



Immigrant Literacy: Self-Assessment vs. Reality

By Jason Richwine

To measure the English ability of immigrants in the United States, researchers often rely on the opinion of the immigrants themselves. For example, the Census Bureau asks foreign-language speakers, “How well [do you] speak English?” and gives them four choices: “very well”, “well”, “not well”, or “not at all”. Answers are highly subjective, as speaking English “well” might mean anything from basic comprehension to near fluency. For objective data, this report turns to a direct test of English literacy administered by the Program for the International Assessment of Adult Competencies (PIAAC). The results raise concerns about the magnitude and persistence of low English ability among immigrants.

Specifically:

- 41 percent of immigrants score at or below the lowest level of English literacy — a level variously described as “below basic” or “functional illiteracy”.
- The average immigrant scores at the 21st percentile of the native score distribution.
- Hispanic immigrants struggle the most with English literacy. Their average score falls at the 8th percentile, and 63 percent are below basic.
- For Hispanic immigrants, self-reported English-speaking ability overstates actual literacy. The average literacy score of Hispanic immigrants who self-report that they speak English “very well” or “well” falls at the 18th percentile, and 44 percent are below basic.
- Even long-time residents struggle with English literacy. Immigrants who first arrived in the United States more than 15 years ago score at the 20th percentile, and 43 percent are below basic.
- Literacy difficulties brought by low-skill immigrants persist beyond the immigrant generation. The children of Hispanic immigrants score at the 34th percentile, and 22 percent are below basic. In addition, just 5 percent of second generation Hispanics have “elite” literacy skills, compared to 14 percent of natives overall.

Introduction

Without a strong command of English, immigrant families will struggle to succeed in the mainstream of American life. How then does immigrant literacy compare to the literacy of native speakers? Unfortunately, answers to survey questions on English ability can be vague and subjective. For example, when the Census Bureau conducts the annual mini-census called the American Community Survey (ACS), it asks all respondents who speak a foreign language at home “How well [do you] speak English?”¹ Respondents have four choices: “very well”, “well”, “not well”, or “not at all”. Answers are based entirely on the opinions of the respondents, not on any objective measure of their abilities.

Table 1 indicates how adults answered the English question in 2015, with results broken down by immigration status and Hispanic background. While two-thirds of non-Hispanic immigrants say they speak English “very

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well”, just one-third of Hispanic immigrants fall into the “very well” category. The picture brightens for U.S.-born Hispanics, of whom nine out of 10 say they speak English “very well” or speak only English at home. Widespread English-speaking by the children (and later generations) of Hispanic immigrants has led some commentators to argue that immigration does not threaten English acquisition in the long term.²

Table 1. Distribution of Responses to Census Question: “How Well Do [You] Speak English?”

Speaks English:	Hispanic Immigrants	Non-Hispanic Immigrants	All Immigrants	Hispanic Natives	Non-Hispanic Natives
Very well*	35.4%	67.5%	53.1%	91.0%	99.6%
Well	22.2%	19.0%	20.5%	6.1%	0.3%
Not well	27.2%	10.5%	18.0%	2.2%	0.1%
Not at all	15.1%	3.0%	8.4%	0.7%	0.0%

Source: CIS analysis of the 2015 American Community Survey.

* Or only English at home.

Responses are limited to adults ages 16 to 74.

Immigrants are foreign-born; natives are U.S.-born.

The information conveyed in Table 1 is limited, however. Depending on context, speaking English “well” might mean anything from basic comprehension to near fluency. Moreover, speech is only one aspect of English ability. The ACS has no data on reading and writing skills, which are the traditional foundations of literacy.

To better understand English ability among immigrants, this report analyzes scores on a direct test of English literacy given to a representative sample of Americans. Conveniently, all test-takers also subjectively rate their English-speaking ability on the same “very well” through “not at all” scale that the ACS uses. This means an actual literacy score can be assigned to people who self-identify as speaking English “very well” vs. “well” vs. “not well”, and so on. The analysis reveals that English literacy is significantly lower among Hispanic immigrants than what is implied by their answers to the ACS question on English-speaking ability. In addition, literacy struggles persist into the second generation.

Methodology

The Program for the International Assessment of Adult Competencies (PIAAC) administers tests of literacy, numeracy, and problem solving in OECD nations. This report focuses on the results of the literacy test in the United States. Administered to over 8,000 Americans between the ages of 16 and 74, the literacy test measures the English ability of a representative sample of adults living in U.S. households between 2012 and 2014.³ The test is strictly in English, meaning people whose English is weak will perform poorly even if they are literate in another language. The background questionnaire, however, is available in both English and Spanish to ensure wide participation.⁴

Definition of Literacy. Conceptually, literacy is not merely the ability to read sentences. PIAAC’s definition of literacy is “understanding, evaluating, using, and engaging with written text to participate in society, to achieve one’s goals, and to develop one’s knowledge and potential.”⁵ By this definition, English literacy varies widely even among native speakers in the United States. Therefore, the literacy scores of immigrants and their children reflect more than just their adoption of English as a first or second language. Even immigrants who speak English exclusively could receive low scores on the test if their literacy skills are not well developed.

Previous Research. The most comprehensive analysis of immigrant performance on the PIAAC tests is a 2015 study sponsored by the National Center for Education Statistics and conducted by the Migration Policy Institute (MPI).⁶ The MPI study assesses immigrant skills and links them to a variety of outcome measures such as education and income. The study’s main conclusion is that immigrant skills fall well short of the U.S. average, which is itself below the average in other industrialized nations.

This report fills in a couple of important knowledge gaps. First, although the MPI authors note that immigrant literacy scores rise with self-assessment of English-speaking ability, the authors do not compare average scores at each self-assessment level with the scores of a native reference group. Only by comparing to a reference group of native speakers can we understand what it really means for an immigrant to speak English at a given self-assessment level. Second, the MPI authors show that second generation immigrants score at parity with the third generation, but they do not separate second generation immigrants by their ethnic background. Since many Latin American immigrants arrive with low levels of education, their children's scores are an indication of whether assimilation for low-skill immigrants is complete by the second generation.

Proficiency Levels. This report examines the percentage of test-takers at different levels of literacy, focusing on Level 1 and below ("below basic") and Levels 4 and 5 ("elite").⁷

Below basic has sometimes been described as functional illiteracy.⁸ It means that a person's English does not extend beyond simple vocabulary and sentence comprehension. Tasks such as reading multiple pages, sifting through competing information in a chart, and making even low-level inferences are typically too advanced for people in this group. By contrast, elite literacy requires absorbing dense texts, synthesizing wide-ranging information, and making complex inferences. Even among native speakers, only a small percentage of test-takers have elite literacy skills.

For a comprehensive description of PIAAC literacy levels, please see Appendix Table A1.

Standard Deviations and Percentiles. Though easy to interpret, results based on dichotomous categories such as "below basic" tell only part of the story.⁹ Average scores matter as well. A perennial problem with reporting average test scores, however, is that they have little meaning without reference to the full score distribution. To illustrate, scores on the PIAAC literacy test range from zero to 500, but how much better is a score of, say, 300 compared to a score of 200? The answer depends on how spread out the score distribution is. If scores tend to bunch up in the center, then jumping 100 points could be a substantial improvement relative to other test-takers. By contrast, if scores are widely distributed, then the relative improvement from a 100-point jump would be much smaller.

This report expresses average score differences in terms of the standard deviation (SD), which is a measure of spread. For example, on a test with a mean score of 100 and a standard deviation of 15, a score of 103 would be $(103 - 100)/15 = 0.2$ SDs above the mean. On a different test that has a mean score of 2,000 and a standard deviation of 100, a score of 2,020 would be $(2,020 - 2,000)/100 = 0.2$ SDs above the mean. By using the standard deviation to adjust for the spread of each distribution, we see that different-looking scores on different tests actually have the same effect size.¹⁰

Because SDs are an unfamiliar concept to some readers, this report also provides percentile scores that mark the place where the average immigrant lies on the native distribution. For example, if an immigrant group scores at the 30th percentile, the average immigrant in that group would score better than 30 percent (and worse than 70 percent) of natives.¹¹

Results

Table 2 reports the percentage of test-takers whose literacy is "below basic" as defined above. About 41 percent of all immigrants are below basic, with the percentage increasing as immigrants' self-reported English-speaking ability goes down. The overall figures disguise substantial differences between Hispanic and non-Hispanic immigrants. Just 23 percent of non-Hispanic immigrants are below basic, versus 63 percent of Hispanic immigrants.

Furthermore, self-assessed English-speaking ability is an overestimate of immigrants' English literacy, at least for Hispanics. To illustrate, among people who say they speak English "very well" or "well", 44 percent of Hispanic immigrants and 20 percent of non-Hispanic immigrants are below basic, compared to 14 percent of natives. The sample sizes shrink when splitting up the "very well" and "well" categories, making the data less certain. However, the percentages still suggest that Hispanic immigrants (but not non-Hispanic immigrants) are more likely to score below basic than natives of the same self-assessed ability.

Table 3 shows the percentage of test-takers with elite literacy skills. It is largely a mirror image of Table 2, with 11 percent of non-Hispanic immigrants and just 1 percent of Hispanic immigrants possessing elite literacy. Self-assessed English-speaking ability again overestimates the English literacy of Hispanic immigrants. Just 4 percent of Hispanic immigrants who speak English "very well" have elite literacy skills, compared to 15 percent of natives.

Table 2. Percentage of Adults Scoring “Below Basic” on the PIAAC English Literacy Test, by Self-Assessed English-Speaking Ability

Speaks English:	Hispanic Immigrants	Non-Hispanic Immigrants	All Immigrants	Hispanic Natives	All Natives
Very well or well	44%	20%	28%	21%	14%
Very well	21%	15%	16%	18%	13%
Well	56%	30%	43%	41%	31%
Not well	85%	N/A	78%	N/A	N/A
All English abilities	63%	23%	41%	23%	15%

Source: CIS analysis of the PIAAC Literacy Test.

English-speaking ability is the test-taker’s opinion; “below basic” percentages come from an objective literacy test.

“Below basic” means scoring at or below Level 1, the lowest of the five skill levels.

Immigrants are foreign-born; natives are U.S.-born.

N/A indicates insufficient data.

Bolded percentages are significantly different from the “all natives” column with at least 95 percent confidence.

No significance tests were conducted on the “...not well” row because of insufficient reference group data.

Table 3. Percentage of Adults With “Elite” Scores on the PIAAC English Literacy Test, by Self-Assessed English-Speaking Ability

Speaks English:	Hispanic Immigrants	Non-Hispanic Immigrants	All Immigrants	Hispanic Natives	All Natives
Very well or well	2%	12%	9%	6%	14%
Very well	4%	13%	12%	7%	15%
Well	1%	9%	5%	3%	3%
Not well	0	N/A	0	N/A	N/A
All English abilities	1%	11%	7%	6%	14%

Source: CIS analysis of the PIAAC Literacy Test.

English-speaking ability is the test-taker’s opinion; “elite” percentages come from an objective literacy test.

“Elite” means scoring at Level 4 or 5, the highest of the five skill levels.

Immigrants are foreign-born; natives are U.S.-born.

N/A indicates insufficient data.

Bolded percentages are significantly different from the “all natives” column with at least 95 percent confidence.

No significance tests were conducted on the “...not well” row because of insufficient reference group data.

Moving beyond categories, Table 4 reports how average scores for immigrants differ from the reference group of all natives. It provides further evidence that self-assessment overstates Hispanic but not non-Hispanic literacy. Hispanic immigrants who speak English “very well” score at the 33rd percentile, equivalent to 0.42 standard deviations (SDs) lower than natives, while non-Hispanic immigrants who speak English “very well” score right around the native average.

At all levels of English ability, immigrants score 0.77 SDs below the native average, a score that places them at the 21st percentile. Again, a major divide between Hispanic and non-Hispanic immigrants is evident. The average non-Hispanic immigrant scores at the 40th percentile, while the average Hispanic scores at just the 8th percentile.

Table 4. Average Score of Immigrant/Hispanic Groups Minus Average Score of All Natives on the PIAAC Literacy Test

Speaks English:	Hispanic Immigrants		Non-Hispanic Immigrants		All Immigrants		Hispanic Natives	
	<i>d</i>	Percentile	<i>d</i>	Percentile	<i>d</i>	Percentile	<i>d</i>	Percentile
Very well or well	-0.90	18	-0.14	43	-0.38	34	-0.30	37
Very well	-0.42	33	0.00	48	-0.08	45	-0.21	40
Well	-1.15	13	-0.43	32	-0.79	21	-0.89	18
Not well	-2.05	3	N/A	N/A	-1.87	4	N/A	N/A
All English abilities	-1.43	8	-0.22	40	-0.77	21	-0.35	35

Source: CIS analysis of the 2015 PIAAC Literacy Test.

d is the group's average score minus natives' average score, in standard deviations (SDs). For example, Hispanic immigrants who speak English "well" score 1.15 SDs lower than all natives.

Percentile is the place where the group's average score falls on the distribution of all native scores. For example, the average Hispanic immigrant who speaks English "well" scores better than about 13 percent of all natives.

Immigrants are foreign-born; natives are U.S.-born.

N/A indicates insufficient data.

Bolded figures are significantly different from the average native score with at least 95 percent confidence.

Does literacy improve with time spent in the United States? On one hand, the answer would seem to be obviously yes, since English usage is so widespread, and since the benefits from learning it are so clear. On the other hand, adult immigrants usually do not attend school (where immigrant children are inevitably exposed to English), and ethnic enclaves allow some immigrants to live, work, and consume media all in their native language. Table 5 shows that immigrants who first arrived in the United States more than 15 years ago are still far more likely than natives to be below basic. In fact, there appears to be little to no literacy improvement compared to immigrants overall.

Complicating the analysis in Table 5 is that new immigrants could be bringing greater skills than past immigrants did upon arrival. Indeed, the fact that immigrants who arrived within the last 15 years do not score appreciably lower on the literacy test than longer-tenured immigrants suggests they may have arrived at a higher starting point.¹² Nonetheless, Table 5 still reveals an important observation: Immigrants who had poor English skills upon arrival still have poor English skills more than 15 years later.

Table 5. PIAAC English Literacy Test Scores of Immigrants Who First Arrived More than 15 Years Ago

	Hispanic Immigrants	Non-Hispanic Immigrants	All Immigrants
Below basic (%)	67	22	43
Elite (%)	1	12	7
<i>d</i>	-1.55	-0.19	-0.82
Percentile	7	41	20

Source: CIS analysis of the PIAAC Literacy Test.

"Below basic" means scoring at or below Level 1, the lowest of the five skill levels.

"Elite" means scoring at Level 4 or 5, the highest of the five skill levels.

d is the group's average score minus the average score of all natives, in standard deviations.

Percentile is the place where the group's average score falls on the distribution of all native scores.

Bolded figures are significantly different from natives with at least 95 percent confidence.

Table 6 shows that low literacy persists not just within immigrant lifetimes, but across generations as well. In this table, a second-generation immigrant is someone born in the United States with at least one foreign-born parent, while the third-plus generation encompasses people who are U.S.-born and have two U.S.-born parents. Encouragingly, below basic literacy rates fall sharply from 41 percent among immigrants to 15 percent in the second generation, bringing the children of immigrants into parity with the third-plus generation. However, the second generation still differs by Hispanic background. At 10 percent, the children of non-Hispanic immigrants are *less* likely to be below basic than the third-plus generation. At the same

Table 6. PIAAC English Literacy Test Scores of Second and Third-Plus Generation Americans

	Hispanic 2nd Gen.	Non-Hispanic 2nd Gen.	All 2nd Gen.	Hispanic 3rd-Plus Gen.	All 3rd-Plus Gen.
Below basic (%)	22	10	15	24	15
Elite (%)	5	22	15	8	14
<i>d</i>	-0.36	0.29	0.01	-0.32	0.00
Percentile	34	60	48	36	48

Source: CIS analysis of the PIAAC Literacy Test.

2nd generation means born in the U.S. with at least one foreign-born parent; 3rd-plus generation means born in the U.S. with two U.S.-born parents.

“Below basic” means scoring at or below Level 1, the lowest of the five skill levels.

“Elite” means scoring at Level 4 or 5, the highest of the five skill levels.

d is the group’s average score minus the average score of all natives, in standard deviations.

Percentile is the place where the group’s average score falls on the distribution of all native scores.

Bolded figures are significantly different from natives with at least 95 percent confidence.

time, 22 percent of second-generation Hispanics and 24 percent of third-plus generation Hispanics are below basic. Second generation Hispanics score 0.36 SDs below natives, placing them at approximately the 34th percentile of natives. At 0.32 SDs from the mean and the 36th percentile, the Hispanic third-plus generation does little better.

Conclusion

Consistent with prior analysis of the PIAAC English literacy test, immigrants score substantially lower than native speakers. Specifically, immigrants perform at the 21st percentile of the native score distribution, and 41 percent of immigrants score low enough to be described as below basic or functionally illiterate. With a 63 percent rate of below basic literacy, Hispanic immigrants struggle with English more than non-Hispanic immigrants, who have a below basic rate of 23 percent.

This report reveals that Hispanic immigrants’ self-assessed English-speaking ability overestimates their English literacy. Hispanic immigrants who speak English “very well” score 0.42 SDs below the native average, placing them at the 33rd percentile. Therefore, researchers should be wary of citing self-assessments as an indication of English ability among Hispanic immigrants. By contrast, non-Hispanic immigrants who say they speak English “very well” perform much closer to natives on the literacy test.

This report also shows that immigrant literacy skills matter beyond the first generation. Although the literacy performance of the second generation as a whole rises to match native speakers, U.S.-born Hispanics still lag well behind other natives.¹³ When the United States accepts low-skill immigration, it chooses to accept a multi-generational skills deficit, with all of the socioeconomic challenges that come along with it.

Appendix

Table A1. Description of PIAAC Literacy Proficiency Levels

Proficiency levels and cut scores for literacy	Literacy task descriptions
Level 5 (376 – 500)	At this level, tasks 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. Application and evaluation of logical and conceptual models of ideas may be required to accomplish tasks. Evaluating reliability of evidentiary sources and selecting key information is frequently a requirement. Tasks often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialized background knowledge.
Level 4 (326 – 375)	Tasks at this level often require respondents to perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy continuous, non-continuous, mixed, or multiple type texts. Complex inferences and application of background knowledge may be needed to perform the task successfully. 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. Conditional information is frequently present in tasks at this level and must be taken into consideration by the respondent. Competing information is present and sometimes seemingly as prominent as correct information.
Level 3 (276 – 325)	Texts at this level are often dense or lengthy, and include continuous, non-continuous, mixed, or multiple pages of text. Understanding text and rhetorical structures become more central to successfully completing tasks, especially navigating complex digital texts. Tasks require the respondent to identify, interpret, or evaluate one or more pieces of information, and often require varying levels of inference. Many tasks require the respondent to construct meaning across larger chunks of text or perform multi-step operations in order to identify and formulate responses. Often tasks also demand that the respondent disregard irrelevant or inappropriate content to answer accurately. Competing information is often present, but it is not more prominent than the correct information.
Level 2 (226 – 275)	At this level, the medium of texts may be digital or printed, and texts may comprise continuous, non-continuous, or mixed types. Tasks at this level require respondents to make matches between the text and information, and may require paraphrasing or low-level inferences. Some competing pieces of information may be present. Some tasks require the respondent to <ul style="list-style-type: none"> • cycle through or integrate two or more pieces of information based on criteria; • compare and contrast or reason about information requested in the question; or • navigate within digital texts to access and identify information from various parts of a document.
Level 1 (176 – 225)	Most of the tasks at this level require the respondent to read relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive. Some tasks, such as those involving non-continuous texts, may require the respondent to enter personal information onto a document. Little, if any, competing information is present. Some tasks may require simple cycling through more than one piece of information. Knowledge and skill in recognizing basic vocabulary, determining the meaning of sentences, and reading paragraphs of text is expected.
Below Level 1 (0 – 175)	The tasks at this level require the respondent to read brief texts on familiar topics to locate a single piece of specific information. There is seldom any competing information in the text and the requested information is identical in form to information in the question or directive. The respondent may be required to locate information in short continuous texts. However, in this case, the information can be located as if the text were non-continuous in format. 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 below level 1 do not make use of any features specific to digital texts.

Source: Reprinted from Bobby D. Rampey, Robert Finnegan, Madeline Goodman, Leyla Mohadjer, Tom Krenzke, Jacquie Hogan, Stephen Provasnik, and Holly Xie, [“Skills of U.S. Unemployed, Young, and Older Adults in Sharper Focus: Results From the Program for the International Assessment of Adult Competencies \(PIAAC\) 2012/2014,”](#) National Center for Education Statistics, March 2016, p. B-3.

As noted in the methodology section, the ACS does not ask people to self-assess their English-speaking ability unless they speak a foreign language at home. Respondents who speak only English at home are typically grouped with the “very well” response, as in Table 1. In the PIAAC, by contrast, all test-takers self-assess their English-speaking ability. This is perhaps the reason that Table A2 shows proportionally fewer people in PIAAC’s “very well” category. Table A3 gives sample sizes.

**Table A2. Distribution of Responses to PIAAC Question:
“With Regard to English, How Well Do You Speak It?”**

Speaks English:	Hispanic Immigrants	Non-Hispanic Immigrants	All Immigrants	Hispanic Natives	Non-Hispanic Natives
Very well	18.4%	63.1%	42.6%	84.4%	92.3%
Well	34.5%	29.5%	31.8%	12.9%	7.3%
Not well	31.4%	6.1%	17.7%	2.5%	0.4%
Not at all	15.8%	1.2%	7.9%	0.2%	0.0%

Source: CIS analysis of the PIAAC Literacy Test.
Immigrants are foreign-born; natives are U.S.-born.

**Table A3. PIAAC Sample Sizes by Self-Assessed English Ability,
Immigration Status, and Hispanic Background**

Speaks English:	Hispanic Immigrants	Non-Hispanic Immigrants	All Immigrants	Hispanic Natives	Non-Hispanic Natives
Very well	103	398	502	542	6,234
Well	157	182	340	91	475
Not well	132	40	173	16	29
Not at all	58	5	63	2	1
Total*	450	626	1,079	651	6,740

Source: CIS analysis of the PIAAC Literacy Test.

* Includes three people with missing English self-assessment.

Immigrants are foreign-born; natives are U.S.-born.

Bolded figures indicate the sample size is too small for meaningful analysis.

End Notes

¹ One reference person answers for everyone in the household, so the actual text of the question (“How well does this person speak English?”) could refer to the reference person’s husband, sister, son, etc.

² See, for example, Dylan Matthews, [“Hispanic Immigrants Are Assimilating Just As Quickly As Earlier Groups”](#), *The Washington Post*, January 28, 2013.

³ Bobby D. Rampey, Robert Finnegan, Madeline Goodman, Leyla Mohadjer, Tom Krenzke, Jacquie Hogan, Stephen Provasnik, and Holly Xie, [“Skills of U.S. Unemployed, Young, and Older Adults in Sharper Focus: Results From the Program for the International Assessment of Adult Competencies \(PIAAC\) 2012/2014”](#), National Center for Education Statistics, March 2016, p. C-2.

⁴ About 2 percent of the initial sample had to be excluded from the test because of a language or cognitive handicap that prevented them from communicating their age, gender, education level, etc. (See Rampey *et al.*, p. C-2.) The small language-based exclusion means the test probably overstates immigrant literacy to some degree. However, immigrants in the PIAAC share a very similar demographic profile with immigrants in the ACS, suggesting that the overstatement is small. (See Batalova and Fix, pp. 24-25.) Furthermore, the exclusion is bound to be concentrated among immigrants who would respond “not at all” to the question about how well they speak English. Results for Spanish-speaking immigrants (who can use the Spanish questionnaire) and for any respondents who claim at least some English ability are likely unaffected.

⁵ Rampey *et al.*, p. 2. Oxford commas added for clarity.

⁶ Jeanne Batalova and Michael Fix, [“Through an Immigrant Lens: PIAAC Assessment of the Competencies of Adults in the United States”](#), Migration Policy Institute, February 2015.

⁷ PIAAC offers no simple labels for the five skill levels it identifies. This report’s use of the label “below basic” for the lowest level follows from MPI’s nomenclature. MPI describes Level 3 and up as “proficient”, Level 2 as “basic”, and below Level 2 as “low”.

⁸ David Mallows and Jennifer Litster, [“Literacy as Supply and Demand”](#), *ZfW*, Vol. 39, No. 2 (September 2016), pp. 171-182.

⁹ For a critique of functional illiteracy as a dichotomous category, see Bryan Maddux and Lucio Esposito, [“Sufficiency Re-examined: A Capabilities Perspective on the Assessment of Functional Adult Literacy”](#), *The Journal of Development Studies*, Vol. 47, No. 9 (2011), pp. 1315-1331.

¹⁰ In this report, the effect size is the difference between immigrant and native scores divided by the standard deviation of the *native* group, not by a pooled standard deviation. This effect size calculation is sometimes referred to as Glass’s delta, and it is useful when the population standard deviations of the two groups appear to be substantially different.

¹¹ With a standard normal (bell-shaped) distribution, there is a direct link between percentiles and score differences expressed in SDs. For example, scoring 0.2 SDs above the mean has the effect of moving from the 50th percentile to the 58th percentile, while a score of one SD above the mean moves a person to the 84th percentile. The distribution of PIAAC literacy scores is not perfectly bell-shaped, however, as some very low scores pull the mean below the median. Consequently, the percentiles listed in the results section are typically one to two percentile points different from what the SDs would imply in a standard normal distribution.

¹² See Batalova and Fix, p. 12, for a similar discussion of this point.

¹³ Third-plus generation data can be difficult to interpret due to “ethnic attrition”, which is the tendency for people of Latin American descent to cease identifying as Hispanic in later generations. For a discussion of Hispanic intergenerational progress, see Jason Richwine, [“Are Low-Skill Immigrants Upwardly Mobile?”](#), Real Clear Policy, July 8, 2015.