

# **The Third-Grade Milestone: An Examination of Vocabulary Demands of Summative Assessments**

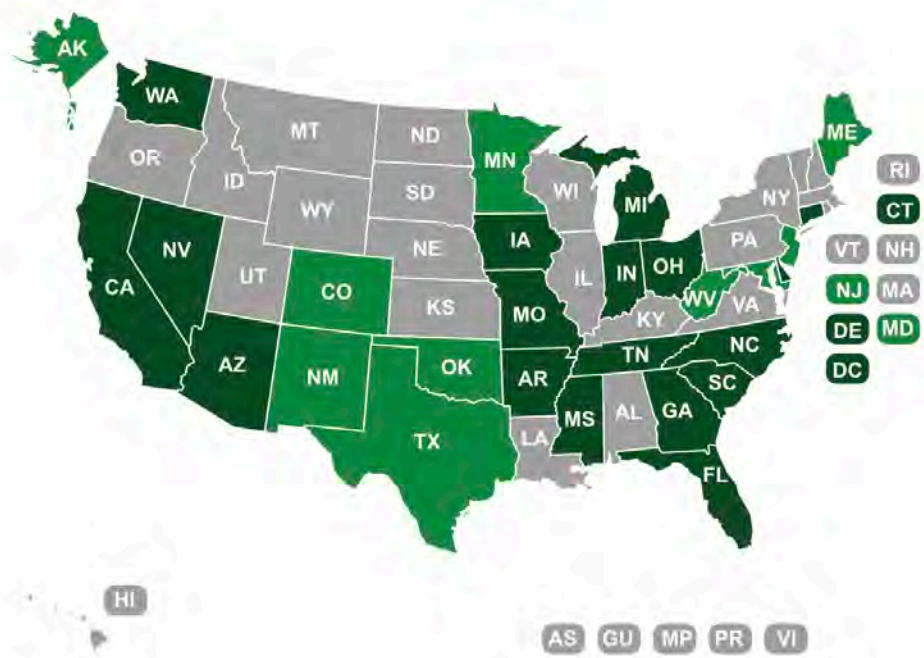
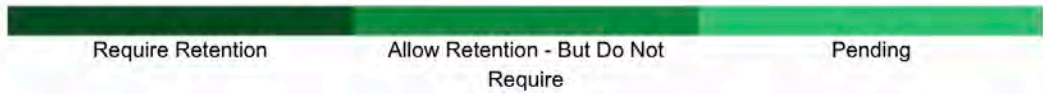
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TextProject



# States with Gr. 3 Reading-Level Mandates

## Third-Grade Reading Legislation



\*South Carolina will begin requiring retention during the 2017-2018 academic year, Nevada on July 1, 2019 and Michigan during the 2019-2020 academic year

# A Focus on The Texts of Assessments

- Why not the items of assessments?
  - Ozuru, Rowe, O'Reilly, & McNamara (2008): Item difficulty was primarily influenced by text features rather than question type;
  - Ogut, Dogan, Tirre, Ndege, & Hummel (2010): Passage factors, not item types, predicted reading difficulty & score differences;
  - Valencia, Wixson, Ackerman, & Sanders (2017): Even "hard" questions can vary considerably in difficulty as a function of text and task interactions;
  - Pearson, Callahan, & Benson-Griffo (2009): Increasing item accessibility derived from vocabulary: "more familiar vocabulary is preferable to less familiar vocabulary for questions and foils unless an unfamiliar vocabulary word is a repetition of a word in the text." (p. 22)

# Research Foci

- 1. What are the vocabulary demands of third-grade assessments used by states?
- 2. How do these vocabulary demands compare to those of the fourth-grade assessments of states and NAEP?
- 3. How do the vocabulary demands compared to the vocabulary demands of third-grade core reading programs?
- 4. What do we know about the word recognition capabilities of third graders in relation to the third-grade assessments?

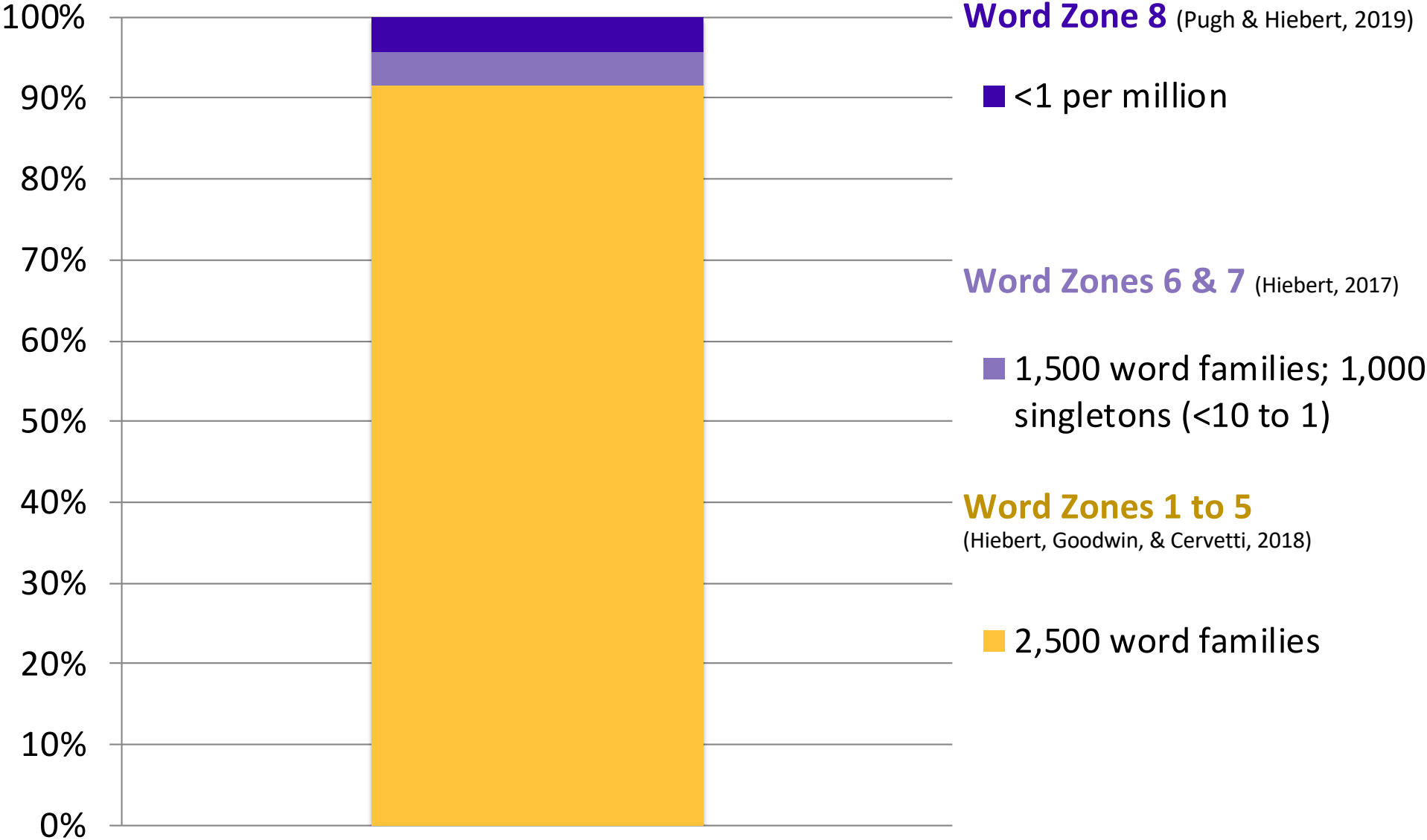
# The Texts

- **Assessment texts**
  - Gr. 3 released texts for 26 states & 2 consortia. In all: 109 passages
  - NAEP passages from 2009 to 2017 (n = 19)
  - Gr. 4 released texts for 4 most populous states: CA/SBAC, TX, FL, & NY
- **Instructional texts**
  - All Gr. 3 anthology texts:
    - Houghton Mifflin Harcourt *Journeys* (Baumann et al., 2014): 31,030 words
    - McGraw-Hill *Wonders* (August et al., 2014): 30,358 words, &
    - Scott Foresman *Reading Street* (Afflerbach et al., 2013): 33,159 words.
  - Leveled Literacy Intervention (Levels N to P) (Fountas & Pinnell, 2009): 15,528 words
- **Student performance**
  - DIBELS Grade 3 Oral Reading Fluency and DAZE benchmark texts & norms (Dewey, Kaminski, & Good (2014)

# The Criteria

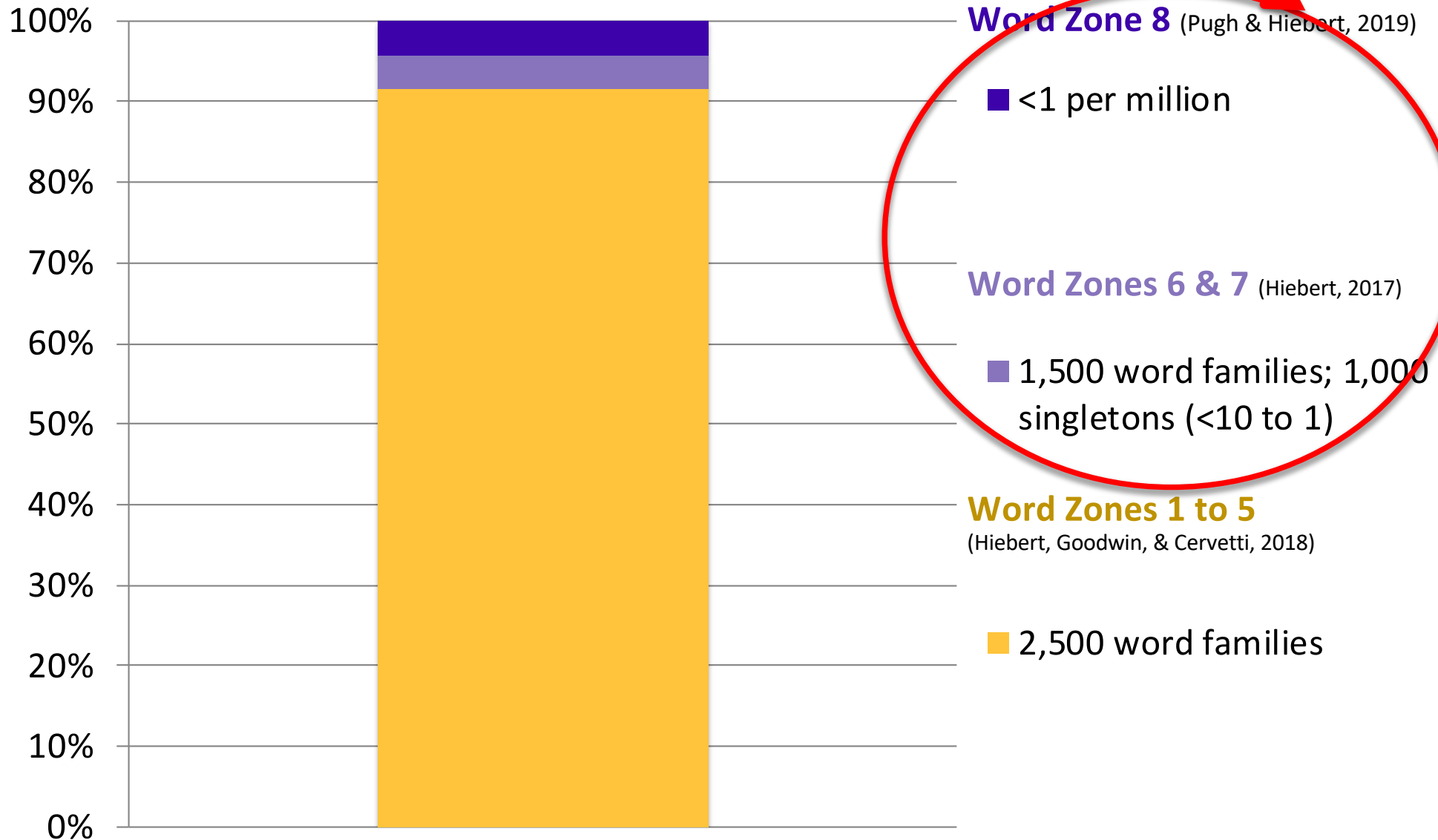
- Lexile
- Word Zone Profiler
  - Word Zones

# Distribution of Vocabulary in English Lexicon



# Distribution of Vocabulary in English Lexicon

## Critical Word Factor (CWF)





# The Criteria

- Lexile
- Word Zone Profiler
  - Word Zones
  - Age of Acquisition (Kuperman, Stadthagen-Gonzalez, & Brysbaert, 2012)
  - Concreteness (Brysbaert, Warriner, & Kuperman, 2014)
  - Number of letters
- Total number of words


# Research Questions

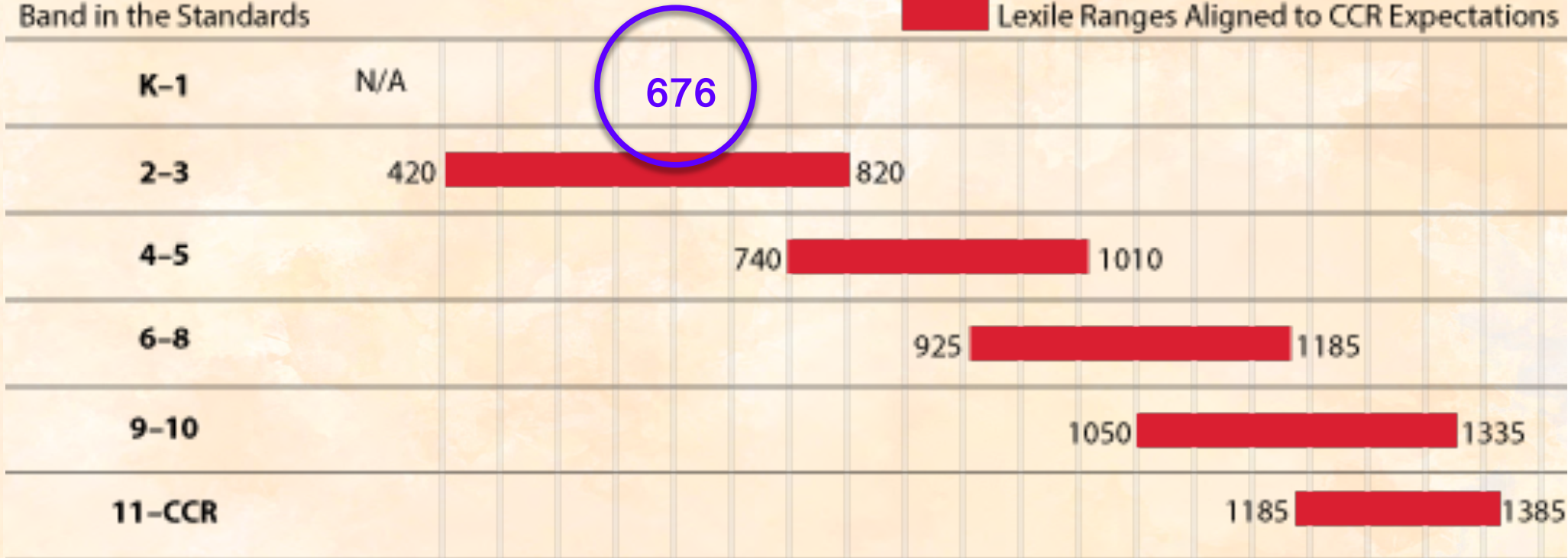
- Q1. What are the vocabulary demands of third-grade assessments used by states?

# Lexile information

- 676L (SD = 149)
- Sentence Length: 11.34

Text Complexity Grade  
Band in the Standards

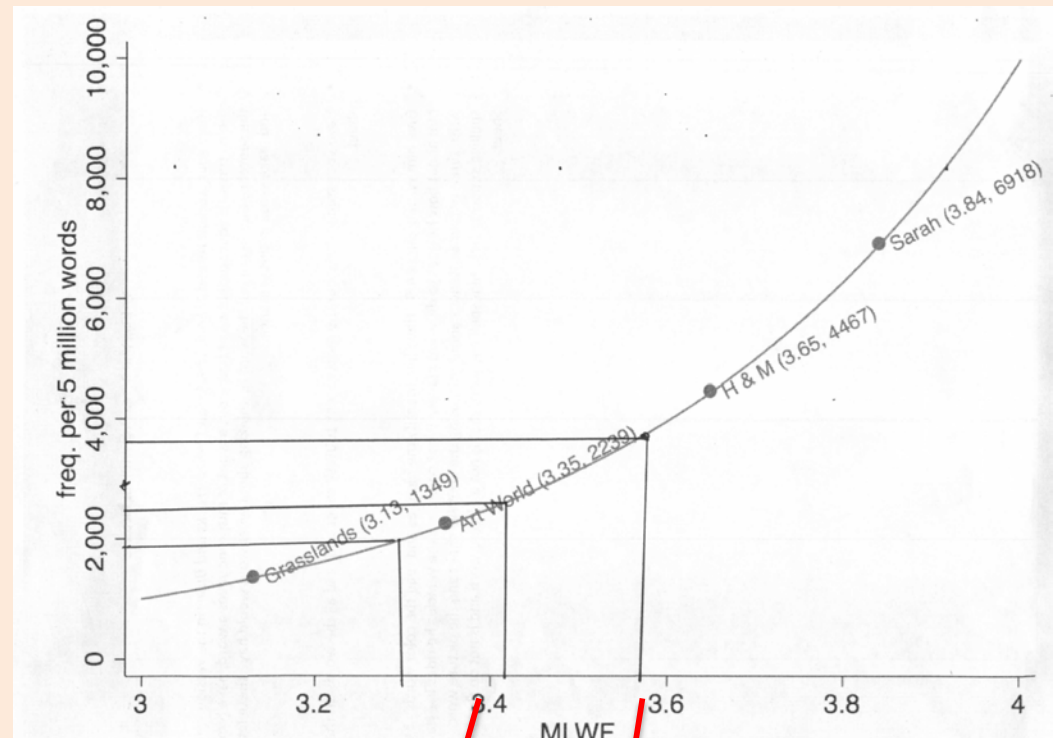
 Lexile Ranges Aligned to CCR Expectations



# Mean Log Word Frequency (MLWF) : = 3.58

**Daddy Day Care: MLWF = 3.38**

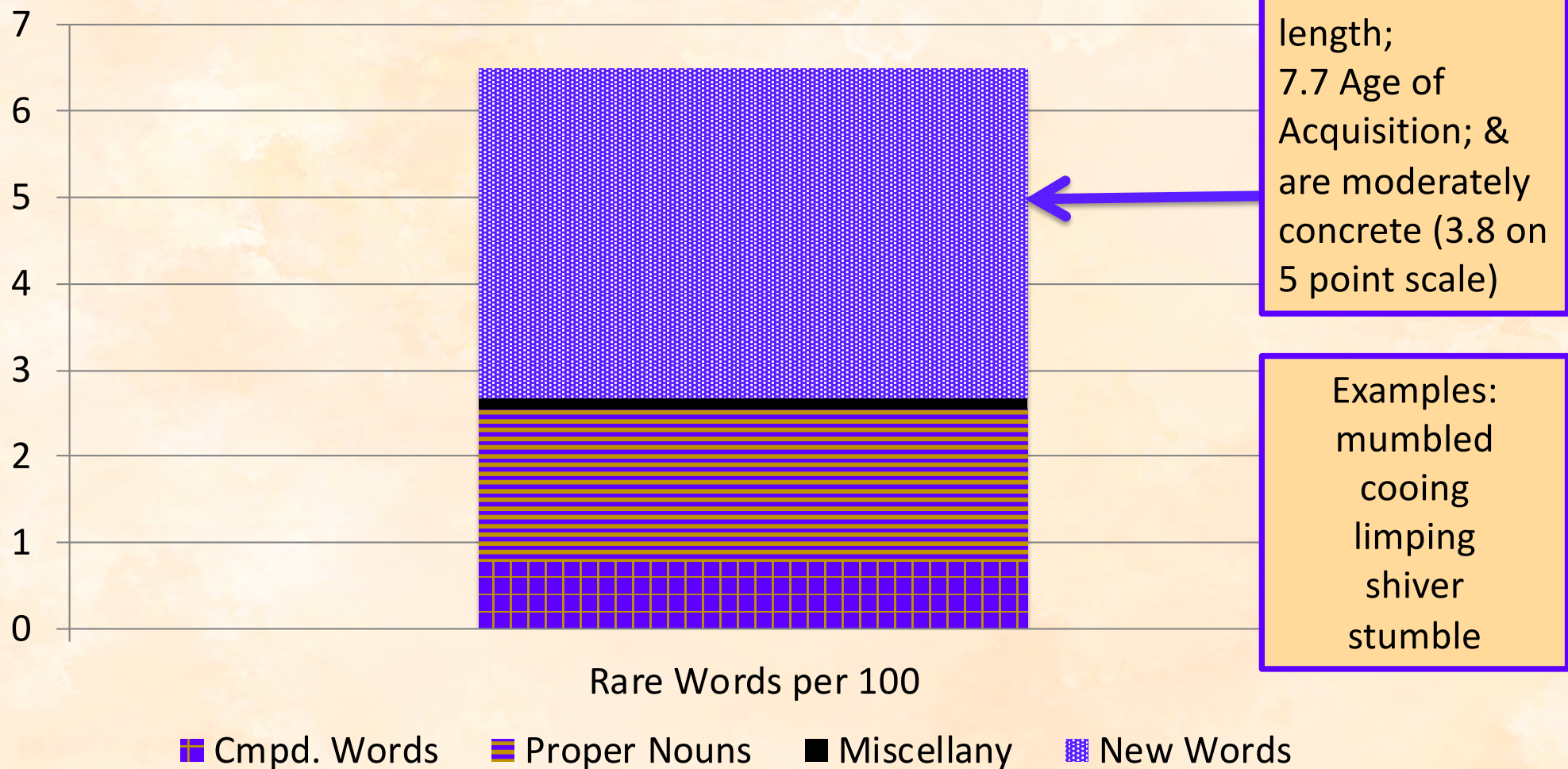
When<sup>3137</sup> other<sup>2205</sup> animals<sup>357</sup>  
head<sup>437</sup> north<sup>275</sup> in<sup>19004</sup> March<sup>47</sup>  
to<sup>25580</sup> avoid<sup>58</sup> the<sup>68006</sup> Antarctic<sup>2</sup>  
winter,<sup>151</sup> emperor<sup>33</sup> penguins<sup>2</sup>  
head<sup>437</sup> south.<sup>255</sup> Antarctica<sup>4</sup>  
is<sup>10257</sup> surrounded<sup>37</sup> by<sup>4083</sup> a<sup>24070</sup>  
huge<sup>130</sup> mass<sup>103</sup> of<sup>28526</sup> sea<sup>276</sup>  
ice<sup>138</sup> in<sup>19004</sup> the<sup>68006</sup> winter.<sup>151</sup>  
This<sup>4243</sup> ice<sup>138</sup> floats<sup>24</sup> on<sup>6674</sup>  
the<sup>68006</sup> ocean<sup>145</sup> in<sup>19004</sup> the<sup>68006</sup>  
southernmost<sup>0.8283</sup> part<sup>694</sup>  
of<sup>28526</sup> the<sup>68006</sup> earth.<sup>366</sup> Harsh<sup>14</sup>  
and<sup>27594</sup> frigid,<sup>0.9983</sup> it<sup>9386</sup> is<sup>10257</sup>  
here<sup>655</sup> where<sup>1073</sup> emperor<sup>33</sup>  
penguins<sup>2</sup> choose<sup>91</sup> to<sup>25580</sup>  
mate<sup>15</sup> and<sup>27594</sup> lay<sup>153</sup> their<sup>3037</sup>  
eggs.<sup>52</sup>



Daddy Day Care

Average of Third-Grade Assessments

# Critical Word Factor in Gr. 3 assessments: 6.5 per 100 words



Words are repeated an average of 2.4 times; 71% appear a single time; most repetition comes from proper names (5.5)

# Length of Text

- 536 words (SD = 139)

## Insect Farmers

The farmer stepped back and surveyed her garden. It looked fine and healthy. A little more fertilizer here and there and her day's work would be done.

Her sisters were busy in another part of the garden gathering some of the crop to feed to the youngsters. Yes, nothing beats a good garden of young mushrooms.

You see, this is no ordinary farmer. She is a leaf-cutting ant.

I first saw leaf-cutting ants on a six month visit to Panama. I had plenty of time to watch the ants because I lived and worked at a tropical research station on Barro Colorado Island in the Panama Canal area.

Barro Colorado became a biological reserve in 1923. Since then scientists from all over the world have gone there to study tropical plants and animals.

## Jungle Walks

There are no roads on the island, just nature trails cutting through the jungle. Nearly every time I walked out on the trails, I had to step over a marching column of leaf-cutting ants they seemed to be everywhere!

At first, the marching columns looked like little pieces of leaves moving by themselves. But when I looked more closely, I saw that each piece of leaf was being carried by a reddish ant many times smaller than the leaf. The ants had cut the leaves with their **scissorlike** jaws and were carrying them back to their nests. Leaf cutters don't eat the leaves. Rather, they use the leaves to raise their most important food, which is a particular kind of **fungus**. The ants take the leaves to special rooms in their underground nests. They cut the leaves into smaller pieces, chew the pieces until they are wet and **spongy**, and deposit them in their garden.

Then the ants **transplant** some fungus onto their fresh "leaf soil." Sometimes they add fertilizer that they **excrete** from their **abdomens**. Adult ants feed on this fungus as well as on **sap**. The fungus is also eaten by the **larvae**, which are the baby ants.

The fungus they grow is a type of mushroom. But the ants have been farming it for so long that it doesn't grow into anything that looks like regular mushrooms. Instead, it looks more like a mass of tiny double

## Ants, Big and Small

A leaf-cutter colony is made up of ants of different sizes. Large ants go out and gather the leaves. Smaller ants guard the big ants, cut up the leaves, tend the garden, and care for the eggs and larvae.

The biggest ant is the queen. Her main job is to lay eggs. All of the other ants in the colony are her daughters. They have many jobs, which they do by **instinct**, communicating with one another and their queen when necessary.

Of course, ants can't talk the way we can. Instead, the ants communicate through a chemical language. They pass around their chemical messages when they feed one another. Workers pass droplets of food to other workers (their sisters). They also feed larvae. Larvae sometimes feed their nurses. The queen feeds her daughters. And workers feed their mom, the queen. An ant colony's chemical communication network is more complicated than our telephone lines.



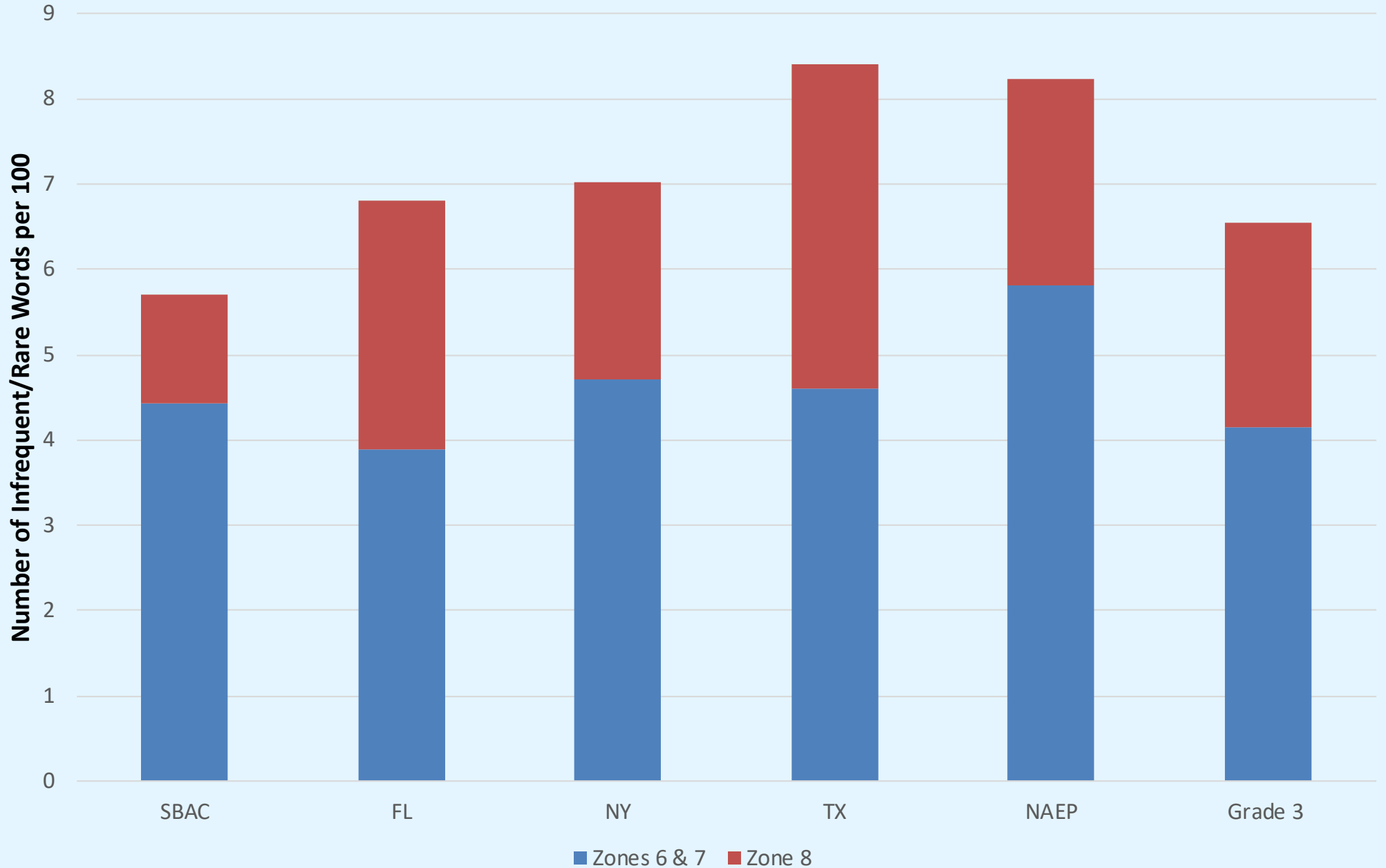
# Summary: Q1

- The texts of Gr. 3 assessments of different states contain an average of 6.5 infrequent/rare words per 100. But a shared feature is that assessments contain an average of 536 words.

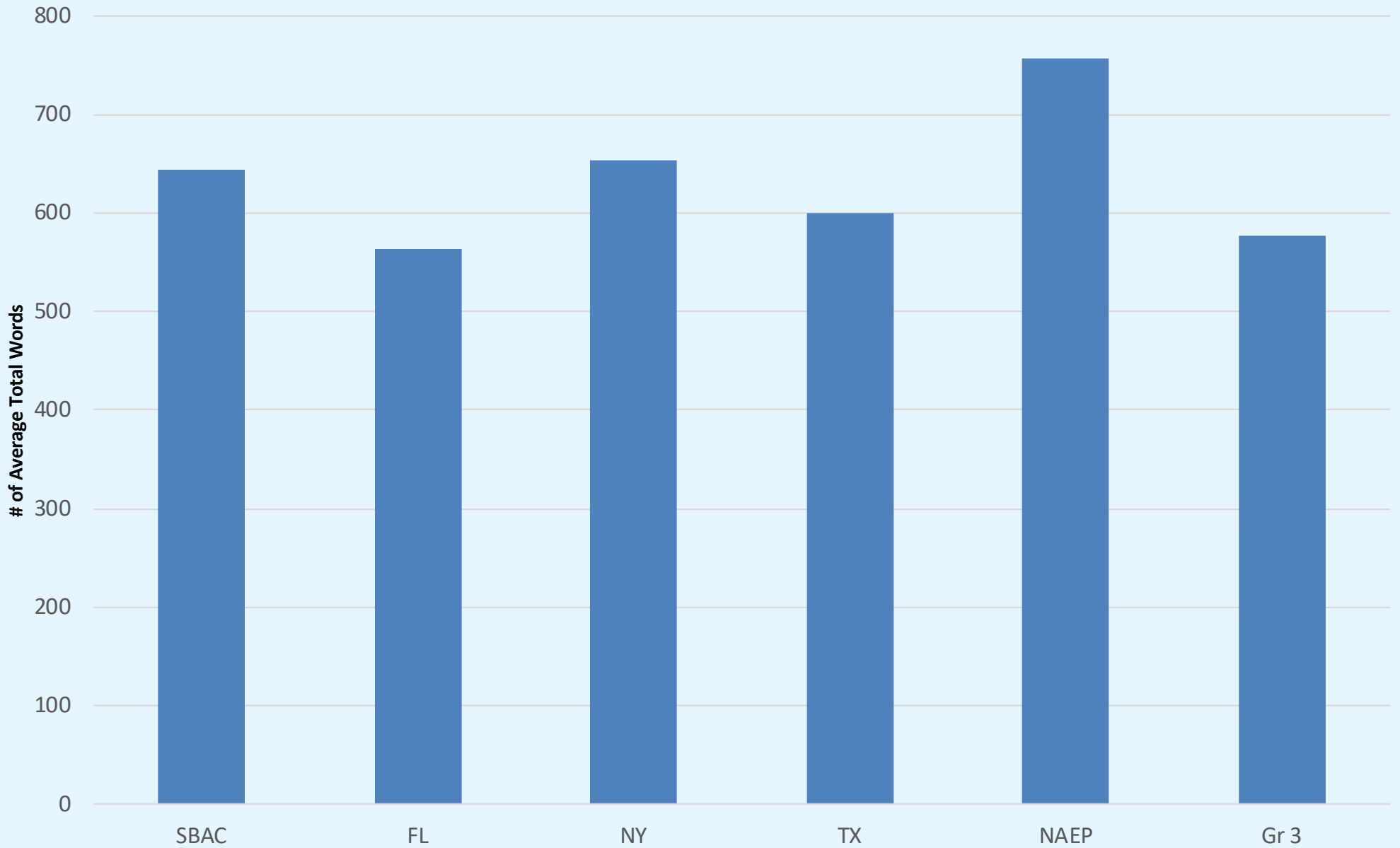
# Research Foci

- 1. What are the vocabulary demands of third-grade assessments used by states?
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# Grade 4 Assessments: Critical Word Factor



# Gr. 4 Assessments: Average No. of Total Words



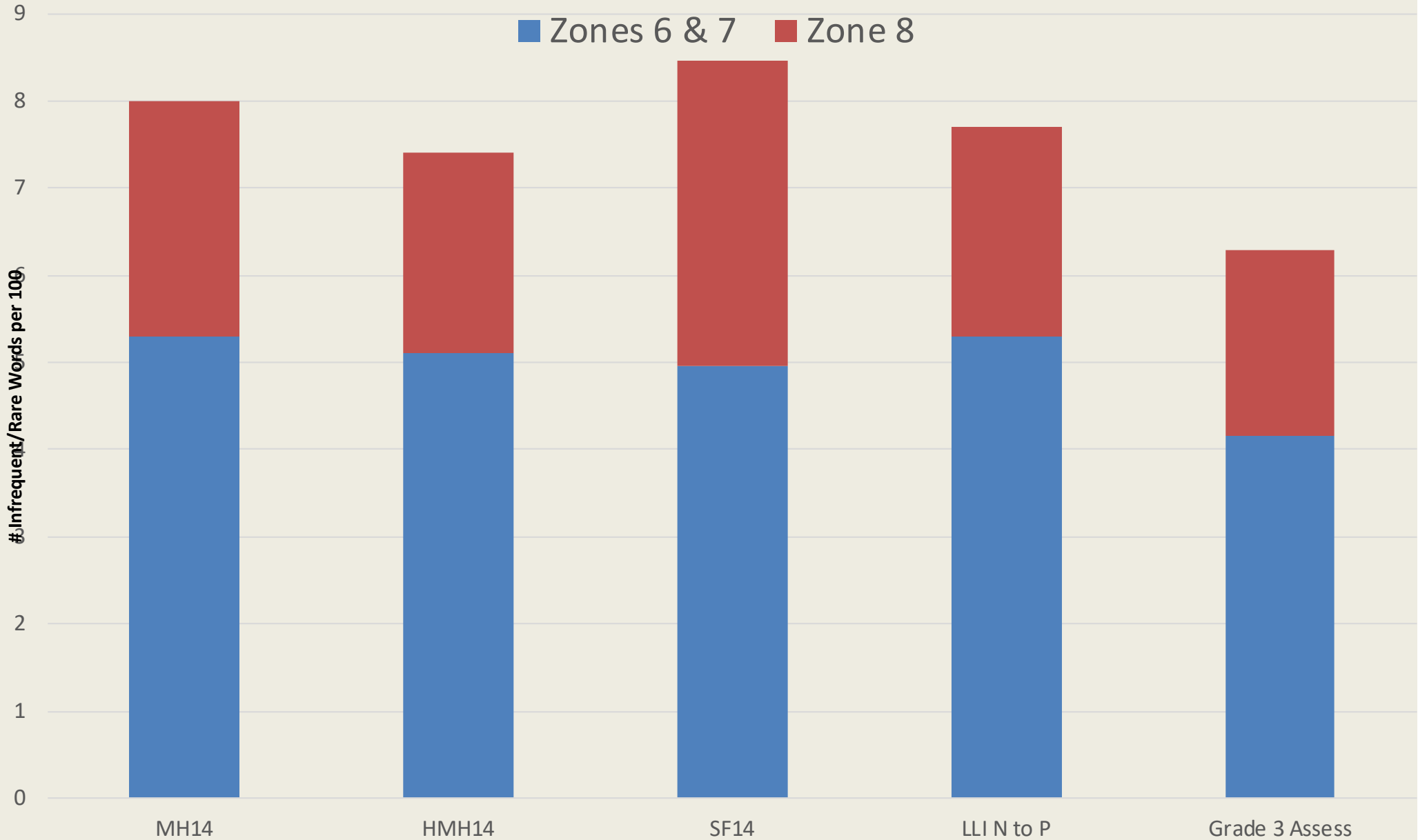
# Summary: Q2

- Texts on state Gr. 4 assessments average .5 rare word in every 100 words than on third-grade assessments and have approximately 7% more words.
- The texts on Gr. 4 NAEP are 24% longer than texts on Gr. 4 state assessments and 31% longer than those of Gr. 3 state assessments. NAEP texts have 1.2 more hard words per 100 than Gr. 4 assessments and 1.7 than Gr. 3 assessments.

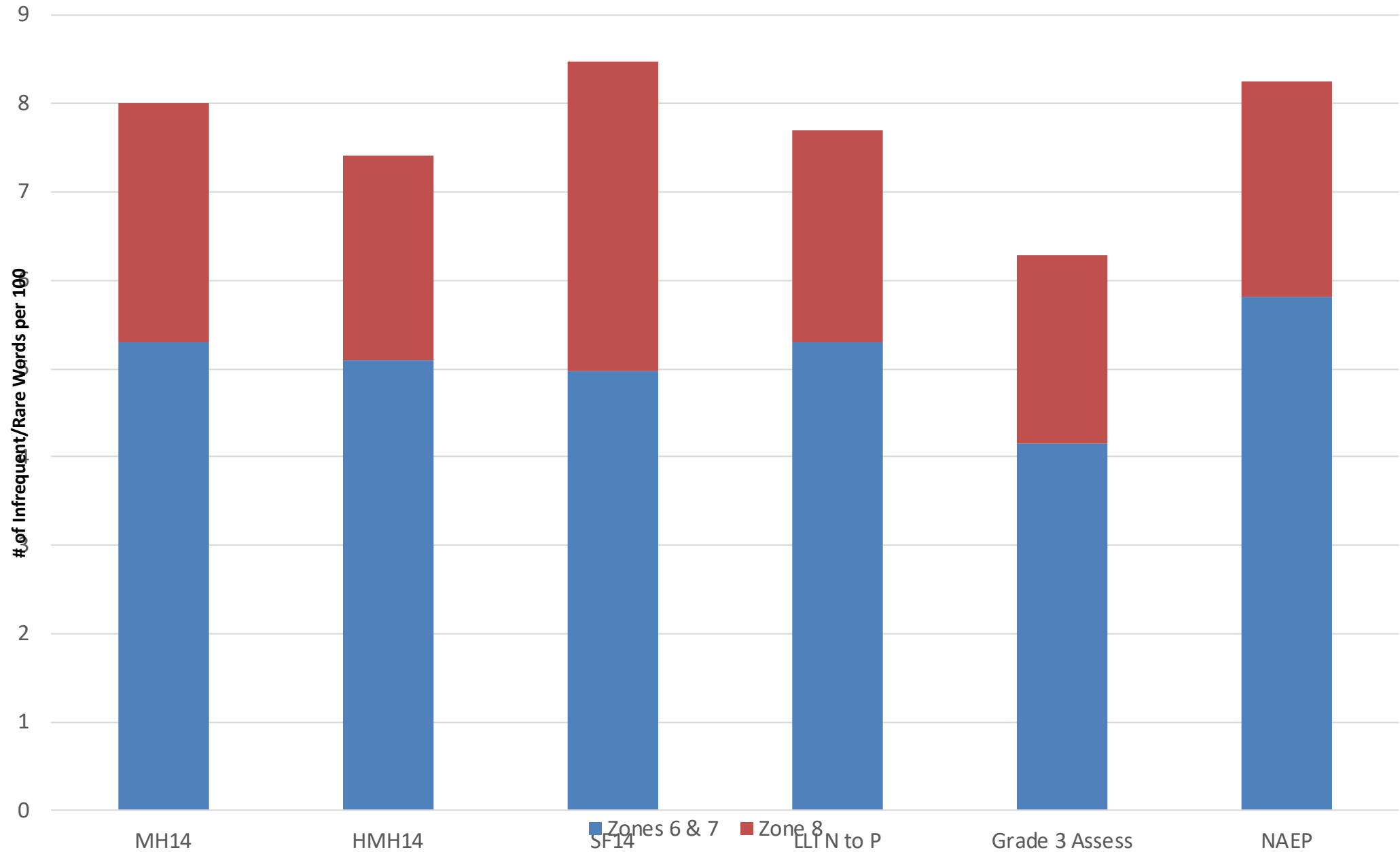
# Research Foci

- 1. What are the vocabulary demands of third-grade assessments used by states?
- 2. How do these vocabulary demands compare to the fourth-grade assessments of states and NAEP?
- 3. How do the vocabulary demands of Gr. 3 assessments compare to the vocabulary demands of Gr. 3 core reading programs?

# Texts of Gr. 3 Instruc. Programs & Assessments: Critical Word Factor



# Texts of Gr. 3 Instruc. & Assessments & NAEP: Critical Word Factor





# Features of Infrequent & Rare Words: Gr. 3 Instruc. & Assess. Texts

Text Group	Average # Text Appearances	Word Length	UFunction	Age of Acquisition	Mean Concreteness
Instruc.	2.1	6.9	2.4	7.7	3.8
Assess.	2.3	6.7	2.4	9.3	3.8

# Features of Infrequent & Rare Words: Gr. 3 Instruc. & Assess. Texts

Text Group	Average # Text Appearances	Word Length	UFunction	Age of Acquisition	Mean Concreteness
Instruc.	2.1	6.9	2.4	7.7	3.8
Assess.	2.3	6.7	2.4	9.3	3.8

# Summary: Q3

- Gr. 3 instruc. texts have a higher CWF than Gr. 3 assess. texts: 7.9 for the latter and 6.5 for the former.
- The average CWF of 7.9 for Gr. 3 instruc. texts is higher than that of the 7 of Gr. 4 state assessments and close to the 8.2 of the NAEP.

# Research Foci

- 1. What are the vocabulary demands of third-grade assessments used by states?
- 2. How do these vocabulary demands compare to the fourth-grade assessments of states and NAEP?
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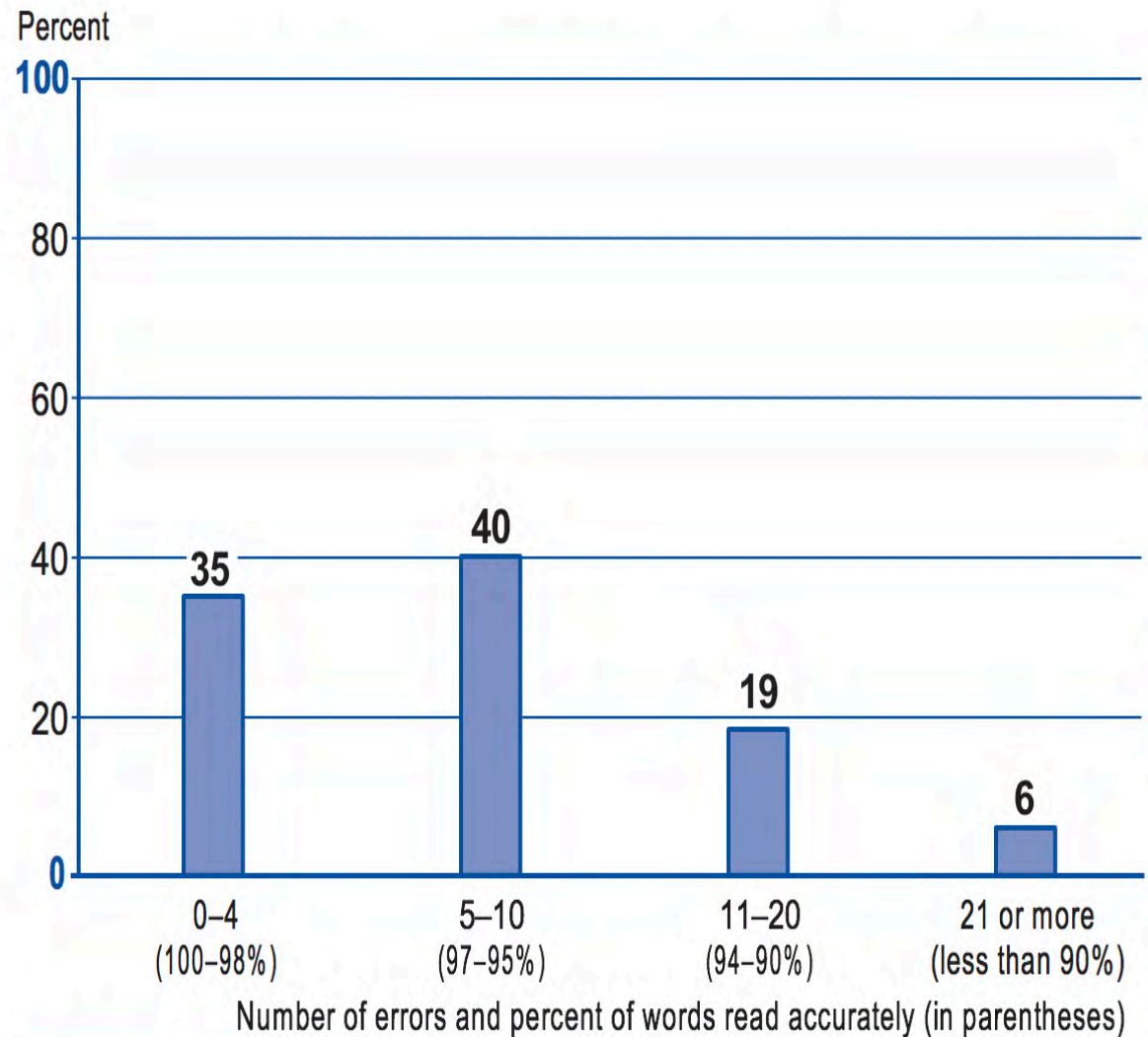
**CWF = 5.5**

Soon the house was buzzing with excitement. Megan sat on the stool watching while Mom and Aunt Nancy prepared the birthday dinner. Dad wouldn't be back for at least two hours. Jason wandered outside trying to think of something to do, but his thoughts kept returning to the box in the barn.

He started walking toward the barn, not at all sure what he'd do when he got there. He was hoping for just a glimpse of the box. Instead he heard a strange noise coming from inside the barn. He wished he could just turn back to the house,

## NAEP Oral Reading

**Figure 2-1.** Percentage of students, by degree of reading accuracy, grade 4: 2002



NOTE: Detail may not sum to totals because of rounding.

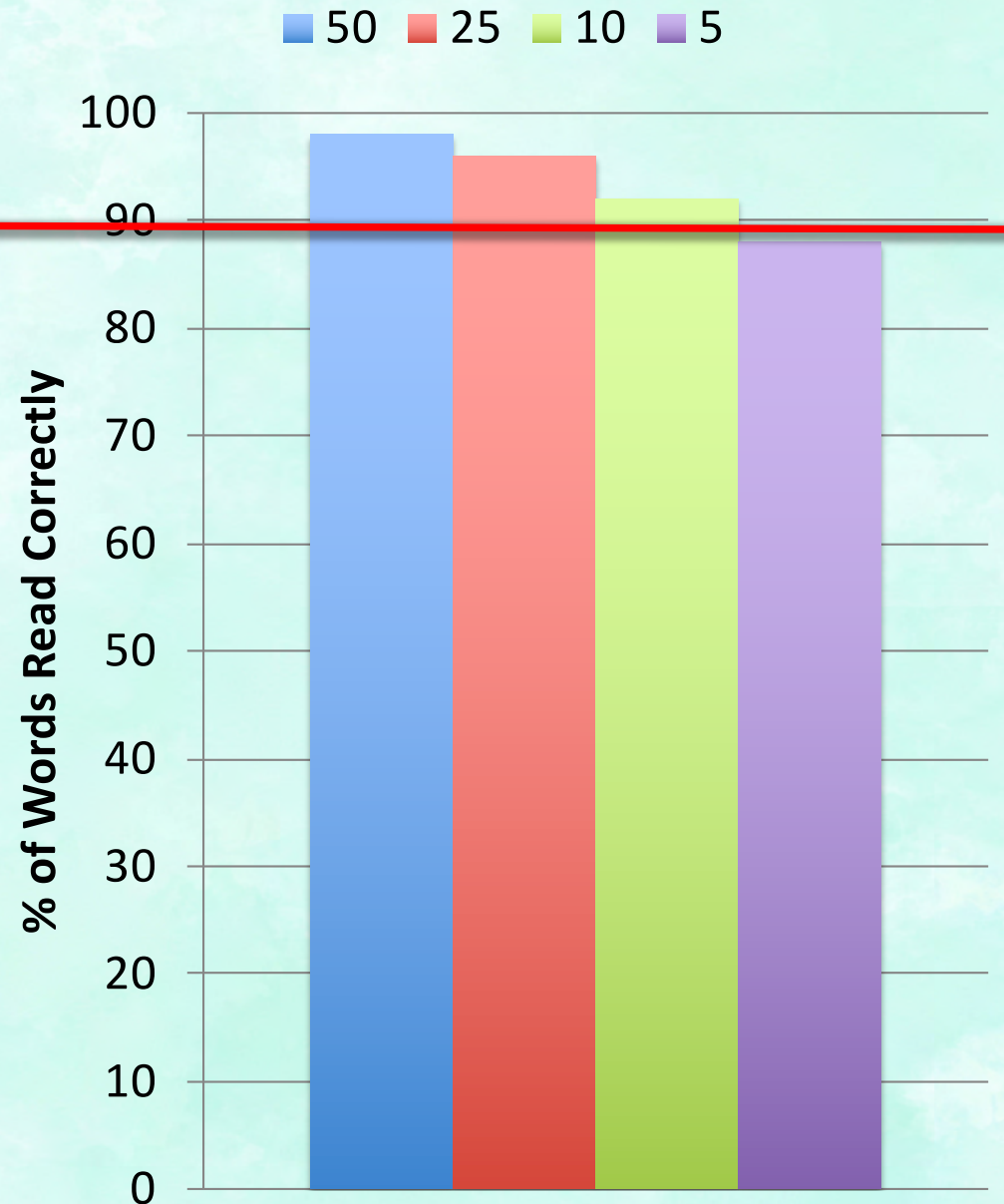
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2002 Oral Reading Study.

## CWF of 5

# DIBELS Oral Reading: Accuracy

At our house, the mail carrier isn't the only one who brings us messages. Our computer also brings mail. Our family has an email address. All we have to do is turn on the computer and get on the Internet. Our computer tells us if we have new mail.

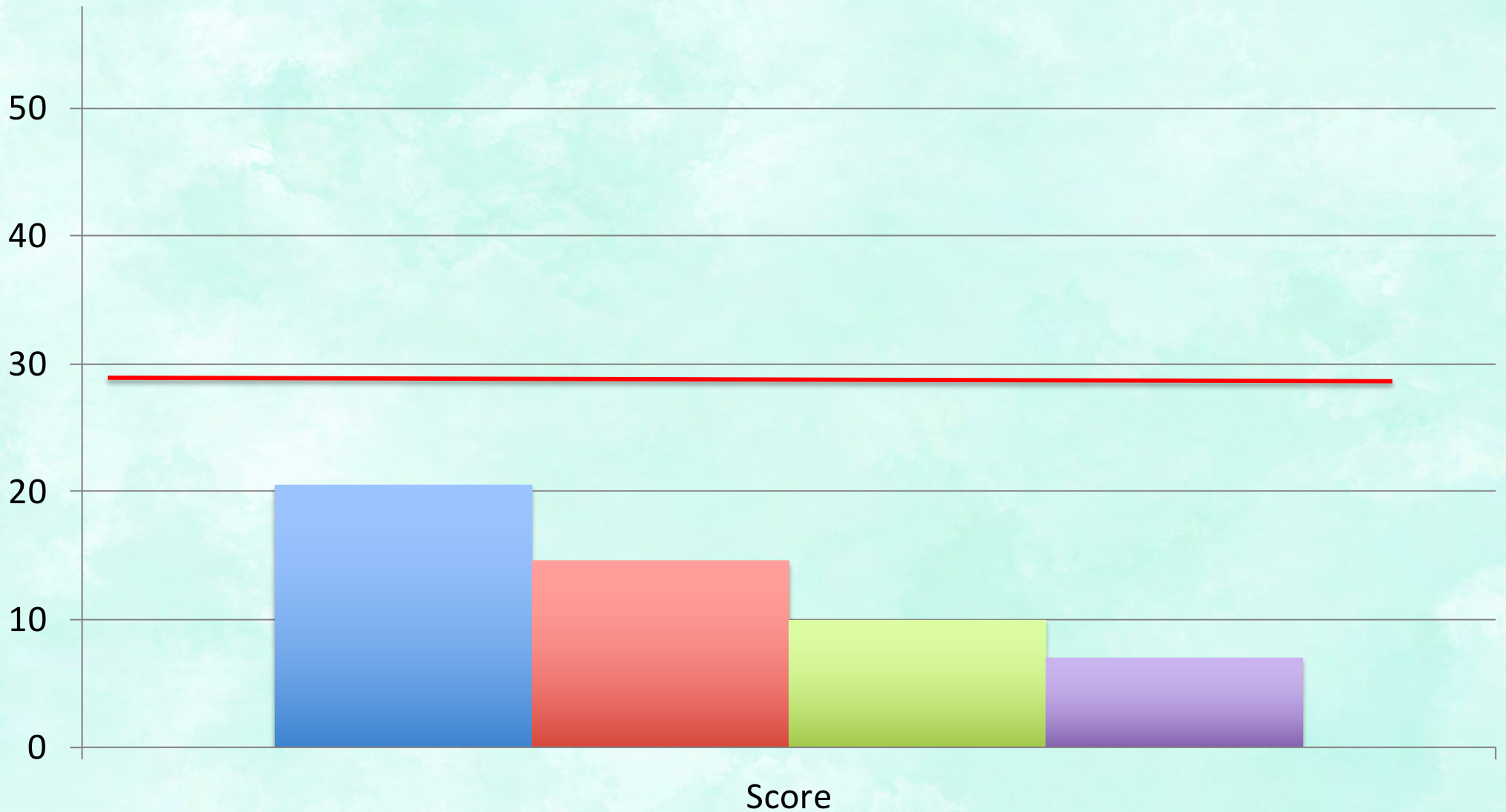
Email is much faster than regular letters. If I send a regular letter to my cousin who lives in Japan, it can take weeks to get an answer. If I email to my cousin, she usually emails back the same day. She lives 4,000 miles away and across the Pacific Ocean



Dewey, E.N., Kaminski, R.A., & Good, R.H. (2014) *DIBELS Next® National Norms 2012-2013* (Technical Report No. 17). Eugene, OR: Dynamic Measurement Group.

# End of Gr. 3: DIBELS Daze

■ 50 ■ 25 ■ 10 ■ 5



# Summary: Q4

- Students at the 50th and 25th percentiles are able to read texts with a critical word factor of 5 with 98% and 96% accuracy, respectively. Students at the 10th and 5th percentiles read this level of texts with 92% and 88% accuracy.
- The oral reading of the latter two groups of students is slow.
- On a silent reading timed comprehension task, all of the groups at the 50th percentile or lower fail to attain a 50% correct level.



# Conclusions

1. Texts of Gr. 3 assessments have a lower CWF than those of Gr. 3 instructional programs.
2. The CWF of texts of Gr. 3 instructional programs is more substantial than the CWF of texts of Gr. 4 assessments and close to the CWF of NAEP texts.

# Questions

1. Hayden, Hiebert, & Trainin (2019) found that approximately 50% of a sample of fourth graders failed to complete texts that resemble the NAEP in length. Do third-grade programs provide more support for the development of silent reading stamina and monitoring than fourth-grade programs?
2. A fundamental issue with comprehension lies in students' background knowledge on text topics. Are third-grade programs more adept at developing background knowledge than fourth-grade programs?

## Questions (continued)

3. The CWF of current Gr. 3 instructional texts is higher than that of Gr. 3 assessments. If challenging texts have not prepared students for slightly easier texts on assessments, what evidence is there that a similar program of texts for retained third graders will prepare them for the texts of the third-grade assessments?

4. If the primary difference between third- and fourth-grade state assessments consists of approximately 7% more words and .5 additional infrequent/rare word per 100, what are the anticipated drawbacks for promotion rather than retention?

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