

What Do Adult Literacy Assessments Actually Measure?

Examining the Gap Between Public Claims and Test Content

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Abstract

Claims that large fractions of American adults are “illiterate” or read “at a sixth-grade level” are commonplace in public discourse. These claims typically derive from national and international assessments such as the National Adult Literacy Survey (NALS), the National Assessment of Adult Literacy (NAAL), and the Programme for the International Assessment of Adult Competencies (PIAAC). This report examines what these assessments actually measure by cataloging their released test items, analyzing the cognitive demands of questions at each difficulty level, and comparing the skills tested to popular conceptions of “literacy.” The analysis reveals that low-scoring items predominantly require multi-step inference, document navigation, and quantitative reasoning—skills that extend well beyond basic reading ability. The gap between what assessments measure and how results are reported in public discourse has significant implications for how we understand and address adult skill deficits.

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1 Introduction

A widely circulated statistic holds that 130 million American adults—54% of those aged 16 to 74—“lack proficiency in literacy, essentially reading below the equivalent of a sixth-grade level.” This figure originates from a Gallup analysis of PIAAC data commissioned by the Barbara Bush Foundation for Family Literacy (Gallup, 2020) and has been reproduced by ProLiteracy, the National Literacy Institute, and numerous news outlets. The “sixth-grade level” characterization proved so dubious that the APM Research Lab, after initially reporting it, retracted the claim, finding no valid basis for equating PIAAC proficiency levels with school grade levels (APM Research Lab, 2020). Variations of this claim nonetheless appear frequently in public discourse: that “21% of Americans are illiterate,” that “half of Americans can’t read a book written at an eighth-grade level,” or simply that American adult literacy is in crisis.

These claims are not fabricated from nothing. They derive from real assessments conducted by serious institutions: the U.S. Department of Education’s National Center for Education Statistics (NCES) and the Organisation for Economic Co-operation and Development (OECD). But between the assessment results and the public interpretation lies a substantial gap—one that this report aims to make visible.

The central argument is straightforward: **the assessments that produce these statistics do not primarily measure what most people mean by “literacy.”** When a layperson hears that someone is “illiterate” or “reads at a sixth-grade level,” they imagine a person who struggles to decode written words—who cannot read a street sign, a medicine label, or a simple paragraph. But the assessments in question—NALS (1992), NAAL (2003), and PIAAC (2012–2023)—test a much broader range of skills. Their items require respondents to make multi-step inferences from dense texts, navigate complex document structures like tables and forms, perform arithmetic using numbers embedded in printed materials, synthesize information across multiple sources, and evaluate arguments.

A person who scores at the lowest proficiency level on these assessments is not necessarily someone who “can’t read.” They may be someone who can read a paragraph perfectly well but struggles to locate a specific number in a complex table, calculate a percentage from a billing statement, or infer the main purpose of a lengthy magazine article. These are real skill deficits with real consequences—but they are not “illiteracy” in the sense that most people understand the term.

This report pursues data transparency on this question. It provides:

1. A **timeline of major literacy studies** with their topline results and an explanation of what those results actually mean (Section 2).

2. An **inventory of released assessment items** with their success rates, identifying which datasets offer the kind of question-level data needed to evaluate these claims (Section 3).
3. A **showcase of actual test questions** organized by difficulty tier, from items that 90% of adults answer correctly down to items that fewer than 20% get right (Section 4).
4. A **taxonomy of cognitive demands** mapping each item to the specific skills it requires, demonstrating that the hardest items test reasoning far beyond basic reading (Section 5).

The goal is to allow readers to look at the actual questions behind the statistics and judge for themselves what it means when someone scores at “Level 1” or “Below Basic.”

2 Timeline of Major Adult Literacy Studies

2.1 The Young Adult Literacy Survey (1985) and National Adult Literacy Survey (1992)

The modern era of adult literacy assessment in the United States began with the Young Adult Literacy Survey (YALS) in 1985, which tested Americans aged 21–25 and introduced the framework of measuring literacy through tasks performed on real-world materials rather than through reading comprehension tests or self-reports (Kirsch, 2001).

The **National Adult Literacy Survey (NALS)** of 1992 was the first comprehensive national assessment. Conducted by NCES with a sample of approximately 26,000 adults aged 16 and older, it measured literacy across three domains (Kirsch et al., 1993):

- **Prose literacy:** searching, comprehending, and using information from continuous texts (articles, stories, poems).
- **Document literacy:** searching, comprehending, and using information from non-continuous texts (forms, tables, charts, maps).
- **Quantitative literacy:** identifying and performing computations using numbers embedded in printed materials.

Results were reported on a 0–500 scale divided into five proficiency levels. The headline finding that generated widespread concern: roughly 21–23% of American adults scored at Level 1, the lowest proficiency level. This was widely reported as meaning that one in five Americans was “functionally illiterate”—a characterization that, as we shall see, substantially overstates what Level 1 performance actually implies.

The NALS report (Kirsch et al., 1993) published difficulty values for dozens of sample tasks, providing a vivid picture of the full difficulty spectrum. Table 1 presents a selection spanning the range from the easiest to the hardest items:

Table 1: Selected NALS 1992 tasks by difficulty value (0–500 scale), illustrating the range from basic decoding to advanced analytical reasoning

Difficulty	Level	Domain	Task Description
69	1	Document	Sign your name
149	1	Prose	Identify country in short article
191	1	Quantitative	Total a bank deposit entry
214	1	Document	Using pie graph, locate vehicle type with specific sales
246	2	Quantitative	Determine difference in price between tickets for two shows
275	2	Prose	Interpret instructions from an appliance warranty
280	3	Prose	Write a brief letter explaining error on a credit card bill
308	3	Quantitative	Using calculator, determine discount from oil bill if paid within 10 days
314	3	Document	Use bus schedule to determine appropriate bus for given conditions
347	4	Prose	Explain difference between two types of employee benefits
359	4	Prose	Contrast views in two editorials on fuel-efficient car technologies
382	5	Quantitative	Determine individual and total costs on an order form for catalog items
396	5	Document	Using survey table, write a paragraph summarizing extent of parent–teacher agreement
423	5	Prose	Interpret a brief phrase from a lengthy news article

The spectrum is instructive. At the bottom (difficulty 69), the task is literally signing one’s name. At difficulty 191, it is totaling a bank deposit. These are the tasks that adults at Level 1 can perform—and they are clearly “literate” activities, even if simple. By contrast, tasks at difficulty 350+ require contrasting editorial viewpoints, calculating complex order totals, and interpreting figurative language—skills that go well beyond what anyone would call “basic reading.” The entire range from 69 to 423 is collapsed into a single “literacy” score.

2.2 The National Assessment of Adult Literacy (2003)

The **National Assessment of Adult Literacy (NAAL)**, administered in 2003 to a nationally representative sample of 19,714 adults, was the successor to NALS. It retained the three-domain structure (prose, document, quantitative) but reorganized the proficiency scale into four levels: Below Basic, Basic, Intermediate, and Proficient (Kutner et al., 2005).

The 2003 results are shown in Table 2 and Figure 1 (Kutner et al., 2005):

Table 2: Percentage of U.S. adults at each NAAL proficiency level, 2003

Domain	Below Basic	Basic	Intermediate	Proficient
Prose	14%	29%	44%	13%
Document	12%	22%	53%	13%
Quantitative	22%	33%	33%	13%

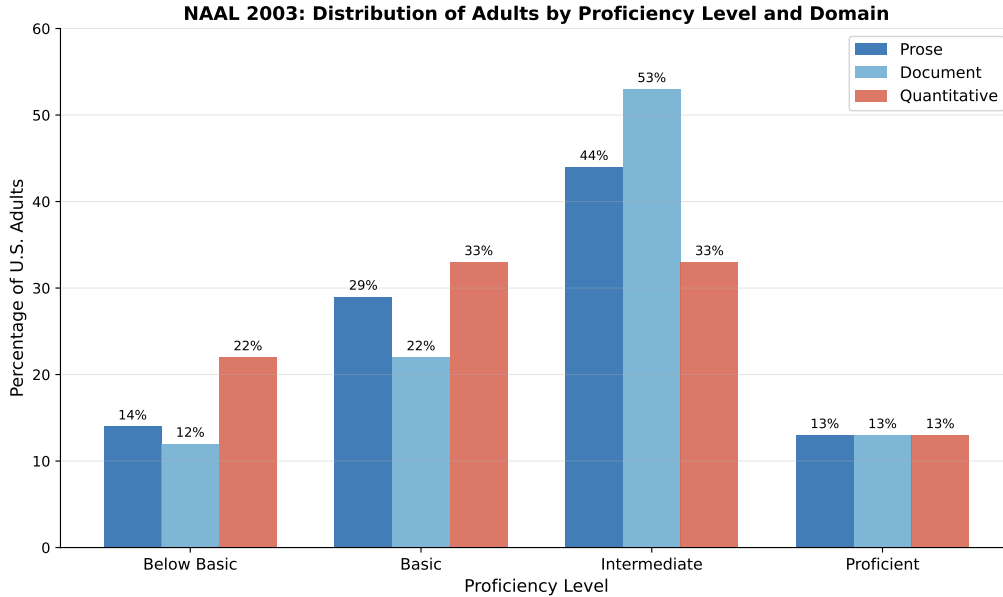


Figure 1: Distribution of U.S. adults across NAAL proficiency levels by domain, 2003. Note the substantially higher percentage at Below Basic in the quantitative domain compared to prose and document.

Several features of these results are worth noting. First, the quantitative domain shows substantially more adults at Below Basic (22%) than prose (14%) or document (12%), suggesting that numerical reasoning—not reading per se—is the area of greatest difficulty. Second, a combined 57% of adults scored at Intermediate or Proficient in prose literacy, meaning that a clear majority demonstrated the ability to perform “moderately challenging literacy activities” including making simple inferences and determining cause and effect (White and Dillow, 2005).

An additional 3% of the adult population (about 11 million people in 2003) could not be tested at all: 2% could not communicate in English or Spanish, and 1% had cognitive or mental disabilities that precluded participation. These individuals were classified separately from the proficiency-level results.

The assessment consisted of 152 prose, document, and quantitative literacy tasks drawn from real-world materials. Sixty-five tasks were carried over from the 1992 NALS to

enable trend comparisons, and 87 were newly developed for 2003 (Kutner et al., 2005).

2.3 PIAAC Cycle 1: The Survey of Adult Skills (2012)

The **Programme for the International Assessment of Adult Competencies (PIAAC)**, developed by the OECD, represented a shift to an international framework. The first cycle collected data in 2011–12 across 24 countries, with additional rounds in 2014–15 (including the U.S.) and 2017–18, ultimately covering 39 countries and regions (OECD, 2013a).

PIAAC assessed literacy, numeracy, and problem-solving in technology-rich environments. It defined literacy as “understanding, evaluating, using, and engaging with written texts in order to participate in society, to achieve one’s goals, and to develop one’s knowledge and potential” (OECD, 2013b)—a definition that explicitly includes evaluation and engagement, not merely decoding.

Results were reported on a 0–500 scale with six proficiency levels (Below Level 1 through Level 5). The U.S. results from Cycle 1 showed a mean literacy score of 270 (compared to an OECD average of 273), with approximately 18% of adults at or below Level 1 (OECD, 2013a).

2.4 PIAAC Cycle 2 and Recent Updates (2017–2023)

PIAAC Cycle 2 collected data in 2022–23 across 31 countries, using a tablet-based assessment with adaptive testing. It assessed literacy, numeracy, and a new domain: adaptive problem solving (OECD, 2024).

The U.S. results from 2023 showed significant declines (Figure 2):

Table 3: U.S. PIAAC results: 2012/2017 vs. 2023 (adults aged 16–65)

Metric	2012	2017	2023
Mean literacy score	270	268	262
% at Level 1 or below	~18%	19%	28%
% at Level 3 or above	~48%	—	44%
Mean numeracy score	253	256	250
% at Level 1 or below (numeracy)	—	—	34%

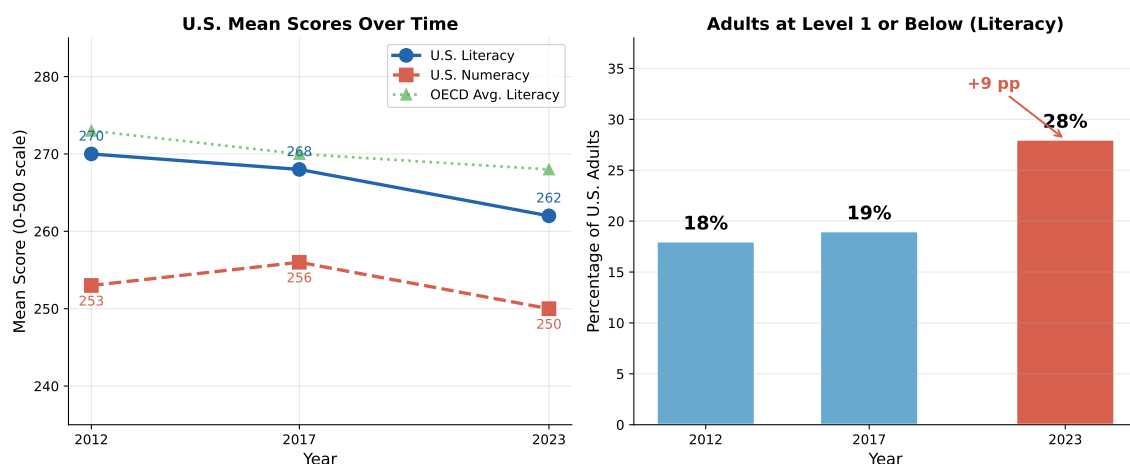


Figure 2: U.S. PIAAC trends, 2012–2023. Left: mean scores declining in both literacy and numeracy. Right: sharp increase in the percentage of adults at Level 1 or below.

The increase from 19% to 28% of adults at Level 1 or below in literacy between 2017 and 2023—representing roughly 59 million adults—generated a new wave of alarming headlines about American “illiteracy.” But as with earlier assessments, the question is what Level 1 performance actually means in terms of what a person can and cannot do.

2.5 NAEP Reading and the “Grade Level” Concept

The claim that adults “read at a sixth-grade level” often conflates adult literacy assessments with the National Assessment of Educational Progress (NAEP), which tests K–12 students. NAEP reports the percentage of students at each grade who score at Below Basic, Basic, Proficient, and Advanced levels ([National Assessment Governing Board, 2019](#)).

In 2022, only 33% of fourth-graders and 31% of eighth-graders scored at or above “Proficient” on the NAEP reading assessment ([National Center for Education Statistics, 2022](#)). These numbers are sometimes misinterpreted to mean that two-thirds of students “can’t read at grade level.” But NAEP’s “Proficient” level has been widely criticized as an unrealistically high benchmark. Tom Loveless of the Brookings Institution has called this “The NAEP Proficiency Myth,” arguing that Proficient represents an aspirational standard roughly equivalent to an A grade, not a minimum competency threshold ([Loveless, 2016](#)). The National Academy of Sciences found the NAEP achievement levels to be “fundamentally flawed” in their standard-setting methodology and recommended they be used with caution ([National Academy of Sciences, 1999](#)). The “Basic” level, which an additional 30–35% of students reach, represents “partial mastery of fundamental skills” and is a more reasonable benchmark for grade-level competence.

The adult literacy assessments (NALS, NAAL, PIAAC) use entirely different scales and

frameworks from NAEP, and there is no direct equivalence between a PIAAC proficiency level and a school grade level. The “sixth-grade reading level” characterization appears to originate from informal mappings of PIAAC Level 1 task demands to readability scales—but these mappings conflate the reading level of the *stimulus text* with the cognitive demands of the *task*, which typically go far beyond simply reading the text.

2.6 Summary Timeline

Table 4: Timeline of major U.S. adult literacy assessments

Year	Assessment	Sample	Key Finding
1985	YALS	~3,600	First task-based literacy assessment of young adults
1992	NALS	~26,000	21–23% at Level 1 across three domains
2003	NAAL	19,714	14% Below Basic (prose), 22% Below Basic (quantitative)
2012	PIAAC Cycle 1	~5,000 (US)	U.S. mean literacy 270; 18% at or below Level 1
2017	PIAAC Cycle 1 R3	~3,700 (US)	19% at or below Level 1 in literacy
2023	PIAAC Cycle 2	—	U.S. mean literacy 262; 28% at or below Level 1

3 Data and Methodology

3.1 Assessment Framework Comparison

Table 5 compares the major assessments across key dimensions.

Table 5: Comparison of major adult literacy assessment frameworks

Feature	NALS/NAAL	PIAAC Cycle 1	PIAAC Cycle 2
Domains	Prose, Document, Quantitative	Literacy, Numeracy, Problem-solving in TRE	Literacy, Numeracy, Adaptive Problem Solving
Scale	0–500	0–500	0–500
Levels	5 (NALS) / 4 (NAAL)	6 (Below 1 through 5)	6 (Below 1 through 5)
Format	Paper-based, open-ended	Computer-based (paper option)	Tablet-based, adaptive
Task types	Locate, integrate, generate	Access, integrate, evaluate	Access, understand, evaluate
Definition of literacy	“Using printed and written information to function in society”	“Understanding, evaluating, using, and engaging with written texts”	“Accessing, understanding, evaluating and reflecting on written texts”

A crucial observation: each successive assessment has *broadened* the definition of literacy.

NALS defined literacy as “using printed and written information to function in society.” PIAAC Cycle 2 defines it as “accessing, understanding, evaluating and reflecting on written texts.” The addition of “evaluating” and “reflecting” means that higher-level items test critical thinking about texts—a skill far removed from what most people mean by “reading.”

3.2 Released Item Inventory

The ability to evaluate what these assessments actually measure depends on access to released test items with performance data. Table 6 summarizes the publicly available items.

Table 6: Inventory of publicly released assessment items

Assessment	Items Released	% Correct Data	Source
NAAL (2003)	7+ sample items	Yes (by level)	NCES 2006-470 “A First Look”
NALS (1992)	48+ tasks with difficulty values	Difficulty values (0–500)	Kirsch et al. 1993 report
PIAAC Cycle 1	12 literacy items	Proficiency levels	OECD sample items document
PIAAC Cycle 2	5 literacy items	Difficulty est. only	OECD released items (2024)
NAEP Reading	Hundreds	Yes	NAEP Questions Tool

The NAAL “A First Look” report (Kutner et al., 2005) is the single richest source: it provides verbatim sample questions with the actual stimulus materials, the correct answer, and the percentage of adults who answered correctly—broken down by all four proficiency levels. This level of transparency is unusual and invaluable for our purposes.

The PIAAC released items include detailed descriptions of the cognitive processes involved and estimated difficulty levels, but do not report percent-correct data from the actual assessment. The NAEP Questions Tool provides the largest pool of released items with percent-correct data, but these are for K–12 students rather than adults.

3.3 Classification Methodology

For the question showcase in Section 4, items are organized by the percentage of adults who answered correctly, creating difficulty tiers:

- **High success (75–90%+ correct):** Items most adults can answer.
- **Moderate success (50–75% correct):** Items roughly half of adults can answer.
- **Low success (30–50% correct):** Items that fewer than half but more than a third of adults can answer.
- **Very low success (<30% correct):** Items that most adults get wrong.

For each item, we identify the primary cognitive demands using a taxonomy of skills described in Section 5. The key question for each item is: *what skills beyond basic reading does this item require?*

4 Question Showcase: What the Tests Actually Ask

Figure 3 provides an overview of all released NAAL items organized by success rate and colored by the primary cognitive demand each item tests.

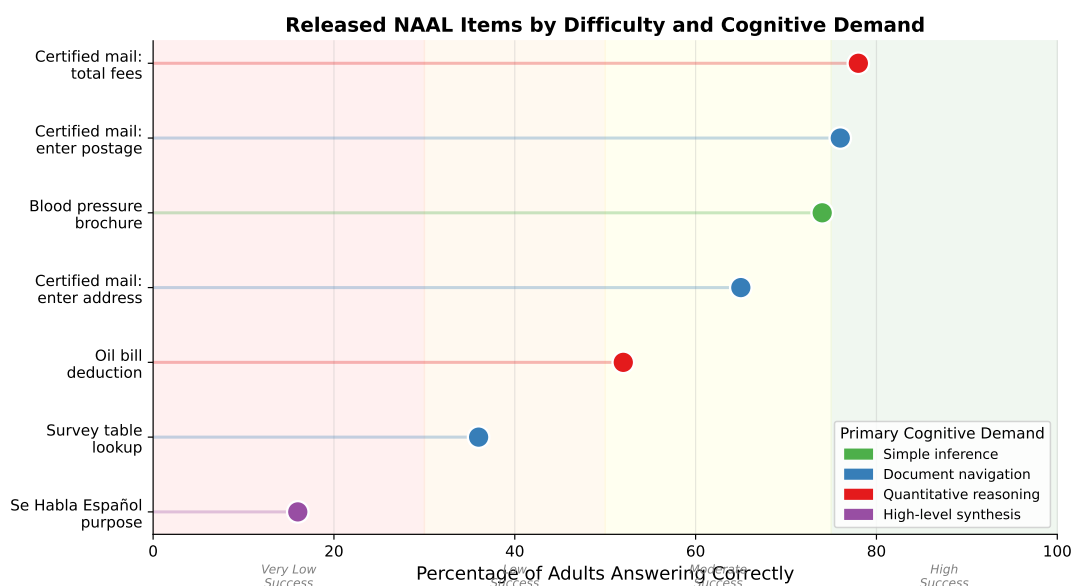


Figure 3: Released NAAL items plotted by percentage of adults answering correctly, colored by primary cognitive demand. As success rates decrease, the dominant skill shifts from simple inference to document navigation, quantitative reasoning, and high-level synthesis.

This section presents actual released items from the NAAL and PIAAC assessments, organized by difficulty. For NAAL items, the percentage of adults answering correctly is reported directly from the assessment data (Kutner et al., 2005). For PIAAC items, estimated difficulty levels are reported from the released items documentation.

4.1 High Success Items (75%+ Correct)

NAAL Quantitative Item: Certified Mail Form (78% correct)

Stimulus: A U.S. Postal Service certified mail form (PS Form 3800), along with instructions about how to use certified mail and a fee schedule.

Task: Given that the postage for a package is \$1.86 and the fee for certified mail is \$0.75, the respondent must enter these amounts on the correct lines of the form and calculate the total postage and fees (\$2.61).

Correct answer: \$2.61 on the “TOTAL Postage and Fees” line.

Results: 78% of all adults answered correctly. By proficiency level: Below Basic 33%, Basic 88%, Intermediate 96%, Proficient 99%.

This item requires locating the correct lines on a real postal form, transferring numbers from the instructions to the form, and performing simple addition ($\$1.86 + \0.75). Despite being one of the easier items, one-third of adults need to navigate the form layout and perform the arithmetic. It is notable that only 33% of Below Basic adults could complete this task, even though the “reading” component is minimal—the challenge lies in document navigation and arithmetic.

NAAL Document Item: Certified Mail Form—Enter Postage (76% correct)

Stimulus: Same certified mail form as above.

Task: Enter \$1.86 on the “Postage” line and \$0.75 on the “Certified Fee” line.

Correct answer: Correct placement of amounts on the appropriate form lines.

Results: 76% of all adults answered correctly. By level: Below Basic 13%, Basic 73%, Intermediate 96%, Proficient 100%.

This item tests pure document navigation—the respondent must locate the correct fields on a form and transcribe information. No reading comprehension or inference is required; the difficulty lies entirely in navigating the form layout. Yet only 13% of Below Basic adults succeeded.

NAAL Prose Item: High Blood Pressure Brochure (74% correct)

Stimulus: A brochure titled “Too Many Black Adults Die from the Effects of High Blood Pressure” with two sections: “Did You Know?” (facts about high blood pressure in the Black community) and “What You Can Do” (recommendations for blood pressure checks and medical compliance).

Task: “According to the brochure, why is it difficult for people to know if they have high blood pressure?”

Correct answer: Any statement indicating that symptoms are not usually present or that high blood pressure is silent.

Results: 74% of all adults answered correctly. By level: Below Basic 11%, Basic 70%, Intermediate 96%, Proficient 100%.

This is the prose item that most closely resembles what people think of as a “reading comprehension” question. The answer is stated explicitly in the brochure: “symptoms usually are not present.” But it requires the respondent to read a multi-paragraph brochure, locate the relevant sentence, and paraphrase the answer—a step beyond simply decoding words. Even so, 74% of adults succeeded, while only 11% of Below Basic adults could do so.

4.2 Moderate Success Items (50–75% Correct)

NAAL Document Item: Enter Name and Address on Form (65% correct)

Stimulus: Same certified mail form.

Task: “You are sending a package to Doris Carter. Her address is 19 Main Street, Augusta, GA 30901.” Enter the name and address on the form.

Correct answer: Name and address entered correctly on the “Sent to” and “Street and No.” lines. No penalty for misspelling.

Results: 65% of all adults answered correctly. By level: Below Basic 8%, Basic 54%, Intermediate 86%, Proficient 97%.

This item tests the ability to fill out a real form correctly—something most people do routinely in daily life. The “reading” component is minimal: the task is clearly stated, and the form labels are straightforward. Yet 35% of adults did not complete it correctly, and only 8% of Below Basic adults succeeded. The difficulty appears to lie in the form navigation itself, not in reading.

NAAL Quantitative Item: Oil Bill Deduction (52% correct)

Stimulus: A home heating oil delivery bill from Ashland Oil, Inc. showing a delivery of 140.0 gallons of fuel oil at \$97.9 (per hundred gallons), with a note: “SAVE if no outstanding balance due and you pay within 10 days. DEDUCT \$.05 per gal.”

Task: “Suppose that you had your oil tank filled with 140.0 gallons of oil, as indicated on the bill, and you wanted to take advantage of the five cents (\$.05) per gallon deduction. Figure out how much the deduction would be if you paid the bill within 10 days.”

Correct answer: \$7.00 ($140 \times \0.05).

Results: 52% of all adults answered correctly. By level: Below Basic 1%, Basic 40%, Intermediate 92%, Proficient 100%.

This is a revealing item. The “reading” component is modest: the respondent must locate the gallon amount and the per-gallon deduction on the bill. But the core challenge is *arithmetic*: multiplying 140 by 0.05. Nearly half of American adults could not perform this calculation in context. Only 1% of Below Basic adults answered correctly—yet their inability to do mental multiplication does not make them “illiterate” in any meaningful sense of the word.

4.3 Low Success Items (30–50% Correct)

NAAL Document Item: Survey Table Lookup (36% correct)

Stimulus: A table from “The Metropolitan Life Survey of the American Teacher, 1987” showing the percentage of parents and teachers who agree or disagree with various statements about parental involvement in schools. The table has rows for different statements and columns for Total, Elementary, Junior High, and High School.

Task: “Seventy-eight percent of what specific group agree that their school does a good job of encouraging parental involvement in educational areas?”

Correct answer: Junior high teachers.

Results: 36% of all adults answered correctly. By level: Below Basic ~0%, Basic 4%, Intermediate 47%, Proficient 98%.

This item perfectly illustrates the mismatch between “literacy” and the skills actually tested. The task requires:

1. Reading and understanding the question (basic literacy).
2. Navigating a multi-row, multi-column table to find the cell containing “78” (document navigation).

3. Tracing that cell back to its row and column headers to identify “Junior high teachers” (cross-referencing).

The text itself is simple. What makes the item difficult is the table navigation—a skill quite distinct from reading. Only 4% of Basic-level adults could answer correctly, and essentially no Below Basic adults could do so. This item, at 36% correct, drives a significant portion of the “low literacy” statistics. But a person who cannot find a specific number in a complex table is not “illiterate”—they lack a specific document navigation skill.

4.4 Very Low Success Items (<30% Correct)

NAAL Prose Item: Purpose of the Se Habla Español Expo (16% correct)

Stimulus: A full-page article from *Hispanic Business Magazine* titled “Se Habla Español Hits Chicago,” describing an annual Hispanic market trade show. The article is dense, spanning multiple columns, with extensive detail about marketing to the Hispanic community, specific companies involved, scholarship funds, and awards ceremonies.

Task: “What is the purpose of the *Se Habla Español* expo?”

Correct answer: Any statement such as: to enable people to better serve and sell to the Hispanic community; to improve marketing strategies to the Hispanic community; to enable people to establish contacts to serve the Hispanic community.

Results: 16% of all adults answered correctly. By level: Below Basic ~0%, Basic 3%, Intermediate 16%, Proficient 60%.

This is the most difficult released NAAL item, and it is worth examining carefully. The article never states the expo’s purpose in a single sentence. Instead, the purpose must be *inferred* from the totality of the article: descriptions of seminars on Hispanic marketing, companies displaying products, Mr. Martinez’s stated mission to “make sure companies learn how they can serve and sell to America’s Hispanics,” and the conference’s focus on business contacts.

The cognitive demands include:

- Reading a lengthy, dense, multi-column article (sustained reading).
- Synthesizing information across multiple paragraphs (integration).
- Inferring the overarching purpose from specific details (high-level inference).
- Formulating and writing a coherent answer (production).

Only 16% of all adults and only 60% of *Proficient*-level adults could answer this question

correctly. Even among the most skilled adults, four in ten failed. This is not a test of basic literacy—it is a test of analytical reading and synthesis that would challenge many college graduates. Yet when this item drives down average scores, the result is reported as evidence that Americans “can’t read.”

4.5 Cross-Assessment Comparison: PIAAC Released Items

The PIAAC Cycle 2 released items (OECD, 2024) provide a useful comparison, as they include explicit descriptions of the cognitive processes involved:

Table 7: PIAAC Cycle 2 released literacy items with cognitive classifications

Item	Task	Cognitive Process	Source Type	Difficulty
Preschool Rules 1	“What is the latest time children should arrive?”	Accessing text	Single	Low
Preschool Rules 2	“Which rule is temporarily ignored for Sharing Day?” (requires reading email + rules list)	Understanding	Multiple	Moderate
Bread Item 1	“At what moisture level do crackers become soft?”	Accessing text	Single	Low
Bread Item 2	Classify statements as true for bread, crackers, or both	Understanding	Single	Mod–High
Bread Item 3	Rank storage methods by freshness (requires inference about temperature)	Understanding	Single	Mod–High

The progression from easy to hard items within PIAAC reveals the same pattern as NAAL. The easiest items (Preschool Rules 1, Bread Item 1) require locating explicitly stated information in a short text—genuine basic literacy tasks. The harder items require:

- **Integration across multiple texts:** Preschool Rules Item 2 requires the respondent to read an email about “Sharing Day” (where children bring a stuffed animal) and then identify which preschool rule is temporarily suspended. The respondent must infer that “stuffed animal” counts as a “toy” and therefore the rule “Please leave toys at home” is the one being waived. This requires cross-text inference and semantic mapping.
- **Scientific reasoning:** Bread Item 3 asks respondents to rank storage methods

(freezer, room temperature, refrigerator) by how well they keep bread fresh. The article discusses retrogradation occurring “more quickly at moderately cold temperatures (around 5°C)” and being delayed by “very cold temperatures (around –20°C).” The respondent must map these temperatures to storage locations and reason about the relative positions, concluding that the *refrigerator* (moderately cold) is actually the *worst* place to store bread—a counterintuitive result requiring genuine scientific reasoning.

The PIAAC Cycle 1 released items (OECD, 2013a) offer additional examples that span the full proficiency range and further illustrate the escalation from basic lookup to complex evaluation:

Table 8: Selected PIAAC Cycle 1 released literacy items spanning the proficiency scale

Item	Level	Task	Key Skill
Election Results	Below 1	Compare three numbers in a simple table to identify which candidate received the fewest votes	Number comparison
Generic Medicine (lookup)	1	Count countries in a table where generic drugs represent 10%+ of sales	Table scanning
Lakeside Fun Run (contact)	2	Identify which website link leads to the organizers’ phone number	Web navigation
Library Search (author)	3	Find the author of a specific book across multiple pages of bibliographic results	Multi-page navigation
Library Search (anti-GMO)	4	Identify two books arguing against genetically modified foods from 10 entries	Evaluate & compare
Library Search (least useful)	5	Determine which of 10 books is <i>least</i> useful for GMO research (negative evaluation)	Evaluative reasoning

The Level 5 item is especially revealing: it asks respondents to evaluate which book is *least* relevant to a topic. The negative phrasing (“least useful”) is more cognitively demanding than affirmative queries; the correct answer is located at the end of the second page; and the task requires evaluating the relevance of all ten entries, not merely finding one match. This is a sophisticated information literacy task that would challenge librarians and graduate students—yet it contributes to the same “literacy” score as the Below Level 1 task of comparing three numbers.

5 A Taxonomy of Cognitive Demands

5.1 Skill Categories

Based on the analysis of released items from NAAL and PIAAC, we can identify seven distinct categories of cognitive demands that these assessments test, arranged roughly from simplest to most complex:

1. **Decoding and word recognition:** The ability to read words and sentences—what most people mean by “literacy.” Tested only at the very lowest levels (PIAAC Below Level 1, NAAL screening items).
2. **Locating explicit information:** Finding a specific fact stated directly in a text. Requires scanning and matching, but no inference. (Example: Preschool Rules Item 1—find the arrival time in a list of rules.)
3. **Document navigation:** Locating information in structured documents—tables, forms, charts, schedules. Requires understanding spatial layout and cross-referencing rows and columns. (Example: NAAL survey table lookup—find which group corresponds to 78%.)
4. **Simple inference:** Drawing a conclusion not explicitly stated but directly implied by a single passage. (Example: Blood pressure brochure—infer from “symptoms usually are not present” that it’s difficult to know you have it.)
5. **Quantitative reasoning:** Performing arithmetic using numbers found in printed materials. May involve multiplication, division, percentages, or multi-step calculations. (Example: Oil bill deduction—multiply $140 \times \$0.05$.)
6. **Cross-text integration:** Synthesizing information from multiple sources or multiple sections of a complex document. Requires holding multiple pieces of information in mind and identifying relationships. (Example: Preschool Rules Item 2—integrate email with rules list; Bread Item 2—classify statements across the full article.)
7. **High-level synthesis and evaluation:** Inferring the main purpose, argument, or theme of a lengthy text; comparing viewpoints; evaluating evidence. The most demanding category. (Example: Se Habla Español—infer the purpose of an expo from a dense magazine article.)

5.2 Mapping Items to Cognitive Demands

Table 9 maps each showcased item to its primary and secondary cognitive demands, revealing the pattern: as success rates decrease, the dominant skills shift away from basic reading toward document navigation, quantitative reasoning, and higher-order inference.

Table 9: Released items mapped to cognitive demand categories

Item	% Correct	Primary Demand	Secondary Demand
Certified mail: total fees	78%	Quantitative reasoning	Document navigation
Certified mail: enter postage	76%	Document navigation	—
Blood pressure brochure	74%	Simple inference	Locating information
Certified mail: enter address	65%	Document navigation	—
Oil bill deduction	52%	Quantitative reasoning	Locating information
Survey table lookup	36%	Document navigation	Cross-referencing
Se Habla Español purpose	16%	High-level synthesis	Cross-text integration

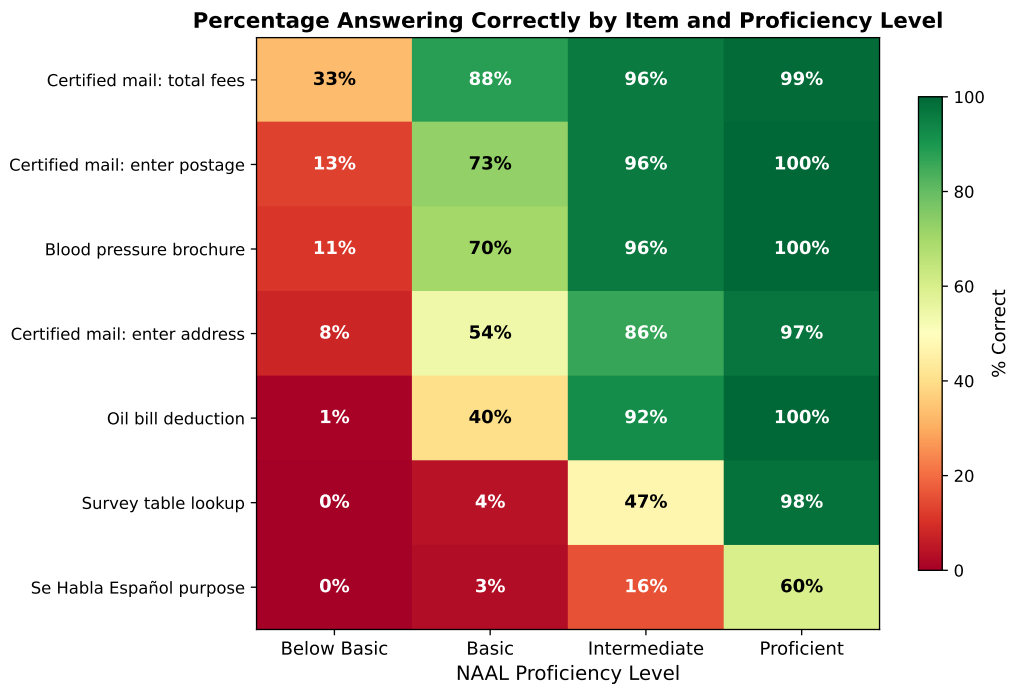


Figure 4: Percentage of adults answering each released item correctly, broken down by NAAL proficiency level. The dramatic gradient from Below Basic (left) to Proficient (right) is visible across all items, but the most striking pattern is the near-zero success rates for Below Basic adults on the harder items—items that test document navigation and synthesis, not reading.

The pattern is striking: **not a single one of the hardest items primarily tests basic reading ability.** The items that drive down American adults’ literacy scores are tests of document navigation (finding a number in a complex table), quantitative reasoning

(multiplying decimals), and analytical synthesis (inferring the purpose of a magazine article). These are all valuable skills. But calling their absence “illiteracy” is like calling someone who can’t solve a Sudoku puzzle “innumerate”—it conflates a specific skill deficit with a fundamental inability.

5.3 What “Level 1” Actually Means

Given this analysis, what can a person at the lowest proficiency level actually do?

NAAL Below Basic (14% of adults in prose): These adults can locate easily identifiable information in short, commonplace prose texts. Sample tasks at this level include searching a short text to find out what a patient is allowed to drink before a medical test, and signing a form (White and Dillow, 2005). They *cannot* reliably make inferences, navigate complex documents, or perform multi-step calculations—but they can read and understand simple texts.

PIAAC Level 1 (part of the 28% at Level 1 or below in 2023): These adults can “locate information on a text page, find a relevant link from a website,” and “identify relevant text among multiple options when information is explicitly cued.” They understand the meaning of short texts and list organization. They struggle with paraphrasing, making inferences, or navigating multi-page digital texts.

In both frameworks, Level 1 does *not* mean “cannot read.” It means “can read simple texts but struggles with complex tasks that require inference, document navigation, or quantitative reasoning.” The distinction matters enormously for public communication and policy.

6 Discussion

6.1 The Mismatch Between Measurement and Narrative

The preceding analysis reveals a systematic mismatch between what adult literacy assessments measure and how their results are communicated to the public. The assessments measure a broad construct that includes document navigation, quantitative reasoning, inference, integration, and evaluation. The public narrative reduces this to “literacy” or “reading ability,” invoking images of adults who cannot read a street sign or a medicine bottle.

This mismatch is not primarily the fault of the assessment developers, who are generally careful in their technical reports. The NAAL report explicitly states that Below Basic adults range from “nonliterate in English” to those who have “no more than the most

simple and concrete literacy skills” (Kutner et al., 2005). The PIAAC framework document carefully distinguishes between proficiency levels and describes what adults at each level can do, not just what they cannot do.

The problem arises in the translation layer: advocacy organizations, journalists, and social media users who take nuanced findings (“14% of adults scored Below Basic in prose literacy, meaning they cannot reliably make inferences from text”) and transform them into alarming simplicities (“14% of Americans are illiterate”). This is then further amplified when PIAAC’s broader “Level 1 or below” category (28% in 2023, which includes many adults who can read but struggle with complex tasks) is reported as showing that “nearly one-third of Americans can’t read.”

This concern is not new. Scholars have raised similar objections since the earliest large-scale assessments. Sticht (2001) argued that the International Adult Literacy Survey (IALS)—the precursor to PIAAC—overstated the “literacy” deficits of low-scoring adults because many items tested document interpretation and quantitative reasoning, not reading ability per se. Thomas (2001) similarly noted that the multidimensional construct measured by these assessments was routinely reduced to a single “literacy” label in public communication, distorting the findings. More recently, Reder (2020) has emphasized that adults at low proficiency levels are heterogeneous: some are genuinely non-literate, but many are immigrants who are literate in their native language, older adults with declining cognitive skills, or adults with specific deficits in numeracy or document navigation rather than reading.

6.2 What These Assessments Do and Do Not Tell Us

To be clear: the assessments reveal real and concerning skill deficits. The fact that only 52% of adults can calculate a simple discount from a bill, or that only 36% can look up a number in a table, has genuine implications for citizens’ ability to navigate healthcare forms, understand financial documents, and participate in civic life. These deficits deserve attention and resources.

What the assessments do *not* tell us is that large fractions of Americans “can’t read.” The released items demonstrate that:

- Items with high success rates (70–80%) test genuine reading comprehension of the kind most people associate with “literacy.”
- Items with moderate success rates (50–70%) predominantly test document navigation and basic arithmetic—skills that are important but distinct from reading.
- Items with low success rates (<40%) test complex inference, multi-source integration, and analytical reasoning—skills that many college-educated adults would

struggle with.

The assessments are better understood as measures of **functional information-processing skills** than of “literacy” in its everyday meaning.

6.3 Implications for Policy and Adult Education

If the problem were truly that 28% of Americans “can’t read,” the solution would be reading instruction—phonics, vocabulary, decoding practice. But the released items suggest that the actual skill deficits are more diverse:

- **Document literacy:** Many adults struggle with forms, tables, and structured documents. This suggests a need for training in document navigation, a skill rarely taught explicitly.
- **Quantitative reasoning:** The sharp drop in success rates on items requiring even simple arithmetic suggests widespread innumeracy, which is a different problem from illiteracy and requires different interventions.
- **Analytical reading:** The hardest items test the ability to synthesize information from complex texts—a skill developed through sustained reading practice and education, not through basic literacy instruction.

Framing all of these deficits as “illiteracy” risks misdirecting resources toward reading instruction for populations that can already read but need support with other information-processing skills.

6.4 Limitations

This analysis has several limitations:

- **Small sample of released items:** The NAAL and PIAAC assessments contain 152 and 80 items respectively, but only a handful are publicly released with performance data. The released items may not be representative of the full item pool.
- **No item-level percent-correct data for PIAAC:** The PIAAC released items include estimated difficulty levels but not the percentage of respondents who answered correctly, limiting direct comparisons with NAAL items.
- **IRT-based scoring:** Both NAAL and PIAAC use item response theory (IRT) to estimate proficiency, meaning that individual scores are based on performance patterns across many items, not on specific items. The percent-correct data for released items is illustrative but does not fully represent how proficiency is determined.

- **Real-world validity:** The released items may understate the real-world competence of low-scoring adults, who may perform better on familiar tasks in context than on unfamiliar tasks in a testing situation.

7 Conclusion

The claim that 54% of American adults “read below a sixth-grade level” or that 28% “lack basic literacy” derives from assessments that test far more than reading ability. The released items from NAAL and PIAAC demonstrate that the tasks driving down scores primarily involve document navigation, quantitative reasoning, multi-step inference, and analytical synthesis—cognitive skills that are important for functioning in modern society but fundamentally different from the ability to read.

A person who scores at NAAL Below Basic or PIAAC Level 1 is not “illiterate” in any colloquial sense. They can typically read and understand short, simple texts. What they struggle with are complex tasks: finding a specific number in a multi-column table, calculating a discount from a bill, or inferring the main purpose of a lengthy magazine article. These are real deficits that affect their daily lives, but they are not the same thing as being unable to read.

The data presented in this report—the actual test questions, the success rates, and the cognitive demands—should allow readers to make this judgment for themselves. When someone cites alarming literacy statistics, the response should be: “What questions were people asked, and what does getting them wrong actually mean?” The answer, more often than not, reveals a more nuanced picture than the headlines suggest.

References

- APM Research Lab (2020). Do half of all adults in the u.s. really read below a 6th-grade level? APM Research Lab. Fact-check; retracted original claim after finding no valid basis for the “sixth-grade level” equivalence.
- Gallup (2020). Adult literacy in the united states. Technical report, Barbara Bush Foundation for Family Literacy. Analysis of PIAAC data estimating 130 million U.S. adults below PIAAC Level 3.
- Kirsch, I. S. (2001). The international adult literacy survey (ials): Understanding what was measured. *ETS Research Report Series*, 2001(2):i–61.
- Kirsch, I. S., Jungeblut, A., Jenkins, L., and Kolstad, A. (1993). Adult literacy in america: A first look at the results of the national adult literacy survey. Technical Report NCES 1993-275, National Center for Education Statistics, Washington, DC.

- Kutner, M., Greenberg, E., Jin, Y., Paulsen, C., and White, S. (2005). A first look at the literacy of america’s adults in the 21st century. Technical Report NCES 2006-470, National Center for Education Statistics, Washington, DC.
- Loveless, T. (2016). *How Well Are American Students Learning?* Brown Center Report on American Education. Brookings Institution. Includes “The NAEP Proficiency Myth” arguing that NAEP Proficient is an aspirational standard, not a minimum competency benchmark.
- National Academy of Sciences (1999). Grading the nation’s report card: Evaluating naep and transforming the assessment of educational progress. Technical report, National Academies Press, Washington, DC. Found NAEP achievement levels “fundamentally flawed” and recommended they be used with caution.
- National Assessment Governing Board (2019). Reading framework for the 2019 national assessment of educational progress. Technical report, U.S. Department of Education, Washington, DC.
- National Center for Education Statistics (2022). Naep reading: National achievement-level results. Technical report, U.S. Department of Education, Washington, DC.
- OECD (2013a). *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*. OECD Publishing, Paris.
- OECD (2013b). *The Survey of Adult Skills: Reader’s Companion*. OECD Publishing, Paris, 1st edition.
- OECD (2024). *Survey of Adult Skills (PIAAC) 2023*. OECD Publishing, Paris.
- Reder, S. (2020). Adults who struggle with literacy and numeracy. *ETS Research Report Series*, 2020(1):1–38.
- Sticht, T. G. (2001). The international adult literacy survey: How well does it represent the literacy abilities of adults? *The Canadian Journal for the Study of Adult Education*, 15(2):19–36.
- Thomas, A. (2001). Dimensions of adult literacy assessment. In *Measuring Adult Literacy: The International Adult Literacy Survey in the European Context*. Office for Official Publications of the European Communities, Luxembourg.
- White, S. and Dillow, S. (2005). Key concepts and features of the 2003 national assessment of adult literacy. Technical Report NCES 2006-471, National Center for Education Statistics, Washington, DC.