

# What Does “Below Basic” Mean on NAEP Reading?

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The fourth-grade 2019 National Assessment of Educational Progress (NAEP) Reading assessment shows that 34% of the nation’s students perform below the *NAEP Basic* level. However, because there is no achievement-level description for below *Basic*, educators and policymakers lack information on the nature of the reading difficulties that these students face. To help fill this gap, we analyze data from the 2018 NAEP Oral Reading Fluency study. We find that, compared with students who perform at the *NAEP Basic* level and above, students who perform below *NAEP Basic* level are much more likely to have poor oral reading fluency and word reading skills.

**Keywords:** NAEP Reading; oral reading fluency; phonological decoding; secondary data analysis; word reading

The Grade 4 National Assessment of Educational Progress (NAEP) Reading test measures reading comprehension by asking students to read literary and informational text passages and answer questions based on what they have read. The results are reported as the percentage of students who attained the cut score for the *Basic*, *Proficient*, and *Advanced* levels. Each of the three performance levels is accompanied by a description of the cognitive skills expected at that level. Students performing at the *NAEP Basic* level should be able to “locate relevant information, make simple inferences, and use their understanding of the text to identify details that support a given interpretation or conclusion.” Descriptions for the higher achievement levels emphasize cognitive skills like making complex inferences and integrating, interpreting, and evaluating information from the text.<sup>1</sup>

The 2019 fourth-grade NAEP Reading assessment shows that more than one third (34%) of the nation’s fourth graders performed below the *NAEP Basic* level; additionally, 52% of Black and 45% of Hispanic students performed below *NAEP Basic*.<sup>2</sup> Because there is no achievement-level description for students who fall below the cut score for *NAEP Basic*, policymakers, educators, and researchers do not have a clear understanding of the nature of the reading difficulties that these students face.

It is plausible, even likely, that students performing below *NAEP Basic* have less vocabulary knowledge and less world knowledge, which would limit their inferencing and comprehension ability. But there are other important determinants of reading comprehension, such as the ability to read the words and

sentences in the test passages with sufficient speed and accuracy. The scientific consensus is that fast, accurate word reading and fluent sentence reading are *necessary* for reading comprehension, not only in the first few grades but also throughout the lifetime of a reader (see, e.g., Foorman et al., 2018).

Our hypothesis is that students in the below *Basic* category have poor oral reading fluency and foundational skills. *Oral reading fluency* is defined as the ability to read text aloud with speed, accuracy, and proper expression. The *foundational skills* that underlie fluency include *word reading*—the ability to read familiar words with accuracy and speed—and *phonological decoding*—the ability to pronounce unfamiliar words based on spelling-sound correspondences. Phonological decoding affects fluency indirectly through its effect on word reading. In essence, as children apply phonological decoding skills to the unfamiliar words that they encounter in text, they make a transition from being “novices” to being “experts” who read familiar words rapidly and automatically (Castles et al., 2018).

In this brief, we analyze and report data from the 2018 NAEP Oral Reading Fluency study (2021a, 2021b). We show that, compared with students who perform at the *NAEP Basic* level and above, students who perform below *NAEP Basic* are much more likely to have poor oral reading fluency and foundational skills.

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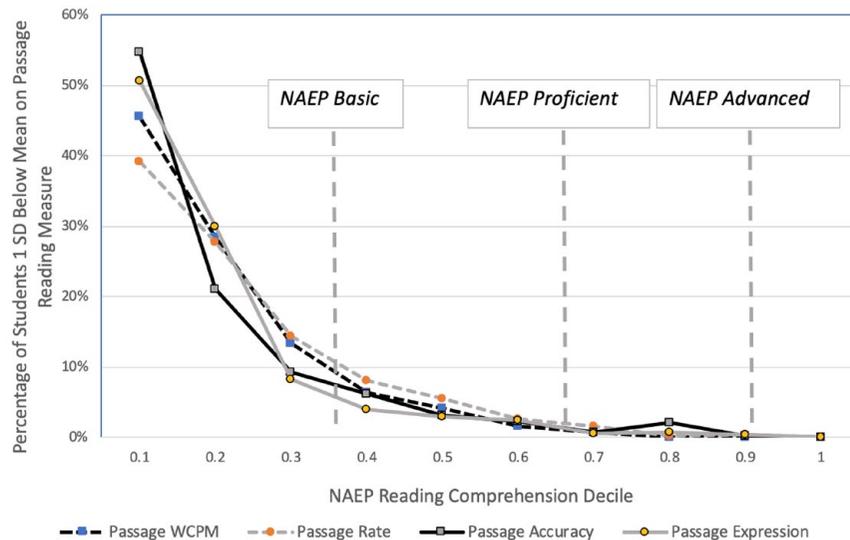


FIGURE 1. Percentage of students having poor oral reading fluency scores by NAEP performance deciles and achievement levels. Note. NAEP = National Assessment of Educational Progress; WCPM = words correct per minute; SD = standard deviation.

## Method

In the 2018 NAEP Oral Reading Fluency study, a nationally representative sample of more than 1,800 fourth-grade students from 180 public schools first completed the NAEP fourth-grade Reading assessment. They then read out loud two word lists to measure the foundational skills of word reading and phonological decoding, respectively: (1) a list of 24 English words of increasing complexity and (2) a list of 18 pronounceable pseudo-words (e.g., *jad*, *bloot*).<sup>3</sup> Finally, to assess oral reading fluency, students read aloud four short passages (152–162 words).<sup>4</sup>

Each passage generated four measures of oral reading fluency that were averaged across the passages to obtain each student’s score: (1) *words correct per minute* (WCPM), defined as the total number of words read correctly, divided by the amount of time taken to read the passage; (2) *rate*, defined as the total number of words read (accurately or not), divided by the amount of time taken to read the passage; (3) *accuracy*, defined as the percentage of words that were read correctly; and (4) *expression*, which was scored on a 5-point rubric that included appropriate intonation, rhythm, emphasis, and grouping of words into phrases and larger units in ways that express the meaning of the text.<sup>5</sup> For both word lists, the measure was WCPM.

Following Sabatini et al. (2019), we identified students with poor performance, defined as equal to or greater than 1 standard deviation (SD) below the mean on each of the passage reading (oral reading fluency) measures and word reading measures.<sup>6</sup> Then, we plotted the percentage of students 1 SD or more below the mean against NAEP reading comprehension deciles and achievement levels. Separate graphs were created for the passage reading and word list measures.

## Results

Figure 1 displays the percentage of students having poor oral reading fluency scores by NAEP reading comprehension decile and/or achievement level. These data show that poor oral

reading fluency is quite prevalent among students who perform below *NAEP Basic*, especially in the first and second reading comprehension deciles, ranging from 21% to 55% of the students, depending on the measure. In contrast, at the cut point for *NAEP Basic*, which corresponds with the 36th percentile, just 5% to 10% of the students have poor fluency scores. Less than 3% of the students at the *NAEP Proficient* level and none of the students at the *NAEP Advanced* level display poor fluency as defined. The results for word list reading and pseudoword list reading (Figure 2) are similar.

## Discussion

We find that significant percentages of the students who perform below the *NAEP Basic* level on the fourth-grade NAEP Reading assessment have poor oral reading fluency and foundational skills. We also find that, as a group, these students are quite different from students performing at or above *NAEP Basic*, in ways that are not apparent in the routine reporting of NAEP results.

Our findings lend new meaning to long-standing concerns about the interpretation and uses of NAEP achievement levels. A formal evaluation by a panel of assessment experts (National Academies of Sciences, Engineering, and Medicine, 2017) concluded that, in general, “the current achievement-level descriptors may not provide users with enough information about what students at a given level know and can do” (p. 214). Focusing specifically on Grade-4 NAEP Reading, educators and policymakers need to know more about the fluency and foundational skills of students who did not meet the criterion for *NAEP Basic*.

What can be said about students who perform at or above the *NAEP Basic* level? Figure 1 cannot be used to support common misconceptions about fluency—for example, that it is fully developed or sufficiently well developed by fourth grade for the majority of students. The most important reason is that, in this analysis, the criterion for “poor” was 1 SD or more below the mean, which is a relatively stringent criterion that represents the

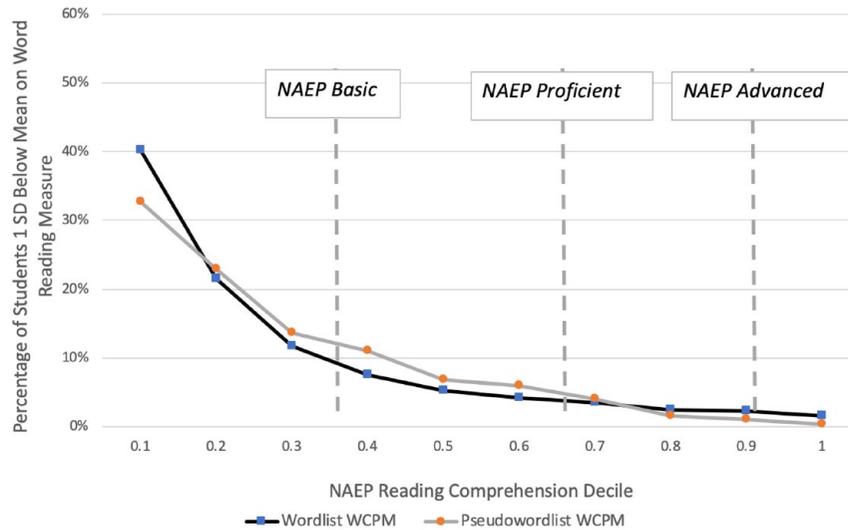


FIGURE 2. Percentage of students having poor word reading and phonological decoding scores by NAEP performance deciles and achievement levels.

Note. NAEP = National Assessment of Educational Progress; WCPM = words correct per minute; SD = standard deviation.

lowest 16% of the fluency scores. If a less stringent criterion were used, more students at the *Basic* and *Proficient* levels would be identified as deficient in fluency. For example, if below the mean on passage WCPM were used as the criterion, 46% of the students performing at the *NAEP Basic* level would be judged as displaying an insufficient level of fluency.<sup>7</sup>

According to the National Assessment of Adult Literacy (Baer et al., 2009), a skilled adult reader reads orally at 166 to 178 WCPM, compared with an average of 123 WCPM for fourth-grade students performing at the *NAEP Basic* level in our study. This means that there is considerable room for improvement in fluency not only for the below *Basic* group (34% of fourth-grade students) but also for the *Basic* group (another 31%). Furthermore, fluency does not develop at a fixed rate independent of learning opportunities. For both of these groups, it is likely that if fluency were improved, comprehension would also improve.<sup>8,9</sup>

Our descriptive and correlational study does not support any specific instructional recommendations for fourth grade or earlier grades. It does serve to alert policymakers, educators, and researchers to the fact that fluency and word reading problems are common among students who perform below *NAEP Basic*.

## NOTES

<sup>1</sup>[https://nces.ed.gov/nationsreportcard/reading/achieve.aspx#2009\\_grade4](https://nces.ed.gov/nationsreportcard/reading/achieve.aspx#2009_grade4)

<sup>2</sup><https://www.nationsreportcard.gov/reading/nation/achievement/?grade=4>

<sup>3</sup>For additional details on the word reading tasks, see Appendix A of White et al. (2021a).

<sup>4</sup>Readability measures and cognitive laboratory studies ensured that the oral reading passages were of appropriate difficulty for fourth-grade students.

<sup>5</sup>For additional details on the automated speech analysis system, the rubric for expression, and scoring, see <https://nces.ed.gov/nationsreportcard/studies/orf/scoring.aspx>

<sup>6</sup>Our 1 SD criterion for “poor”—85 WCPM—is consistent with other research. Sabatini et al. (2019) explored alternative criteria that

produced similar results, including the lowest quartile. Norms compiled in 2017 by the Behavioral Research and Teaching Program at the University of Oregon indicate that 85 WCPM falls between the 10th percentile (71 WCPM) and the 25th percentile (95 WCPM) for Grade 4 students in the winter. See [https://www.brtprojects.org/wp-content/uploads/2019/05/TechRpt\\_1702ORFNorms.pdf](https://www.brtprojects.org/wp-content/uploads/2019/05/TechRpt_1702ORFNorms.pdf)

<sup>7</sup>For the below *Basic* group, 84% of the students would be regarded as having insufficient fluency if the criterion were below the mean WCPM.

<sup>8</sup>It is worth noting that, as can be seen in Figure 1, a student performing at the 50th percentile on comprehension would be classified as performing at the *Basic* level, when *Proficient* is the standard set by the National Assessment Governing Board. Because comprehension is the goal of reading and reading instruction, the first step in determining whether a given level of fluency is sufficient is to choose a standard for comprehension.

<sup>9</sup>A parallel set of arguments could be constructed for fourth-grade students’ foundational skills, word reading, and phonological decoding.

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