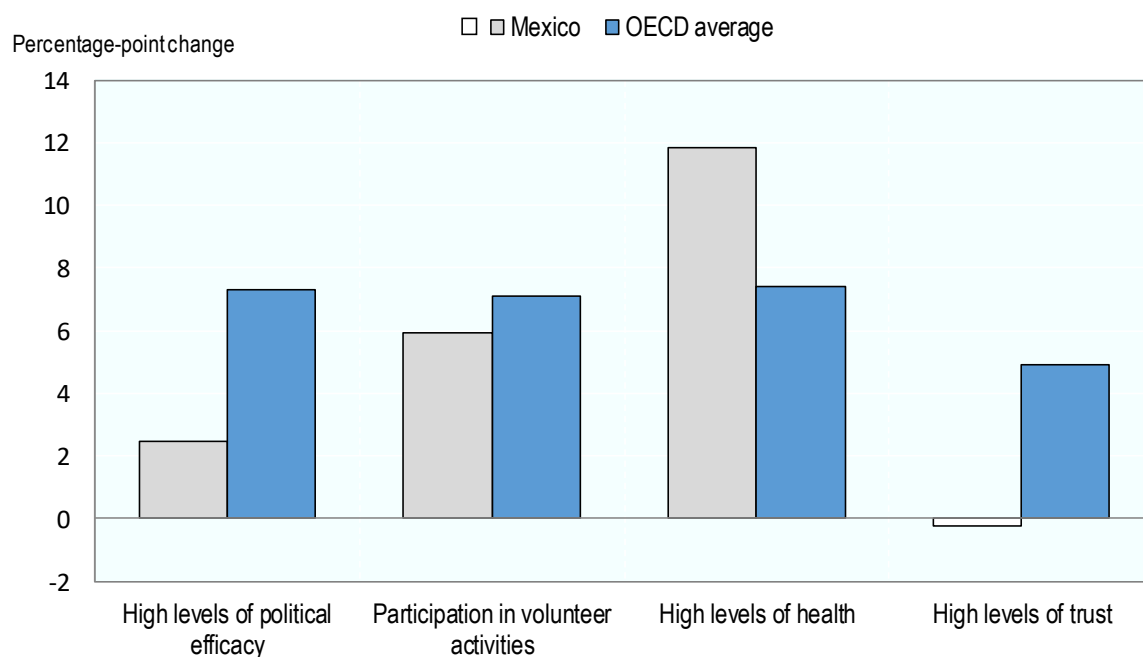
*Notes:* The figure plots coefficients from the OLS regression of the probability of being employed vs unemployed (left side of the figure) or of log hourly wages (right side of the figure) on years of education and proficiency. The model controls for gender, age, marital and foreign-born status for the employment equation, and for age, gender, foreign-born status, numeracy skills at work and tenure for the wage equation. Hourly wages inclusive of bonuses are used, and expressed in PPP-adjusted USD (2012). The wage distribution was trimmed to eliminate the 1st and 99th percentiles. Statistically significant values are shown in a darker tone (at the 5% level).

*Source:* Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A4.2.

**The link between higher literacy and social outcomes is positive but weaker in Mexico than in most other countries and economies, with the exception of health levels.**

In Mexico, individuals more proficient in literacy are also more likely to participate in volunteer activities and to believe they have impact on the political process, but the magnitudes of these associations are weaker in Mexico than on average across OECD countries and economies. Conversely, a one standard deviation increases in literacy proficiency is associated to a 12% higher probability to report high levels of health in Mexico, compared to a 7% higher probability across the OECD on average. Unlike the situation observed across OECD countries, literacy proficiency is not associated to levels of reported trust in Mexico.

**Figure 9. Marginal effects (as percentage-point change) of one standard-deviation increase in literacy score on the probability to report high – and low – levels of trust and political efficacy, good to excellent health, or participating in volunteer activities**



Notes: Statistically significant values are shown in a darker tone (at the 5% level).

Source: Survey of Adult Skills (PIAAC) (2012, 2015, 2018), Table A5.8(L).

## Key facts about the Survey of Adult Skills (PIAAC)

### What is assessed

- The Survey of Adult Skills (PIAAC) assesses the proficiency of adults from age 16 onwards in literacy, numeracy and problem solving in technology-rich environments. These skills are “key information-processing competencies” that are relevant to adults in many social contexts and work situations, and necessary for fully integrating and participating in the labour market, education and training, and social and civic life.
- In addition, the survey collects a range of information on the reading- and numeracy-related activities of respondents, the use of information and communication technologies at work and in everyday life, and on a range of generic skills, such as collaborating with others and organising one’s time, required of individuals in their work. Respondents are also asked whether their skills and qualifications match their work requirements and whether they have autonomy over key aspects of their work.

### Methods

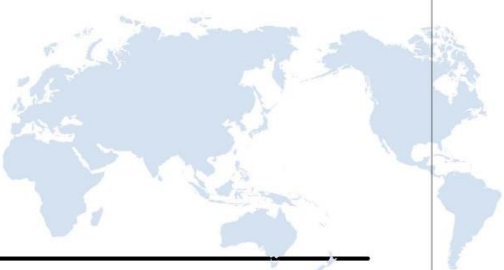
- The first cycle of the Survey of Adults Skills has been conducted over three rounds of data collection. The first round surveyed around 166 000 adults aged 16-65 years in 24 countries (or regions within these countries) in 2011-12. In Australia, Austria, Canada, Cyprus\*, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Slovak Republic, Spain, Sweden and the United States – the sample was drawn from the entire national population. In Belgium, the data were collected in Flanders; in the United Kingdom, the data were collected in England and Northern Ireland (data are reported separately for England and Northern Ireland in the report).
- Nine countries (or regions within these countries) took part in a second round of data collection in 2014-15: Chile, Greece, Jakarta (Indonesia), Israel, Lithuania, New Zealand, Singapore, Slovenia and Turkey. A total of 50 250 adults were surveyed. In all countries except Indonesia, the entire national population was covered. In Indonesia, the data were collected in the Jakarta municipal area only.
- The third round was conducted in 2017-18 in six countries: Ecuador, Hungary, Kazakhstan, Mexico, Peru and the United States. A total of 34 792 adults were surveyed. Note that the United States had already participated in Round 1. This brought the number of participating countries and economies to a total of 39.
- The language of assessment was the official language or languages of each participating country. In some countries, the assessment was also conducted in widely spoken minority or regional languages.
- Two components of the assessment were optional: the assessment of problem solving in technology-rich environments and the assessment of reading components.
- The target population for the survey was the non-institutionalised population, aged 16 to 65 years, residing in the country at the time of data collection, irrespective of nationality, citizenship or language status.
- Sample sizes depended primarily on the number of cognitive domains assessed and the number of languages in which the assessment was administered. Some countries boosted sample sizes in order to have reliable estimates of proficiency for the residents of particular geographical regions and/or for certain sub-groups of the population such as indigenous inhabitants or immigrants. The achieved samples ranged from a minimum of approximately 4 500 to a maximum of nearly 27 300.
- The survey was administered under the supervision of trained interviewers either in the respondent’s home or in a location agreed between the respondent and the interviewer. The background questionnaire was administered in Computer-Aided Personal Interview format by the interviewer. Depending on the situation of the respondent, the time taken to complete the questionnaire ranged between 30 and 45 minutes.
- After having answered the background questionnaire, the respondent completed the assessment either on a laptop computer or by completing a paper version using printed test booklets, depending on their computer skills. Respondents could take as much or as little time as needed to complete the assessment. On average, the respondents took 50 minutes to complete the cognitive assessment.

## Proficiency levels: Literacy and numeracy

Level	Score range	Literacy	Numeracy
Below Level 1	Below 176 points	Tasks at this level require the respondent to read brief texts on familiar topics and locate a single piece of specific information. There is seldom any competing information in the text. Only basic vocabulary knowledge is required, and the reader is not required to understand the structure of sentences or paragraphs or make use of other text features.	Tasks at this level require the respondent to carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money, or recognising common spatial representations.
1	176 to less than 226 points	Tasks at this level require the respondent to read relatively short digital or print texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive. Knowledge and skill in recognising basic vocabulary, determining the meaning of sentences, and reading paragraphs of text is expected.	Tasks at this level require the respondent to carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit. Tasks usually require one-step or simple processes involving counting; sorting; performing basic arithmetic operations; and identifying elements of simple or common graphical or spatial representations.
2	226 to less than 276 points	Tasks at this level require the respondent to make matches between the text, either digital or printed, and information, and may require paraphrasing or low-level inferences.	Tasks at this level require the application of two or more steps or processes involving calculation with whole numbers and common decimals, percents and fractions; simple measurement and spatial representation; estimation; and interpretation of relatively simple data and statistics in texts, tables and graphs.
3	276 to less than 326 points	Texts at this level are often dense or lengthy. Understanding text and rhetorical structures is often required, as is navigating complex digital texts.	Tasks at this level require the application of number sense and spatial sense; recognising and working with mathematical relationships, patterns, and proportions expressed in verbal or numerical form; and interpreting data and statistics in texts, tables and graphs.
4	326 to less than 376 points	Tasks at this level often require the respondent to perform multiple-step operations to integrate, interpret, or synthesise information from complex or lengthy texts. Many tasks require identifying and understanding one or more specific, non-central idea(s) in the text in order to interpret or evaluate subtle evidence-claim or persuasive discourse relationships.	Tasks at this level require analysis and more complex reasoning about quantities and data; statistics and chance; spatial relationships; and change, proportions and formulas. They may also require understanding arguments or communicating well-reasoned explanations for answers or choices.
5	Equal to or higher than 376 points	Tasks at this level may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence based arguments. They often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialised background knowledge.	Tasks at this level may require the respondent to integrate multiple types of mathematical information where considerable translation or interpretation is required; draw inferences; develop or work with mathematical arguments or models; and critically reflect on solutions or choices.

## Description of proficiency levels in problem solving in technology-rich environments

Level	Score range	The types of tasks completed successfully at each level of proficiency
No computer experience	Not applicable	Adults in this category reported having no prior computer experience; therefore, they did not take part in the computer-based assessment but took the paper-based version of the assessment, which does not include the problem solving in technology-rich environment domain.
Failed ICT core	Not applicable	Adults in this category had prior computer experience but failed the ICT core test, which assesses basic ICT skills, such as the capacity to use a mouse or scroll through a web page, needed to take the computer-based assessment. Therefore, they did not take part in the computer-based assessment, but took the paper-based version of the assessment, which does not include the problem solving in technology-rich environment domain.
“Opted out” of taking computer-based assessment	Not applicable	Adults in this category opted to take the paper-based assessment without first taking the ICT core assessment, even if they reported some prior experience with computers. They also did not take part in the computer-based assessment, but took the paper-based version of the assessment, which does not include the problem solving in technology-rich environment domain.
Below Level 1	Below 241 points	Tasks are based on well-defined problems involving the use of only one function within a generic interface to meet one explicit criterion without any categorical or inferential reasoning, or transforming of information. Few steps are required and no sub-goal has to be generated.
1	241 to less than 291 points	At this level, tasks typically require the use of widely available and familiar technology applications, such as e-mail software or a web browser. There is little or no navigation required to access the information or commands required to solve the problem. The tasks involve few steps and a minimal number of operators. Only simple forms of reasoning, such as assigning items to categories, are required; there is no need to contrast or integrate information.
2	291 to less than 341 points	At this level, tasks typically require the use of both generic and more specific technology applications. For instance, the respondent may have to make use of a novel online form. Some navigation across pages and applications is required to solve the problem. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, though the criteria to be met are explicit.
3	Equal to or higher than 341 points	At this level, tasks typically require the use of both generic and more specific technology applications. Some navigation across pages and applications is required to solve the problem. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, and the criteria to be met may or may not be explicit. Integration and inferential reasoning may be needed to a large extent.



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FROM THE SURVEY OF ADULT SKILLS

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