

SURVEY OF ADULT SKILLS
FIRST RESULTS

SWEDEN

Key issues

- **Adults (aged 16-65) in Sweden show above-average proficiency in literacy, numeracy and problem solving in technology-rich environments compared with adults in the other countries participating in the survey**
- **Young adults (aged 16-24) in Sweden have higher proficiency in literacy and problem solving and slightly lower proficiency in numeracy compared to the overall population. Sweden's young adults show above-average proficiency in numeracy, but around the average proficiency in literacy.**
- **Foreign-language immigrants in Sweden have very low levels of literacy proficiency, and score much lower than native-born and native-language Swedes.**
- **Swedish adults scoring at the lowest levels in literacy have nearly three times the chance of those with high levels of literacy of reporting poor health, which is larger than observed in most countries.**

The survey

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

- literacy – the ability to 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 Sweden from August 2011 to June 2012.
A total of 4 469 adults aged 16- 65 were surveyed.

Adults in Sweden show above-average proficiency in literacy, numeracy and problem solving in technology-rich environments compared with adults in the other countries participating in the survey.

Some 16.1% of adults in Sweden (aged 16-65) attain the two highest levels of proficiency in literacy (Level 4 or 5) compared with the average of 11.8% of adults in all participating countries. 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 41.6% are proficient at Level 3 in literacy** compared to 38.2% of adults in all participating countries. 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 18.6% of adults in Sweden attain Level 4 or 5 in numeracy compared with the average of 12.4% of adults across all participating countries. At Level 4, adults understand a broad range of mathematical information that may be complex, abstract or found in unfamiliar contexts. **Some 38.0% attain Level 3 proficiency in numeracy** compared to 34.4% 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.

Some 8.8% of adults are proficient at Level 3, the highest proficiency level, in problem solving in technology-rich environments (compared to an average of 5.8% of adults in all participating countries), while 35.2% attain proficiency Level 2 in problem solving (compared with the average of 28.2%). Adults at Level 3 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.

Young adults (aged 16-24) in Sweden have higher proficiency in literacy and problem solving and slightly lower proficiency in numeracy compared to the overall population. Sweden's young adults show above-average proficiency in numeracy but around the average proficiency in literacy.

In **literacy**, young adults in Sweden show lower proficiency, on average, than young adults in Estonia, Finland, Japan, Korea and the Netherlands, but greater proficiency than those in Canada, England/Northern Ireland (UK), France and the United States.

In **numeracy**, young adults in Sweden show lower proficiency, on average, than their peers in Finland and the Netherlands, greater proficiency than their peers in Denmark, England/Northern Ireland (UK), Ireland and the United States, and proficiency similar to that of young adults in Austria, Germany and Korea.

In **problem solving in technology-rich environments**, 61.7% of Sweden's young adults attain Level 2 or 3 (compared with 50.7% of young adults across all participating countries). This proportion is only 1.7 percentage points smaller than that in Korea, where young adults attain the highest scores in problem solving, and 24.1 percentage points larger than that in the United States, where young adults attain the lowest scores in problem solving.

As in most participating countries, relatively large proportions of the adult population in Sweden have poor literacy, numeracy and problem-solving skills.

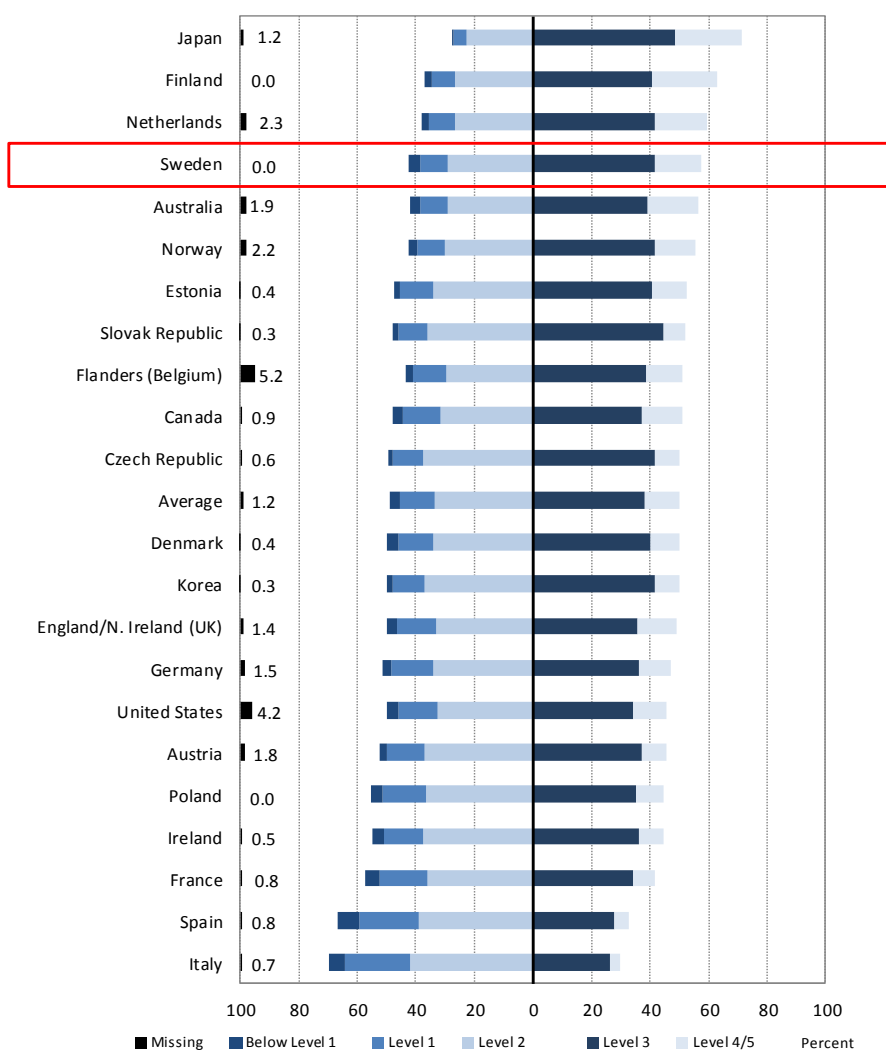
Some 13.3% of adults attain only Level 1 or below in literacy proficiency (compared with the average of 15.5%) and 14.7% attain Level 1 or below in numeracy (compared with the average 19.0%). At Level 1 in

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.

Some 6.4% of Swedish adults (compared with 14.2% of adults in all participating countries) **indicated that they had no prior experience with computers or lacked very basic computer skills, while 43.9% score at or below Level 1 in problem solving in technology-rich environments.** This is slightly above average, and similar to the levels found in Canada, Germany, the Netherlands and Norway. 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.

Literacy proficiency among adults

Percentage of adults scoring at each proficiency level in literacy



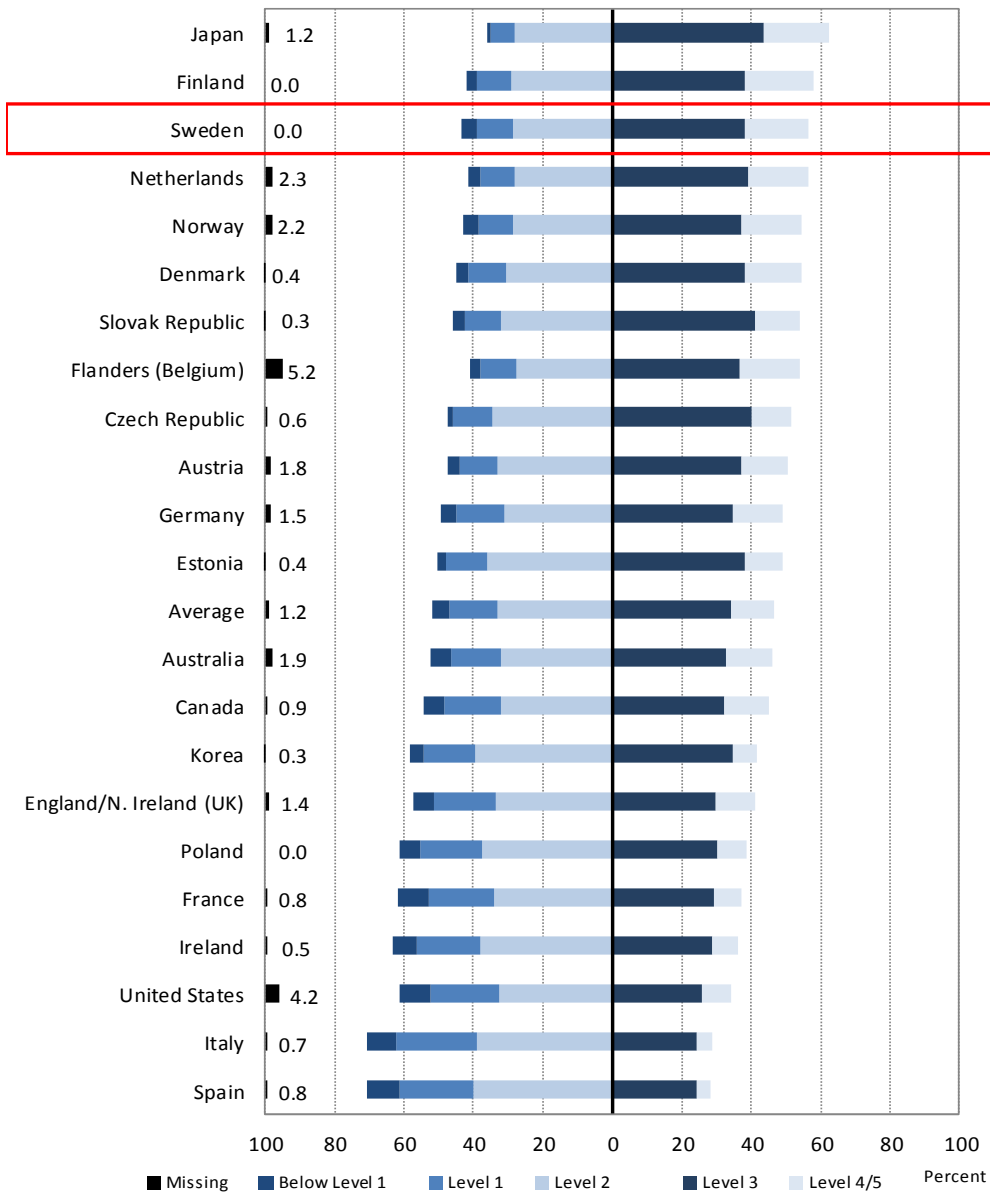
Countries are ranked in descending order of the combined percentage of adults scoring at Level 3 and Level 4/5

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).

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

Numeracy proficiency among adults

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



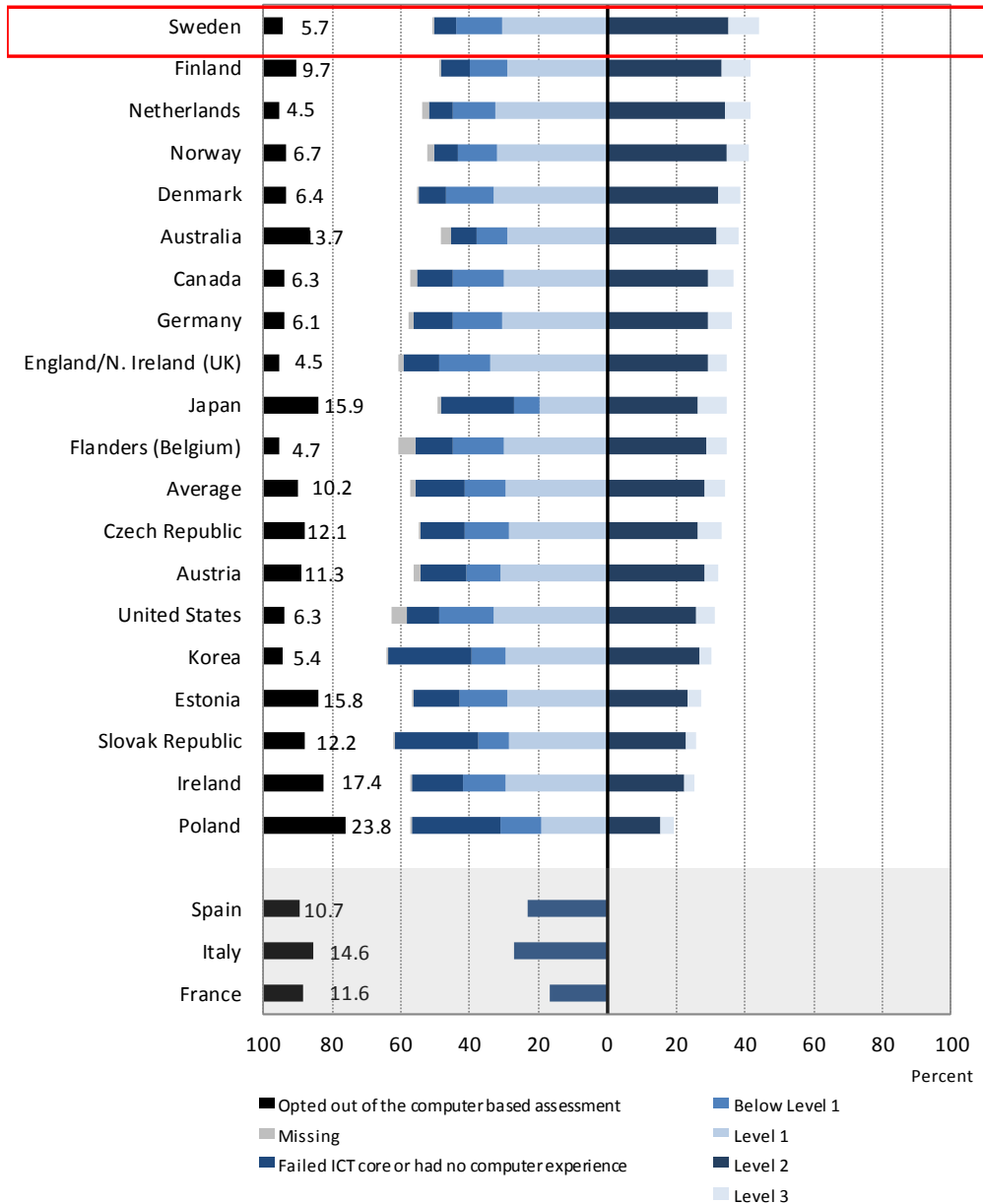
Countries are ranked in descending order of the combined percentage of adults scoring at Level 3 and Level 4/5

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).

Source: Survey of Adult Skills (PIAAC) (2012), Table A2.5

Proficiency in problem solving in technology-rich environments among adults

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



Countries are ranked in descending order of the combined percentage of adults scoring at Levels 2 and 3

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. France, Italy and Spain did not participate in the problem solving in technology-rich environments assessment.

Source: Survey of Adult Skills (PIAAC) (2012), Table A2.10a

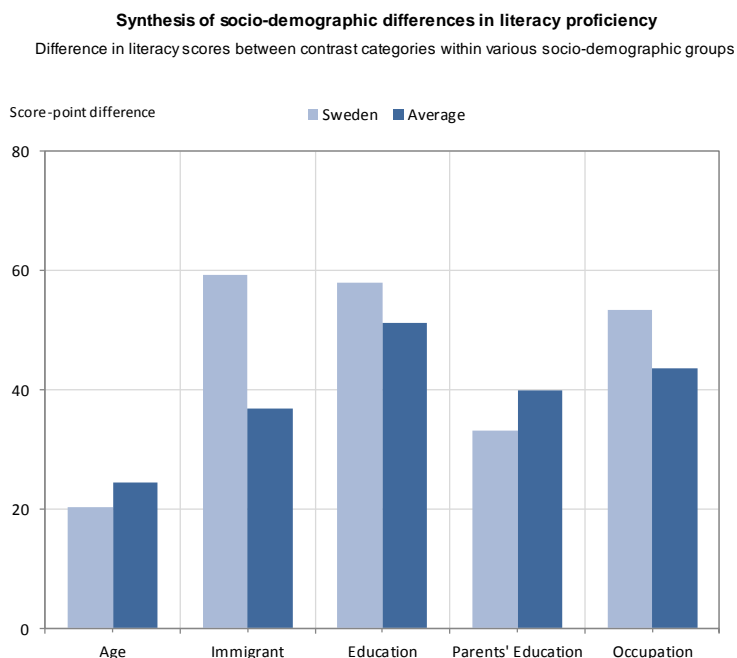
Foreign-language immigrants in Sweden have very low levels of literacy proficiency with a large difference in score compared to native-born and native-language Swedes.

As expected, in all countries, foreign-language immigrants tend to have lower literacy skills than native-born adults who spoke the official language of the country from birth. Both their overall level of proficiency and their proficiency relative to native-born adults reflect the changing size and composition of immigrant inflows into the countries concerned during the post-war period, as well as the impact of language and integration policies. Foreign-language immigrants in Sweden are much less proficient in literacy than the average for this group. The difference in literacy proficiency between foreign-language immigrants and native-born Swedes is very large: at 59 points, the difference is the largest observed among all participating countries.

The relationship between most socio-demographic characteristics and proficiency is similar to that observed in other countries; the exceptions are immigration background, education and occupation.

In most countries, including Sweden, there are differences in skills proficiency related to socio-demographic characteristics, such as gender, age, level of education and social background. Differences related to immigrant background and education are larger in Sweden than in many other countries.

Across the countries in the survey, proficiency peaks among 25-34 year-olds while the proficiency of 55-64 year-olds is generally the lowest of all age groups. This is true in Sweden too. Older Swedes have slightly higher proficiency than the average for their peers in other countries, while the gap in proficiency between the youngest and oldest age groups is slightly lower than average.



Notes: The estimates show the differences between the two means for each contrast category. The differences are: 16-24 year-olds minus 55-65 year-olds (age), native born and native language minus foreign born and foreign language (immigrant), tertiary minus less than upper secondary (education), at least one parent attained tertiary minus neither parent attained upper secondary (parents' education) and skilled minus elementary occupations (occupation).

Source: Survey of Adult Skills (PIAAC) (2012), Table A3.2(L), Table A3.6(L), Table A3.9(L), Table A3.15(L) and Table A3.19(L).

On average across countries, men have higher proficiency in numeracy than women. The difference in numeracy scores between men and women in Sweden is 13.6 points, 1.9 points above the average of 11.7 points. In literacy, the score gap between men and women is much smaller than that in numeracy. Men score 3.3 points higher than women in literacy – 1.4 points more than the 1.9-point difference between men and women across OECD countries.

In Sweden, the gap in literacy proficiency between workers in elementary occupations, such as labourers and production workers, and workers in skilled occupations, such as professional and technicians, is one of the largest observed: 53 score points. Low proficiency among workers in low-skilled occupations may place these workers at significant risk in the event of downsizing or restructuring.

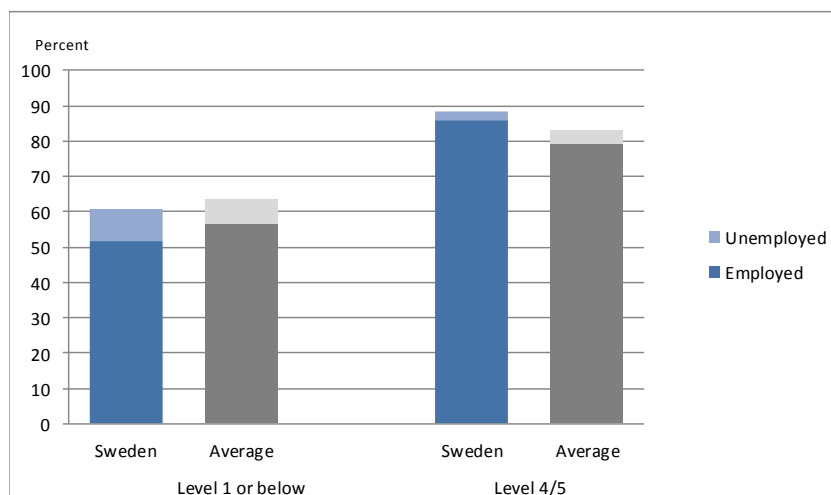
Higher proficiency in literacy and numeracy has a positive impact on labour force participation and wages.

In all participating countries, there is a positive relationship between proficiency and labour force participation and employment. Individuals with higher levels of proficiency in literacy, numeracy and problem solving in technology-rich environments have greater chances of participating in the labour market and of being employed, and less chance of being unemployed than individuals with lower levels of proficiency, on average.

Some 85.8% of Swedish respondents scoring at Level 4/5 in literacy are employed, while only 51.7% of those scoring at or below Level 1 are. This difference is similar to that observed in England/Northern Ireland (UK). Meanwhile, the rate of inactivity (11.7%) among Sweden’s highly proficient (Level 4/5) adults is lower than the average (17.1%) among participating countries.

Employment status, by literacy proficiency level

Percentage of adults in each labour market status

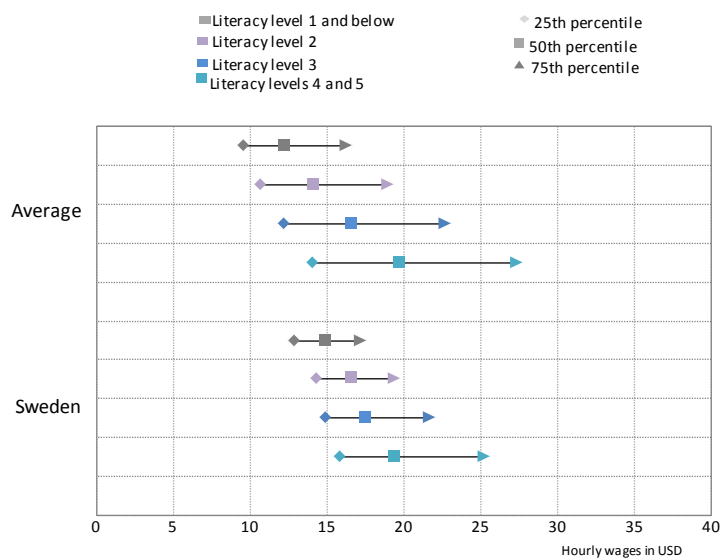


Source: Survey of Adults Skills (PIAAC) (2012), Table A6.3 (L)

Wages are also affected by proficiency in information-processing skills. **In Sweden, the best-paid workers who score at Level 4/5 in literacy earn about USD 8.1 more per hour than the best-paid workers who score at or below Level 1.** However, there is slight overlap in the wage distributions at different levels of proficiency. For instance, in Sweden, a median earner with Level 2 proficiency in literacy earns slightly more, on average, than a low-paid worker with Level 4/5 proficiency. This is probably due to the large differences in wages earned by adults who score at Level 4/5.

Distribution of wages, by literacy proficiency level

25th, 50th and 75th percentiles of the wage distribution

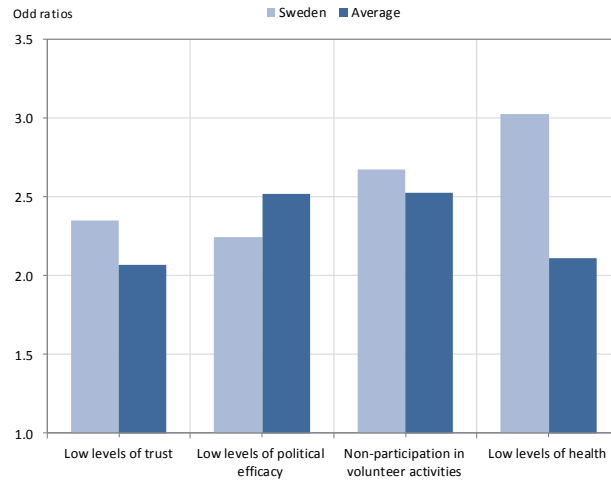


Notes : Employees only. Hourly wages, including bonuses, in purchasing-power-parity-adjusted USD.
Source: Survey of Adults Skills (PIAAC) (2012), Table A6.4 (L).

The link between higher literacy and such social outcomes as trust in others, participation in volunteer and associative activities, and better health is stronger in Sweden than in most other countries while the link between proficiency and belief that an individual can have an impact on the political process is weaker than in most other countries.

In Sweden, individuals proficient in literacy at or below Level 1 have much greater chances, relative to those of adults with Level 4/5 proficiency in literacy, of distrusting others, believing they have little impact on the political process, not participating in volunteer activities and reporting poor health. In the case of health, Swedish adults scoring at or below Level 1 in literacy have three times the chance of those with a high level of literacy of reporting poor health.

Low literacy proficiency and negative social outcomes
 Odds ratio showing the likelihood of adults scoring at or below Level 1 in literacy reporting low levels of trust and political efficacy, fair or poor health, or of not participating in volunteer activities (adjusted)



Notes: Reference group is adults scoring at Level 4/5 in literacy.

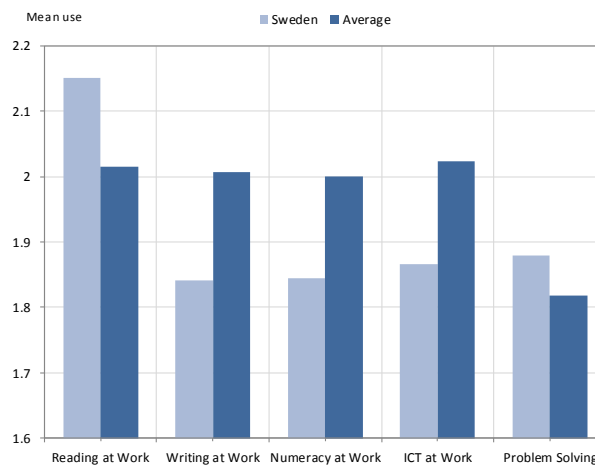
Source: Survey of Adult Skills (PIAAC) (2012), Table A6.9(L).

Sweden has a good match between the literacy proficiency of workers and the demands of their jobs

The survey collected information about the use of information-processing and various generic skills in the workplace. Linked with data about workers' proficiency in these skills, this information provides a picture of the match – or mismatch – between workers' skills and the tasks they are asked to perform in their jobs.

Swedish workers read, write, work with mathematics, solve problems and use computers in their jobs at around the average level observed across OECD countries participating in the survey. Overall, there is a high level of match between the literacy skills of workers and the literacy demands of their jobs in Sweden. The country has around 6% of workers whose proficiency in literacy is estimated to be above the maximum required by their job (over-skilling). This is the smallest proportion observed among participating countries. Around 5% of workers have a level of proficiency that is below the minimum required by their job (under-skilling).

Average use of information-processing skills at work



Notes: Skills use indicators are standardised to have a mean of 2 and a standard deviation of 1 across the entire survey sample

Source: Survey of Adult Skills (PIAAC) (2012), Table A4.1

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

- Around 166 000 adults aged 16-65 were surveyed in 24 countries and sub-national regions: 22 OECD member countries – Australia, Austria, Belgium (Flanders), Canada, the Czech Republic, Denmark, Estonia, Finland, France, Norway, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Slovak Republic, Spain, Sweden, the United Kingdom (England and Northern Ireland), and the United States; and two partner countries – Cyprus** and the Russian Federation
- Data collection for the Survey of Adult Skills took place from 1 August 2011 to 31 March 2012 in most participating countries. In Canada, data collection took place from November 2011 to June 2012; and France collected data from September to November 2012.
- 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. Twenty of the 24 participating countries administered the problem-solving assessment and 21 administered the reading components assessment.
- 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.

**A. 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”.

B. 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.

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.

Contacts:

Andreas Schleicher
Advisor to the Secretary-General on Education Policy,
Deputy Director for Education and Skills
Email: Andreas.SCHLEICHER@oecd.org
Telephone: +33 6 07 38 54 64

Mark Keese
Head of the Employment Analysis and Policy Division,
Directorate for Employment Labour and Social Affairs
Email: Mark.KEESE@oecd.org
Telephone: +33 1 45 24 87 94

Marta Encinas-Martin
Analyst, Skills Beyond School Division,
Directorate for Education and Skills
Email: Marta.ENCINAS-MARTIN@oecd.org
Telephone: +33 1 45 24 97 58

**For more information on the Survey of Adult Skills (PIAAC)
and to access the full *OECD Skills Outlook 2013* report, visit:**

<http://skills.oecd.org/skillsoutlook.html>

www.oecd.org/site/piaac

