

# Adult Numeracy in the United States

**DATA POINT**  
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Using the data from the Program for the International Assessment of Adult Competencies (PIAAC), this Data Point summarizes the number of U.S. adults with low levels of numeracy and describes how they differ by nativity status<sup>1</sup> and race/ethnicity.

PIAAC is a large-scale international<sup>2</sup> study of working-age adults (ages 16–65) that assesses adult skills in three domains (literacy, numeracy, and digital problem solving) and collects information on adults’ education, work experience, and other background characteristics. In the United States, when the study was conducted in 2012 and 2014, respondents were first asked questions about their background, with an option to be interviewed in English or Spanish, followed by a skills assessment in English. In addition, an interactive mapping tool (Krenzke et al. 2020) was produced to provide estimates of adults’ literacy and numeracy skills for all U.S. states and counties based on combined PIAAC data from 2012, 2014, and 2017.

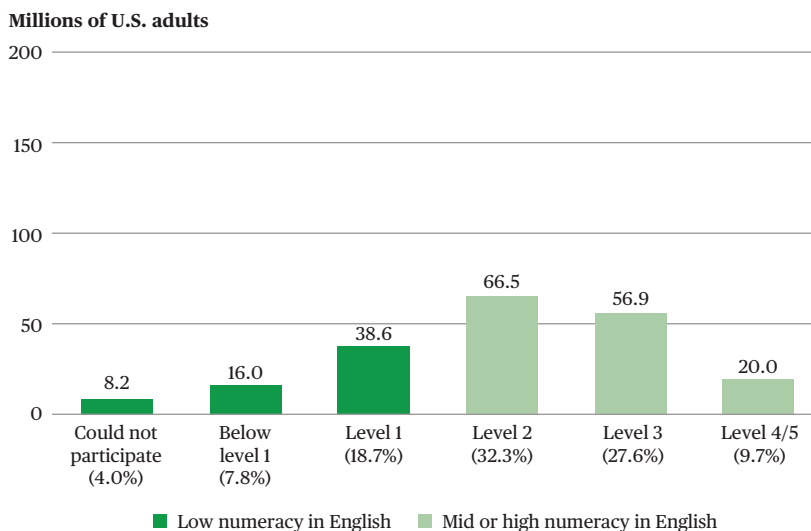
PIAAC defines numeracy as “the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life” (p. 75, OECD 2013). Results in this Data Point are presented as the number of adults at numeracy proficiency levels. These levels are described in terms of the types of tasks those adults are likely to complete successfully at a particular level. PIAAC reports out five numeracy proficiency levels: from below level 1 to level 4/5.<sup>3</sup> Adults with low levels of numeracy are defined, consistent with international reports (OECD 2013), as those performing on PIAAC’s numeracy assessment at “level 1 or below” or those who could not participate in the survey,<sup>4</sup> as explained below.

## What are the rates of numeracy proficiency in the United States?

Over two in three (70 percent) U.S. adults have sufficient numeracy skills to make calculations with whole numbers and percentages, estimate numbers or quantity, and interpret simple statistics in text or tables—numeracy skills at level 2 or above in PIAAC (OECD 2013). In contrast, nearly one in three U.S. adults (30 percent) has difficulty completing such tasks in English (**FIGURE 1**).

This translates into 62.7 million U.S. adults who possess low numeracy skills in English: 38.6 million at level 1, 16.0 million below level 1, while 8.2 million could not participate in PIAAC’s background survey either because of a language barrier or a cognitive or physical inability to be interviewed. These adults who were unable to participate are categorized as having low numeracy skills, as is done in international reports (OECD 2013), although no direct assessment of their skills is available.

**FIGURE 1. Number of adults age 16 to 65 at each level of proficiency on the PIAAC numeracy scale and those who could not participate: 2012 and 2014**



NOTE: Standard error tables are available at <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020025>. Percentages of U.S. adults age 16 to 65 at each level of proficiency on the PIAAC numeracy scale appear in parentheses. Low numeracy in English is defined as those performing at PIAAC numeracy proficiency level 1 or below or who could not participate due to a language barrier or a cognitive or physical inability to be interviewed. Mid or High numeracy in English is defined as those performing at PIAAC numeracy proficiency level 2 or above. Detail may not sum to totals because of rounding. SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for the International Assessment of Adult Competencies (PIAAC), U.S. PIAAC 2012/2014.

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Adults classified as below level 1 may be considered not functionally numerate in English. They cannot successfully complete one-step tasks presented in English involving counting, sorting, and identifying elements of simple graphs and spatial representations (OECD 2013).

### What is the makeup of adults with low numeracy skills by nativity status and race/ethnicity?

U.S.-born adults make up about three-fourths of adults with low levels of numeracy skills in the United States. However, the non-U.S.-born are overrepresented among such low-skilled adults. Non-U.S.-born adults comprise 24 percent of the population with low numeracy skills, compared to 15 percent of the total population (FIGURE 2).

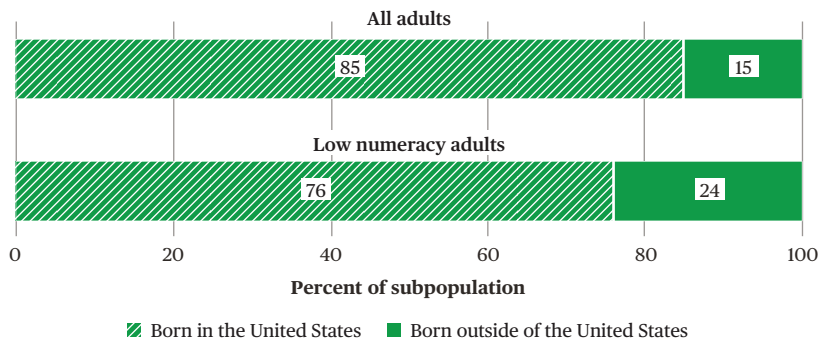
White adults make up the largest percentage of U.S. adults with low levels of numeracy, 39 percent, followed by that of Hispanic and Black adults, 28 and 26 percent, respectively (FIGURE 3).

By race/ethnicity and nativity status, the largest percentage of those with low numeracy skills are White U.S.-born adults, who represent about two-fifths of such low-skilled population. Black U.S.-born adults make up close to a quarter of these low-skilled adults in the United States (FIGURE 3).

### References

- Krenzke, T., Ren, W., Paul, A., Schneider, A., Karne, V., Abbott, M., Kemmerer, J., Mohadjer, L., and Hogan, J. (2020). *U.S. PIAAC Skills Map: State and County Indicators of Adult Literacy and Numeracy* (NCES 2020-047). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved July 28, 2020, from <https://nces.ed.gov/surveys/piaac/skillsmap>.
- Organization for Economic Cooperation and Development (OECD) (2013). *OECD Skills Outlook 2013: First Results From the Survey of Adult Skills*. Paris: OECD Publishing. Retrieved June 29, 2018, from <http://dx.doi.org/10.1787/9789264204256-en>.
- Rampey, B.D., Finnegan, R., Goodman, M., Mohadjer, L., Krenzke, T., Hogan, J., and Provasnik, S. (2016). *Skills of U.S.*

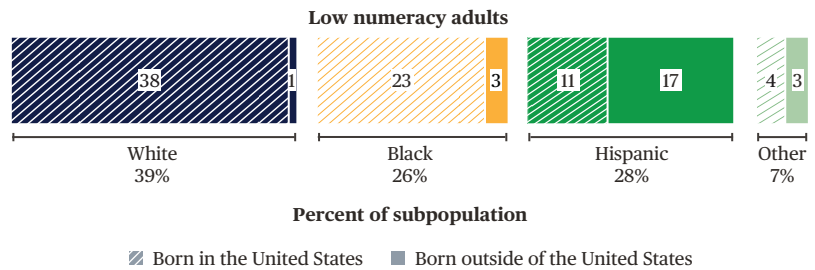
**FIGURE 2. Percentage of all adults and low-skilled adults age 16 to 65, by nativity status: 2012 and 2014**



NOTE: Standard error tables are available at <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020025>. Adults with low numeracy skills are defined as those performing at PIAAC numeracy proficiency level 1 or below. Adults who could not participate are excluded.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for the International Assessment of Adult Competencies (PIAAC), U.S. PIAAC 2012/2014.

**FIGURE 3. Percentage of low-skilled adults age 16 to 65, by nativity status and race/ethnicity: 2012 and 2014**



NOTE: Standard error tables are available at <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020025>. Adults with low numeracy skills are defined as those performing at PIAAC numeracy proficiency level 1 or below. Adults who could not participate are excluded.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Program for the International Assessment of Adult Competencies (PIAAC), U.S. PIAAC 2012/2014.

*Unemployed, Young, and Older Adults in Sharper Focus: Results From the Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014: First Look* (NCES 2016-039rev). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved October 30, 2018, from <https://nces.ed.gov/pubs2016/2016039rev.pdf>.

### Endnotes

<sup>1</sup> Nativity status refers to whether the respondent was born in the United States or born outside the United States.

<sup>2</sup> This international study is coordinated by the Organization for Economic Cooperation and Development (OECD) and developed by

participating countries with the support of the OECD.

<sup>3</sup> This analysis combines the top two proficiency levels (levels 4 and 5), following the OECD's reporting convention (OECD 2013), because across all participating countries, no more than 2 percent of adults reached level 5.

<sup>4</sup> Unlike in the U.S. PIAAC 2012/2014 First Look (Rampey et al. 2016), those who could not participate are included in the numeracy proficiency distribution shown here. Referred to as "literacy-related nonresponse cases," these adults who could not participate are typically not shown because virtually all information about them is missing.