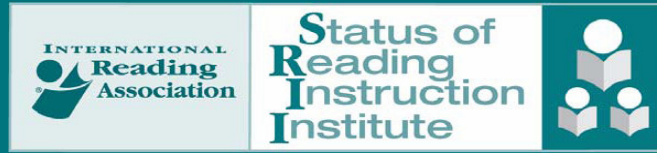


Poverty and Reading Skills



Learning to Read in American Elementary School Classrooms: Poverty and the Acquisition of Reading Skills

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Poverty is a pressing problem that continues to challenge the educational success of too many of America's children. This report documents the reading skills of poor children in comparison to that of their more advantaged peers throughout elementary school. Overall, the data presented in this report show that poor children start kindergarten with lower entry level reading skills and take longer to acquire higher-level reading skills as they move through elementary school. It also illustrates that many wealthier children have not mastered higher level reading skills by the end of fifth grade.

It is important to recognize that there are many factors that influence student achievement in reading in addition to poverty. The purpose of this report is descriptive, and analyses were not conducted to identify whether poverty is a causal factor in the differences among students. With very few exceptions, differences between the means for poor and wealthier students were statistically significant. Tables presenting sample sizes in each wave of the study, and comparing poor and wealthier students in the sample in regard to gender, race/ethnicity, and whether students are on-grade level in 2004 appear at the end of this report.

Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K)

The National Center for Education Statistics conducted the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K) to provide information on students' growth in reading, math, general knowledge, and science, and socio-emotional skills throughout elementary school in the surrounding context of family, school, and community. By following a group of students from kindergarten through fifth grade (and eventually through eighth grade), the ECLS-K data provide the ability to both describe student achievement and also study growth in reading and other skills. This report focuses on comparing student achievement at various grade levels. Findings in this report summarize longitudinal data, and the sample includes students who for the most part had assessments in each wave in which full data collection took place. They also include the subset of students who were assessed in the fall of 1999. Therefore, findings may differ from those that are obtained when looking at a single year of data collection due to attrition in the sample over time.

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Data collection took place in the fall of 1998; spring of 1999; spring of 2000; spring of 2002; spring of 2004; and spring of 2007. In addition, a smaller group of students was studied in the fall of 1999 to provide a measure of summer learning. Data have not yet been released for public use for the 2007 wave of data collection.

ECLS-K is based on a nationally representative sample that includes over 21,000 kindergarteners in 1,200 public and private schools. More students were added to the sample in first grade to make sure that it continued to be representative of all first graders. Therefore, data for kindergarten and first grade can be viewed as representative of all U.S. school children. Following first grade, no new students were added to the sample and therefore the data cannot be used to describe all U.S. third and fifth graders. Therefore, data in later years of the study are best interpreted as representative of the group of students who began kindergarten in 1998 and/or first grade in 1999.

Once students were selected for the ECLS-K they were assessed in future waves regardless of their grade placement. As would be expected, not all children remained on grade level throughout the study; some were retained in one or more grades and a few advanced more quickly than their peers. Since grade level is an important anchor in thinking about reading skills, charts are labeled by the normative grade at each wave of data collection.

Student mobility is a vexing problem for researchers attempting to follow students over extended periods of time. ECLS-K made substantial efforts to follow children who changed schools between data collection waves.

Reading assessments were given in English. Students for whom English was not the language spoken at home were given an English oral language development test to determine whether they could participate in the reading assessment. Some students who were not eligible for testing in kindergarten or first grade acquired sufficient skills in English to be tested in third and fifth grade.



Reading Assessment

The reading assessment administered to students in the ECLS-K study was designed to measure growth in overall reading achievement from kindergarten through eighth grade, as well as specific skills at each grade level. The assessment includes 50 – 70 items at each grade level that measure basic skills, vocabulary, initial understanding, developing interpretation, personal reflection, and critical stance. The proportion of items in each of these areas changes from kindergarten through fifth grade. For example, basic skills make up 40 % of the items in kindergarten but only 10% in fifth grade. Critical stance makes up 5% of the items in kindergarten, but increases to 20% in fifth grade.

Individual items from the reading assessment were combined to create scores for nine reading skills shown below. The skills are listed in ascending order of difficulty. With very few exceptions, students had mastered lower-level skills. For example, if a student was proficient in recognizing common sight words, they had also mastered letter recognition, and beginning and ending sounds. Descriptions of each skill are taken from documentation provided by the National Center for Education Statistics:

1. **Letter recognition** – identifying upper- and lower-case letters by name
2. **Beginning sounds** – associating letters with sounds at the beginning of words
3. **Ending sounds** – associating letters with sounds at the end of words
4. **Sight words** – recognizing common ‘sight’ words
5. **Comprehension of word in context** – reading words in context
6. **Literal inference** – making inferences using cues that are directly stated with key words in text (for example, recognizing the comparison being made in a simile)
7. **Extrapolation**: identifying clues used to make inferences, and using background knowledge combined with cues in a sentence to understand use of homonyms
8. **Evaluation** – demonstrating understanding of author’s craft (how does the author let you know...), and making connections between a problem in the narrative and similar life problems
9. **Evaluating non-fiction** – critically evaluating, comparing and contrasting, and understanding the effect of features of expository and biographical texts.

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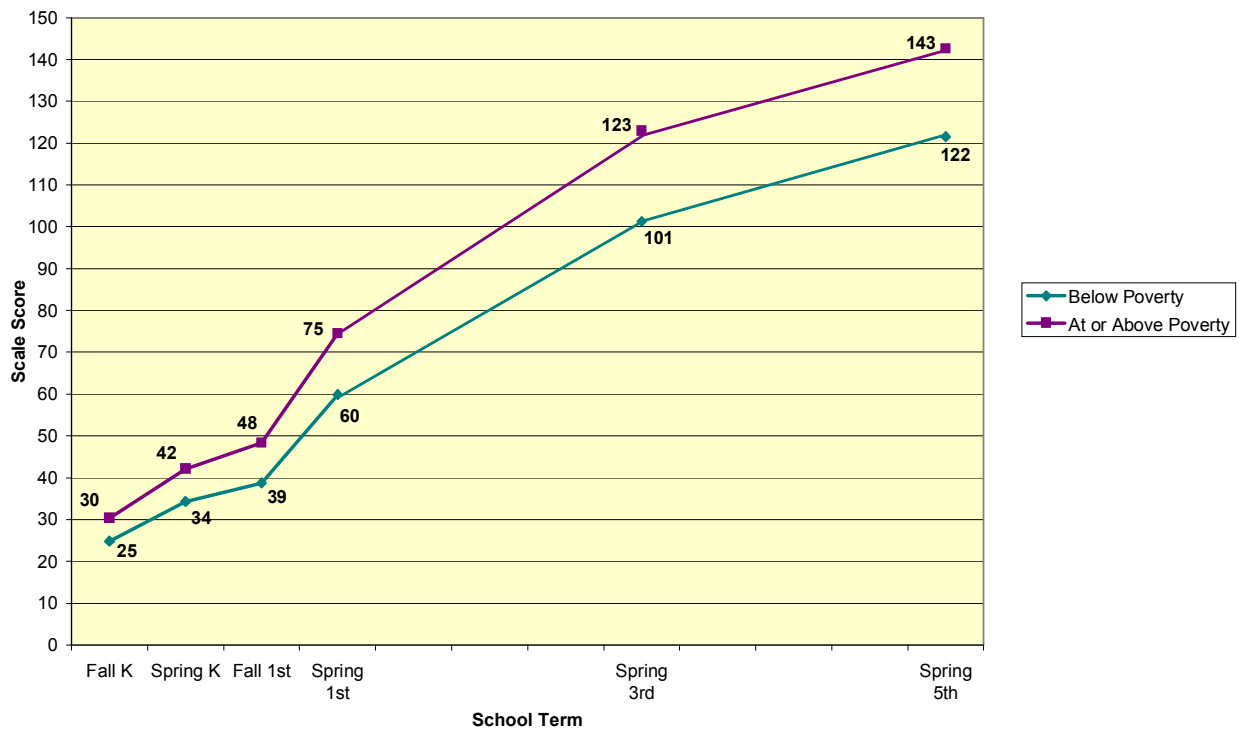


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The figures in this report compare the mean percentage of poor and wealthier students demonstrating proficiency in each of these skills. Graphs showing the distribution of scores for each group are found at the end of the report.

Figure 1: Overall Reading Scale Scores By Poverty Status



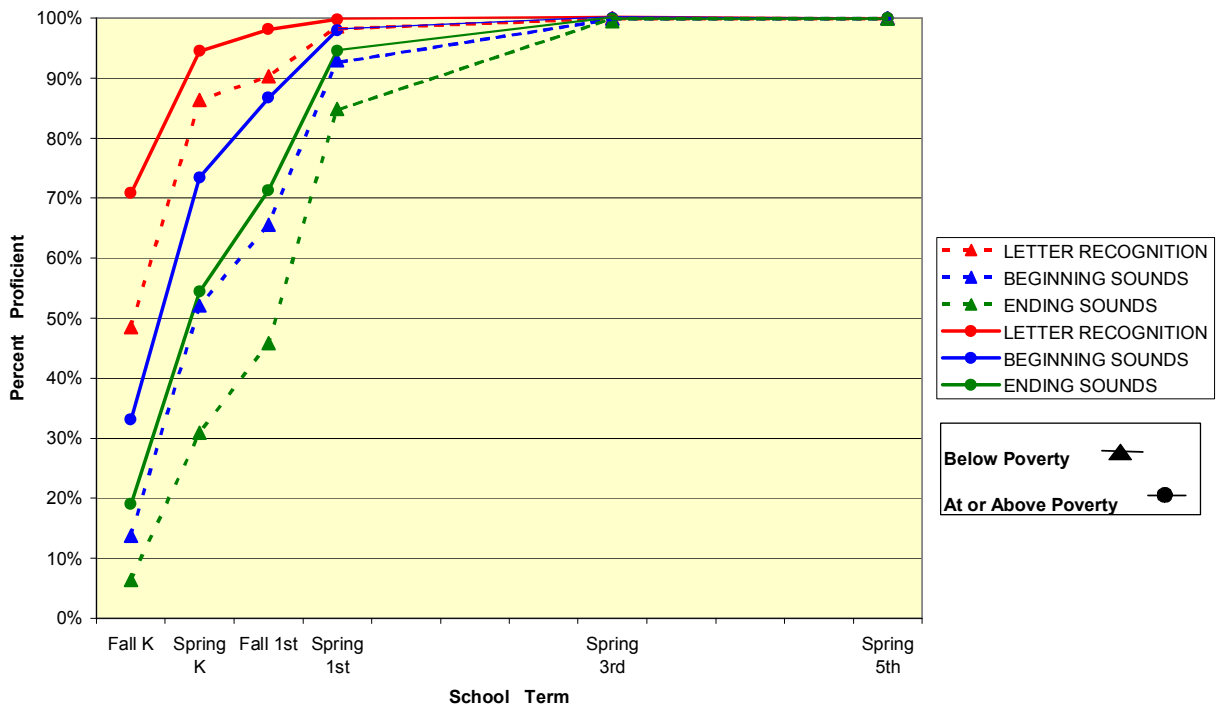
Poor students begin kindergarten with an average scale score 5 points lower than wealthier students. It takes poor students about 3 months to reach the level at which their wealthier peers begin school. The achievement gap continues to widen at each grade level, so that by fifth grade poor students have an average scale score almost 20 points below that of their more advantaged peers.

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The next set of charts shows proficiency in specific reading skills for poor and wealthier students from kindergarten through fifth grade. Figure 2 illustrates that poor students begin school with lower skills than wealthier students in recognizing letters, and knowledge of sounds at the beginning and ending of words. Almost all of the wealthier students have mastered these skills by the spring of first grade. Poor students lag behind in their understanding of beginning and ending sounds through first grade. By third grade, however, virtually all students have mastered all three of these reading skills.

Figure 2: Percentage of Students with Proficiency in Letter Recognition, Beginning Sounds and Ending Sounds



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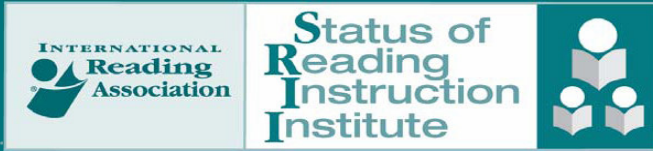


Figure 3: Percentage of Students with Proficiency in Sight Words, Word in Context and Literal Inference

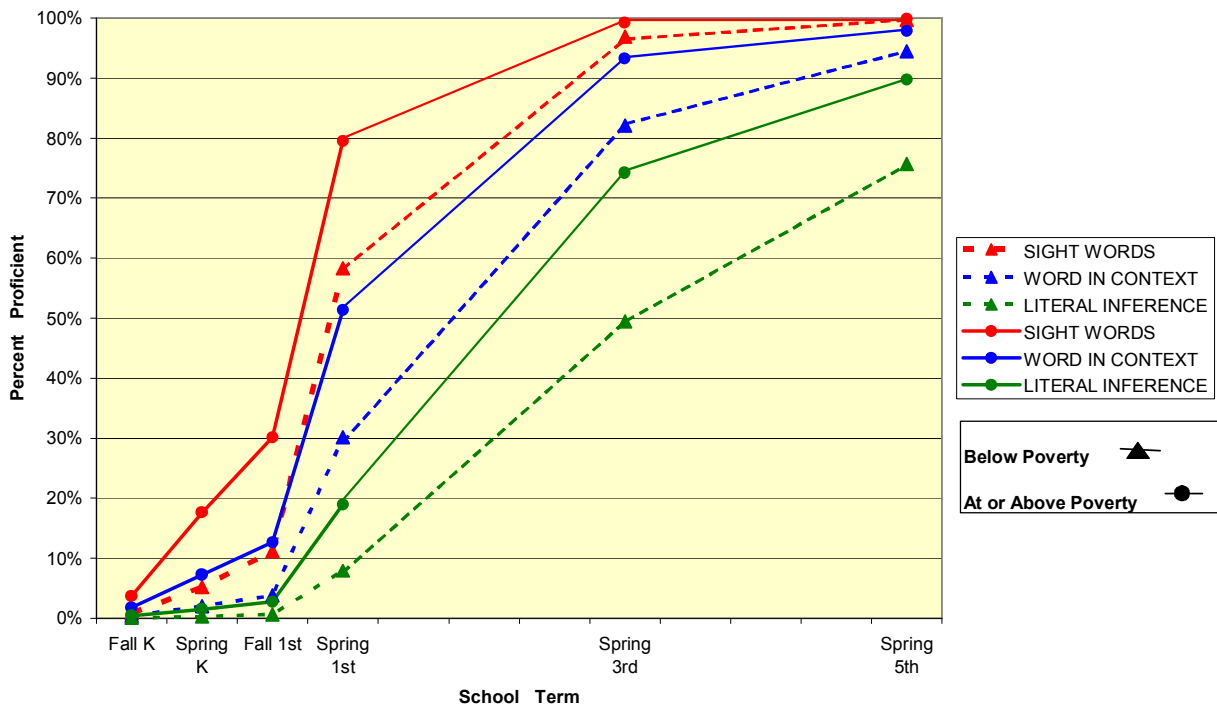
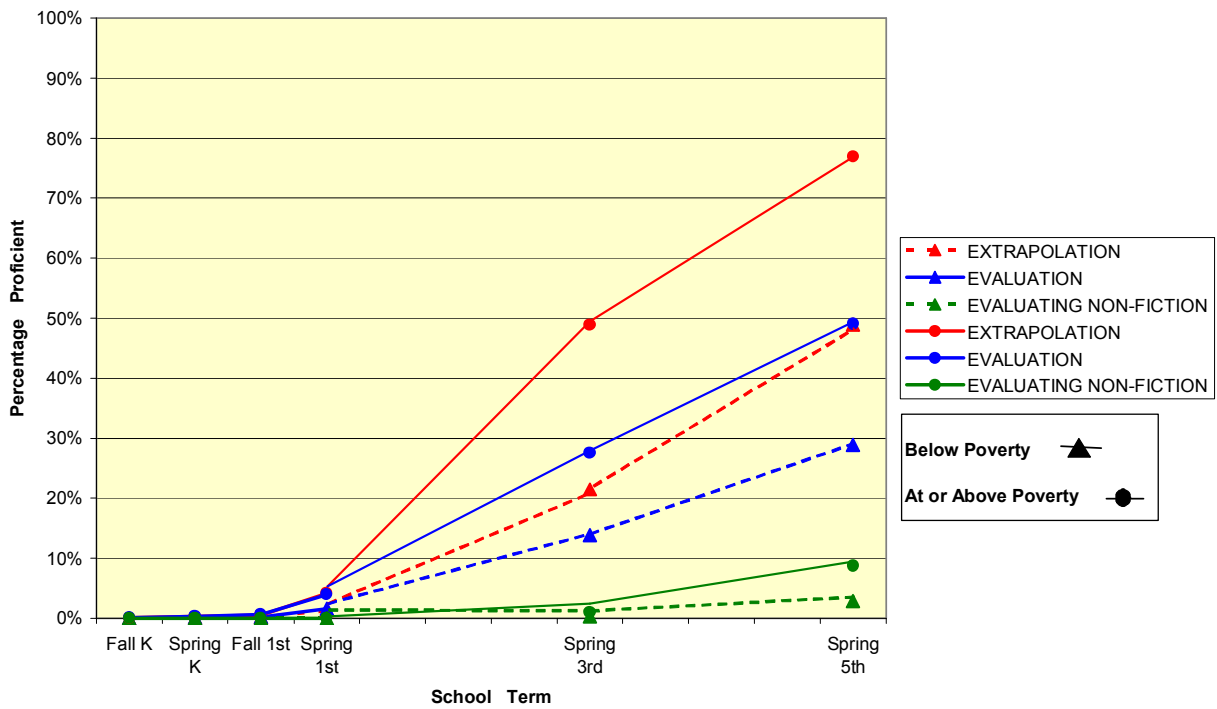


Figure 3 illustrates the importance of first grade in moving students beyond entry level reading skills. In the fall of first grade, wealthier students have low skills in recognizing sight words and understanding words in context. By spring of first grade, the majority of wealthier students have proficiency in sight words and are making progress in understanding words in context. Poor students continue to lag behind in both of these skills. In fifth grade, poor students have caught up in sight recognition, and have closed the gap in understanding words in context. But they still lag behind in literal inference.

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Figure 4: Percentage of Students with Proficiency in Extrapolation, Evaluation and Evaluating Non-Fiction



As students work to acquire the skills necessary to make more complex inferences and make connections between what they are reading and other knowledge and experience, poor students continue to lag behind in third and fifth grade. By the end of fifth grade, very few students, regardless of wealth, have proficiency in evaluating non-fiction, and only half of wealthier students are proficient in evaluating fiction.

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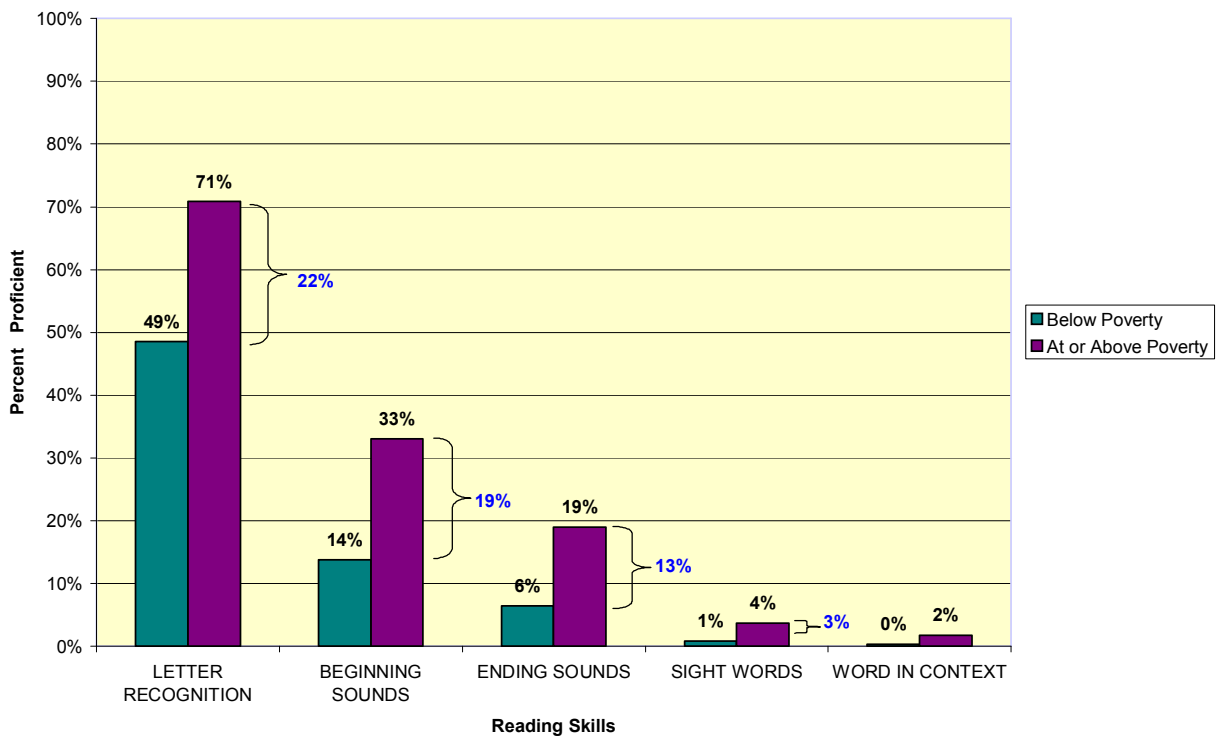


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The next set of charts shows the same information presented in Figures 1 – 4 in a different format. They compare the reading skills for poor and wealthier students at each grade. Figure 5 illustrates the substantial gaps in entry-level reading skills for poor students in comparison to wealthier students.

Figure 5: Fall of Kindergarten Reading Skills by Poverty Status



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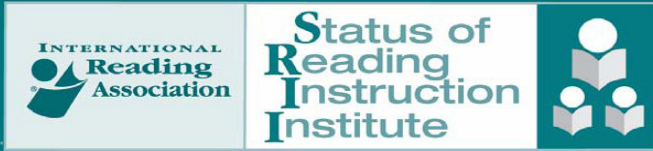
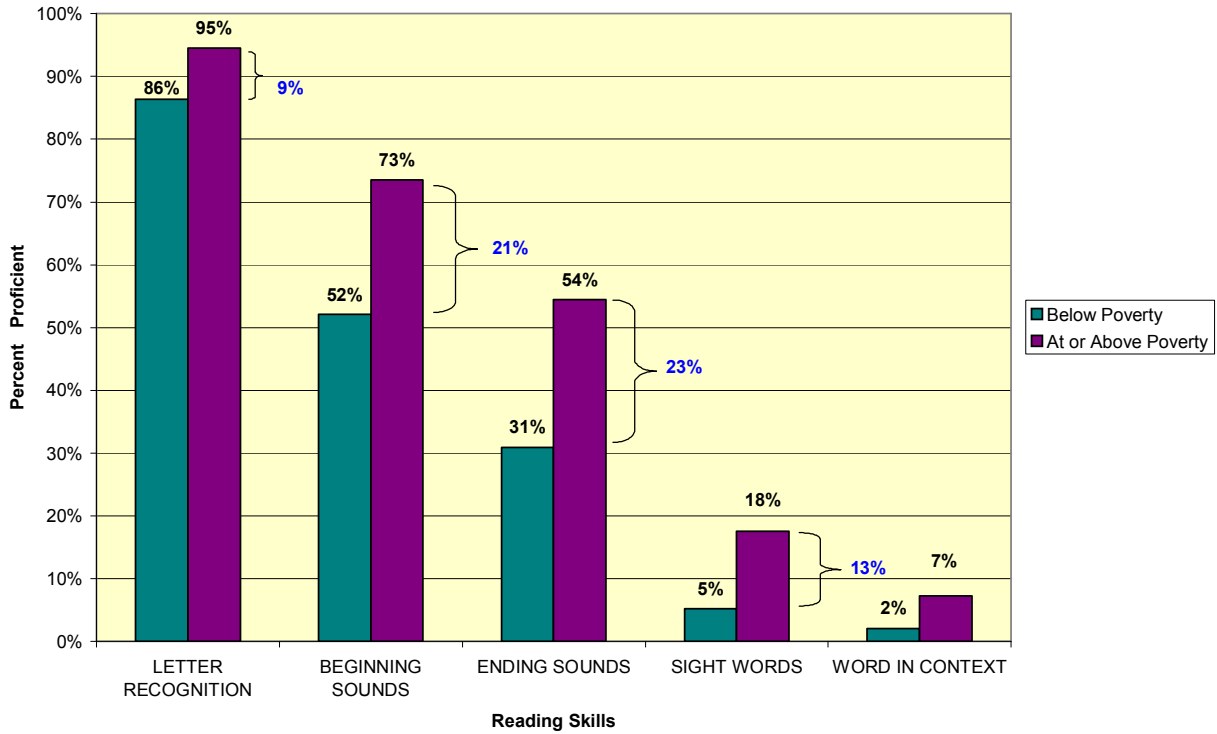


Figure 6: Spring of Kindergarten Reading Skill by Poverty Status

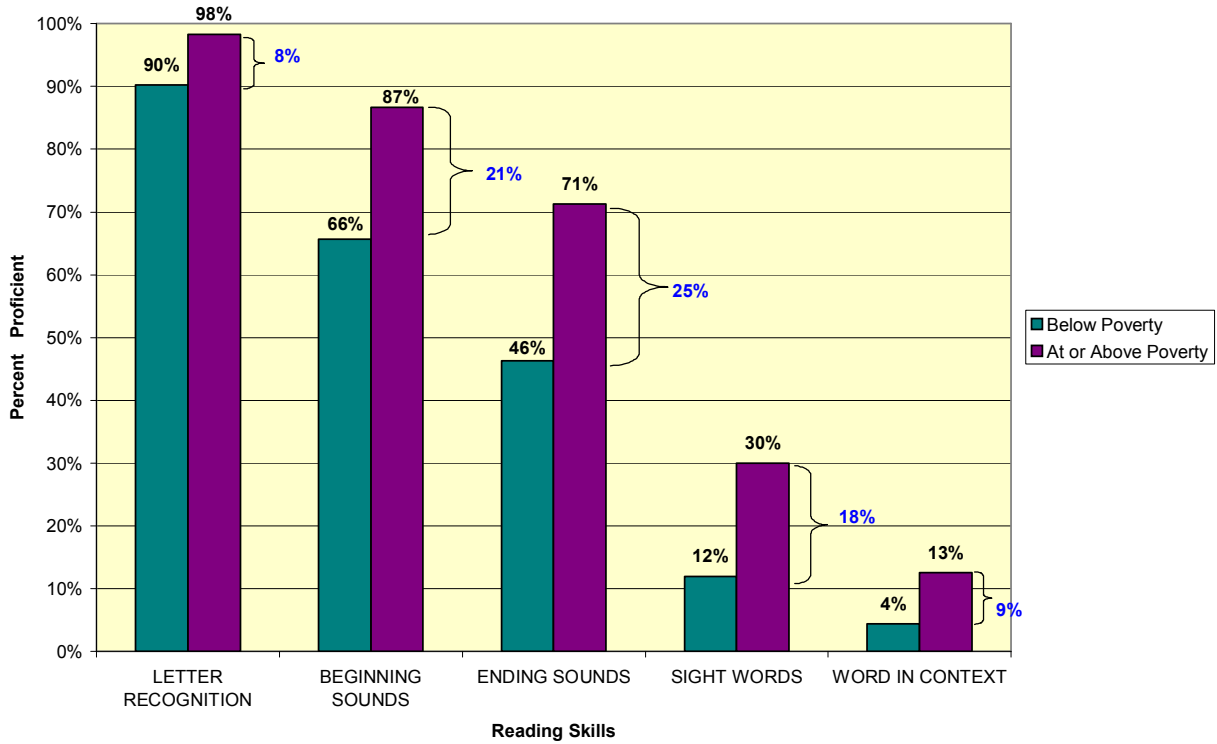


By the end of kindergarten, all students have shown strong gains in entry level skills, but poor students continue to have lower skills, particularly in beginning and ending sounds.

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Figure 7: Fall of First Grade Reading Skill by Poverty Status



By comparing this chart with Figure 6, we see that both wealthier and poor children have slightly higher reading skills in the fall than in the previous spring. However, gaps in beginning and ending sounds persist, and wealthier children have gained more skill in recognizing sight words and understanding words in context.

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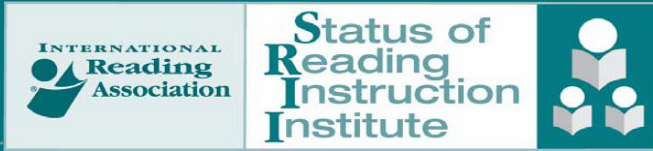
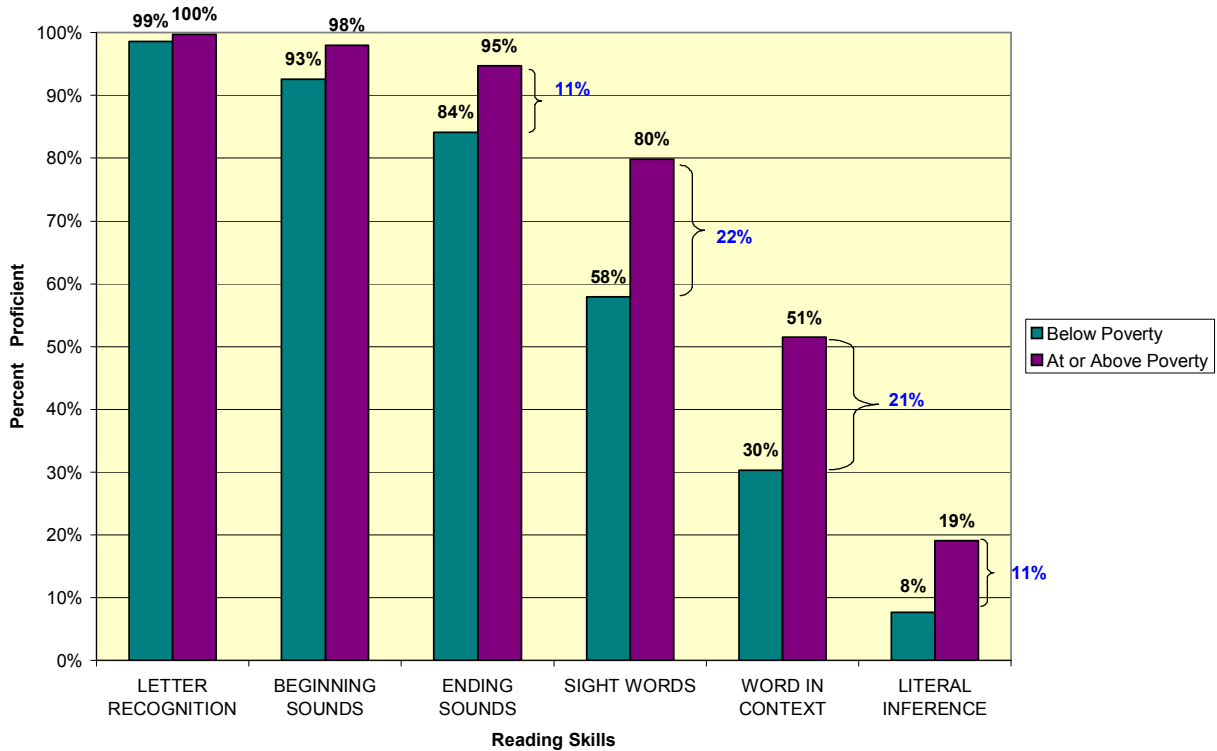


Figure 8: Spring of First Grade Reading Skill by Poverty Status



By the spring of first grade, the majority of all students have mastered entry level skills, but gaps between poor and wealthier students persist in upper level skills such as recognizing sight words, understanding words in context, and making literal inferences from text.

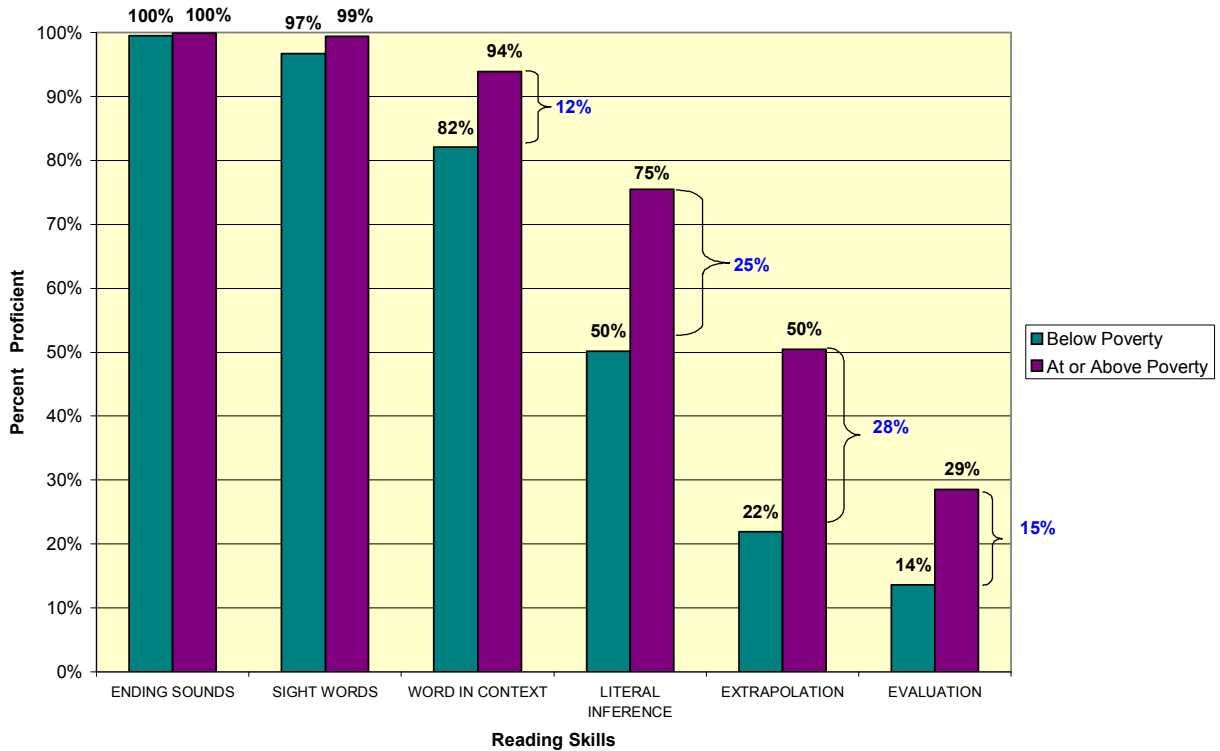
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Figure 9: Spring of Third Grade Reading Skill by Poverty Status



As with previous charts, all students continue to make progress in learning upper level skills, including extrapolation and evaluation. However, poor children continue to lag behind their more advantaged peers in most skills.

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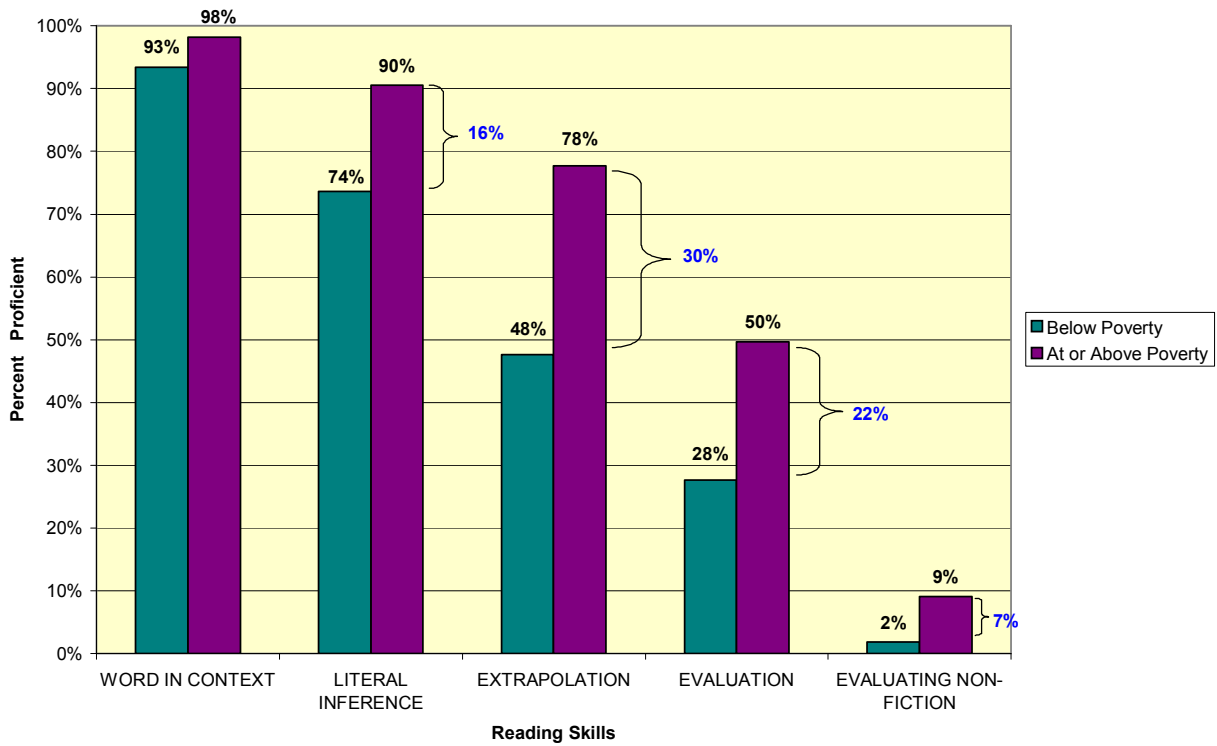


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By fifth grade, a similar pattern is found in which poor students are acquiring skills but not catching up as their more advantaged peers acquire higher level reading skills.

Figure 10: Spring of Fifth Grade Reading Skill by Poverty Status



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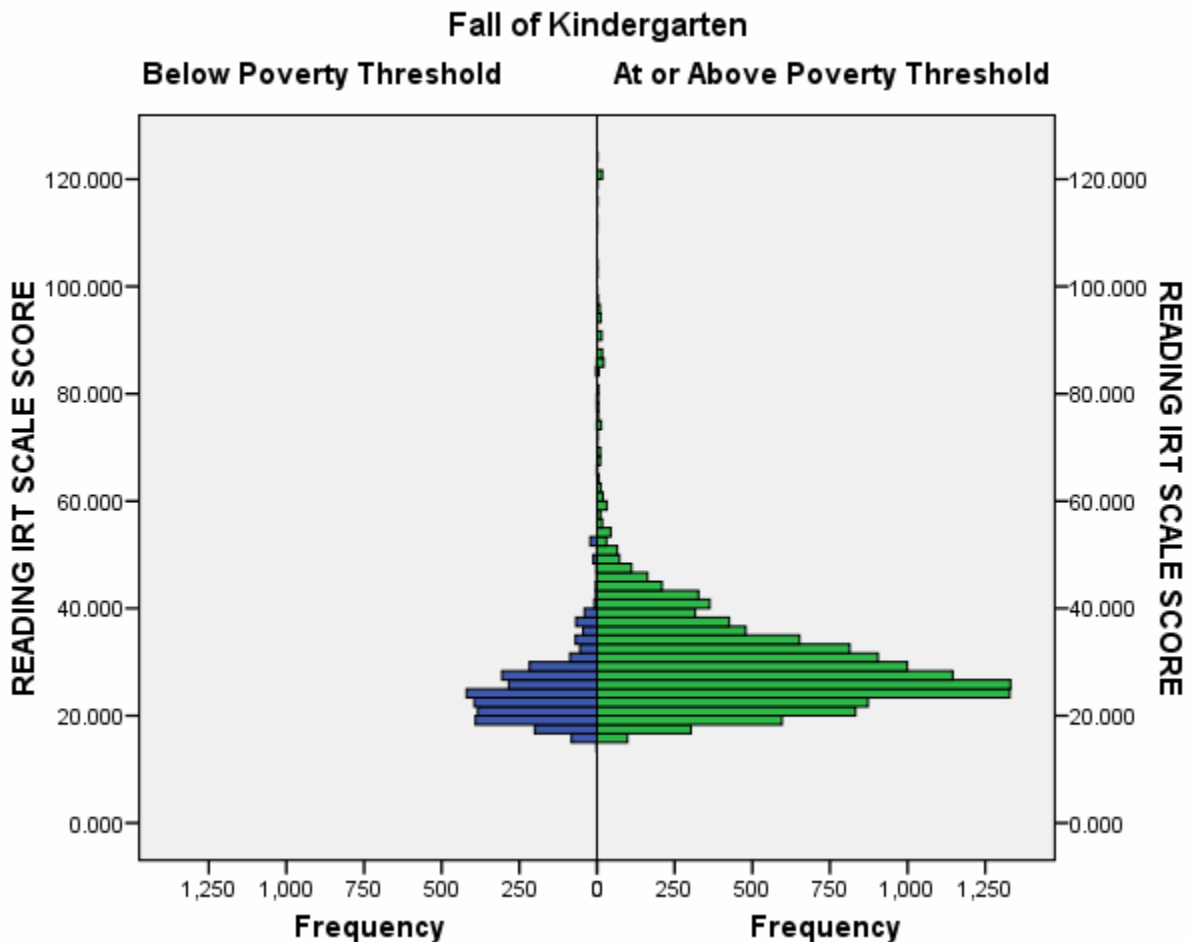


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The following graphs compare the distribution of reading scores for students above and below the poverty line. Each histogram shows the number of students who earned each score. They are helpful in describing the minimum and maximum scores obtained by each group of students, as well as the overall pattern of scores. Due to the different numbers of students in each group, the length of the bars does not provide a meaningful comparison across the two groups.

In the graph below, we see that some of the wealthier students had minimum reading scores equal to those of poor students, but a higher number of wealthier students scored in the higher ranges on reading.



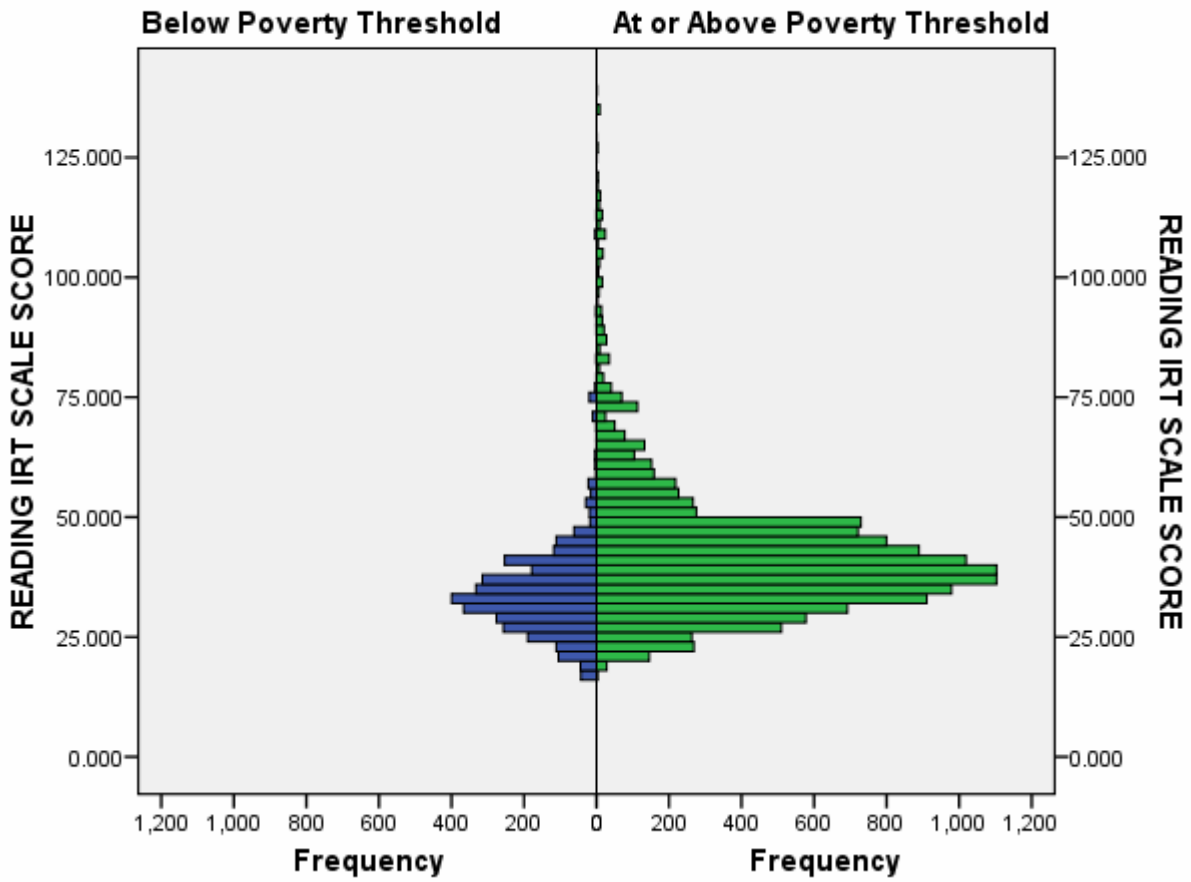
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Spring of Kindergarten



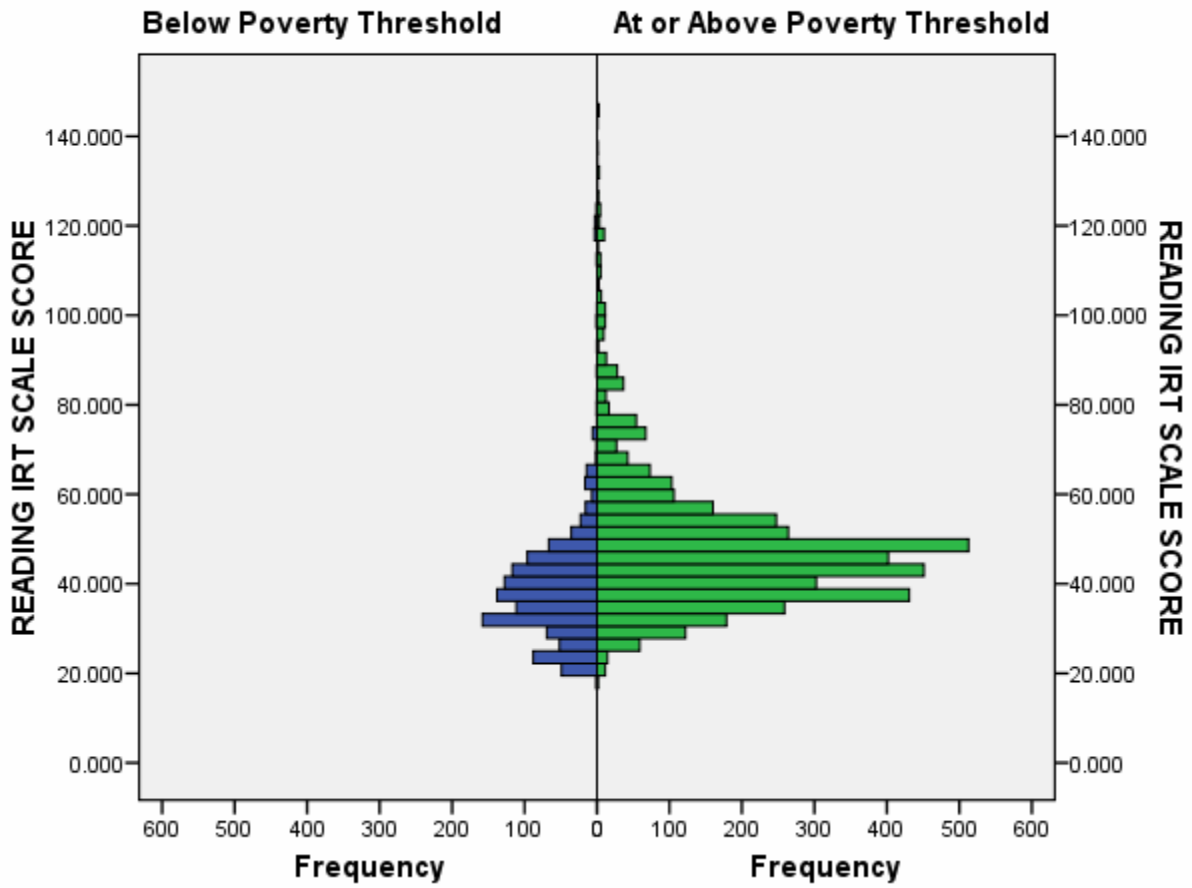
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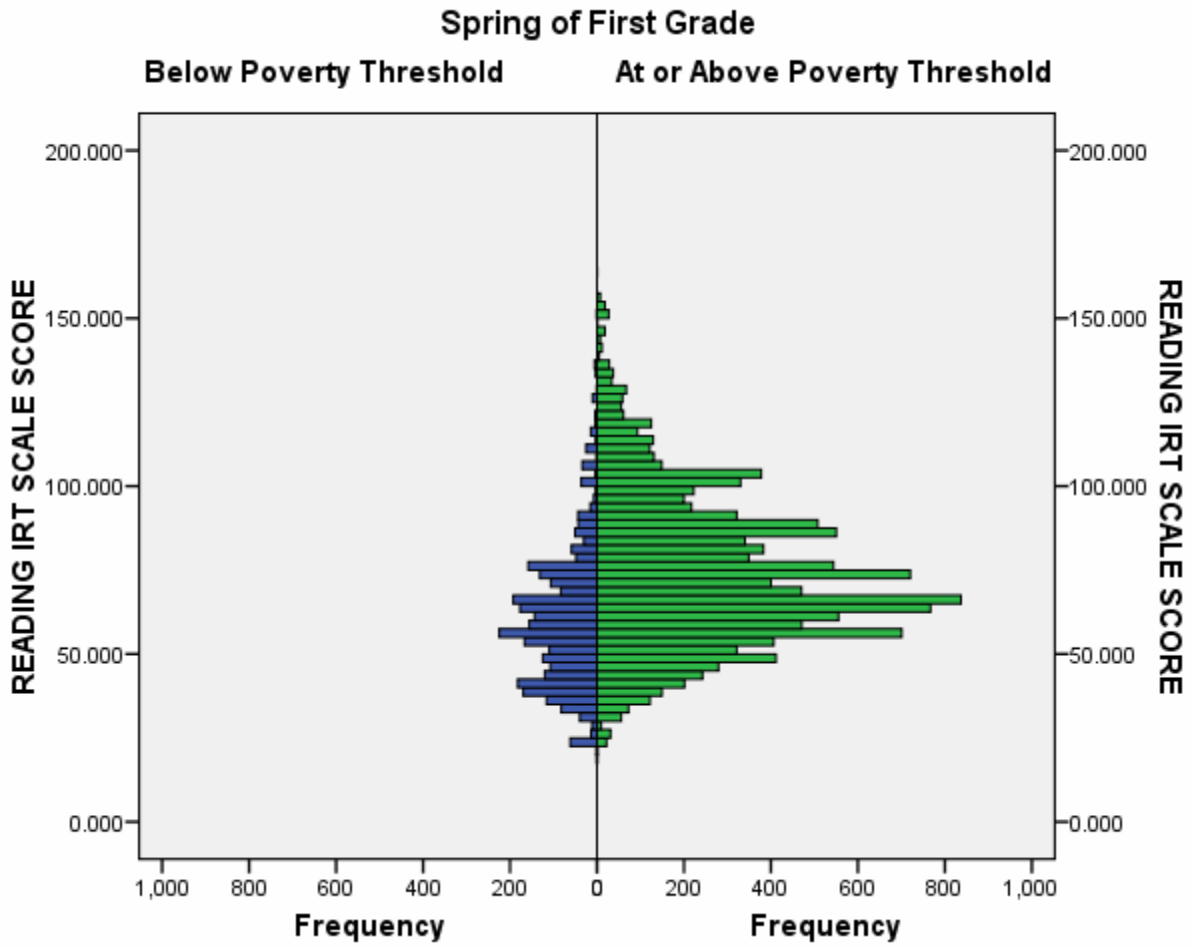
Fall of First Grade



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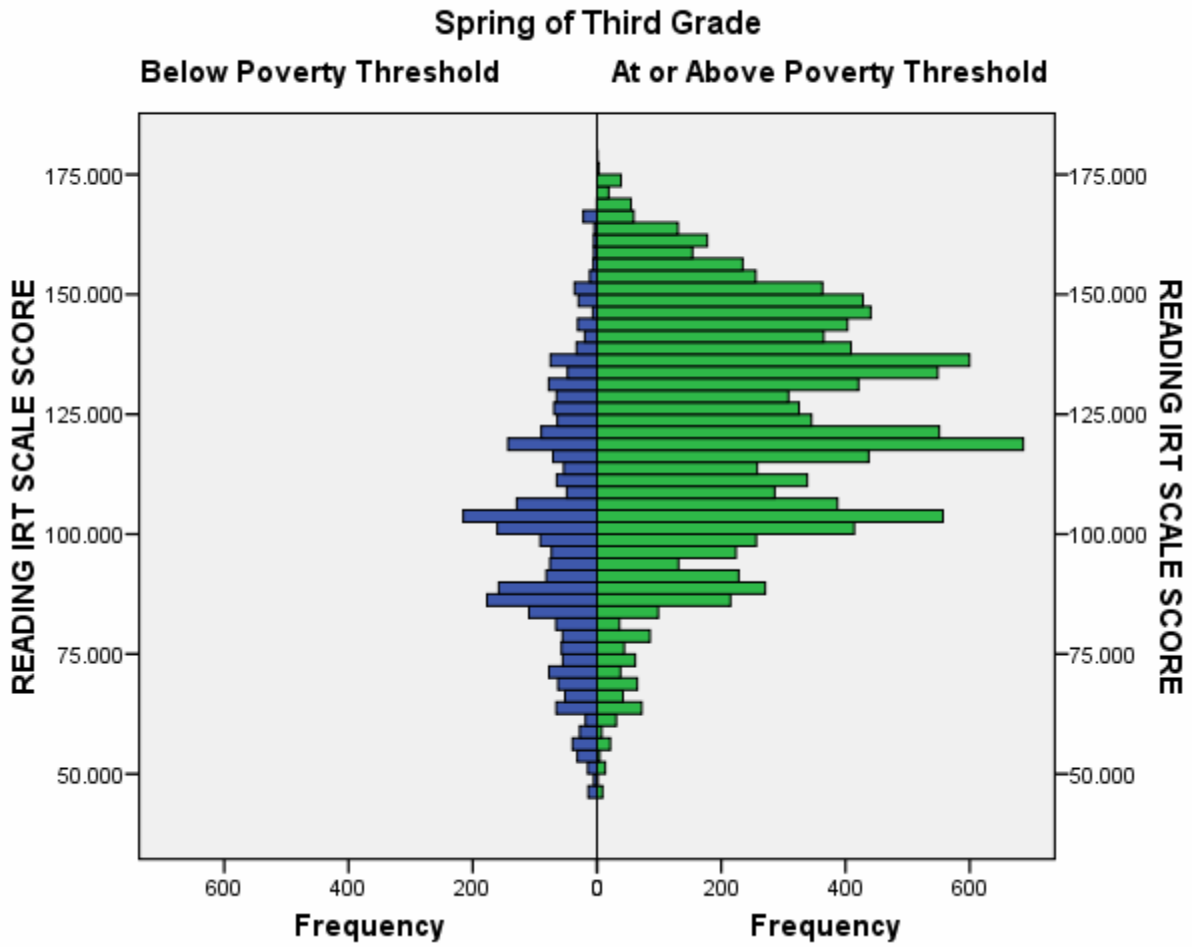
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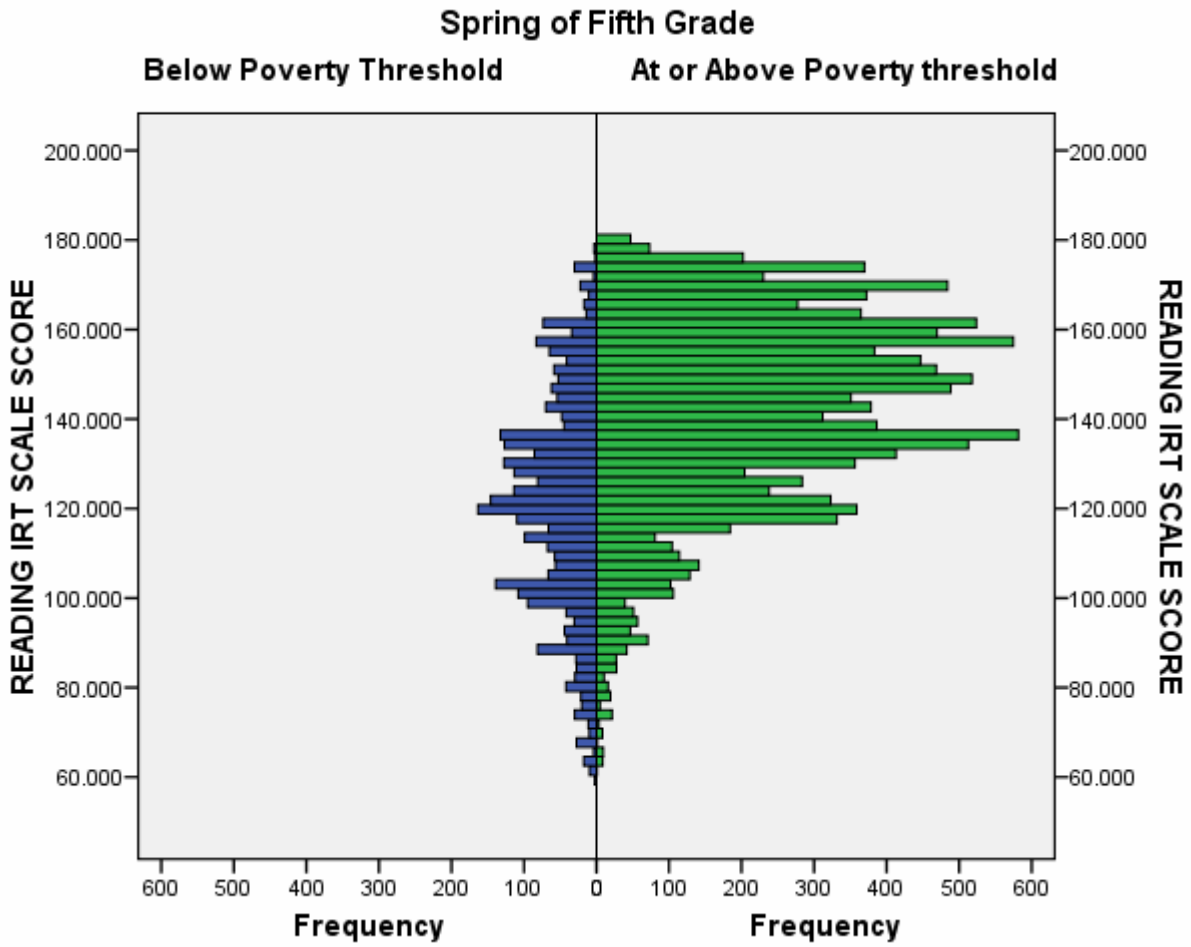
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Table 1: Sample Sizes for Data Collection Waves

	Number of Students by School Term					
	Fall		Spring			
	Kindergarten	Kindergarten	Fall 1st	Spring 1st	Spring 3rd	Spring 5th
Below Poverty	3,109	3,325	1,207	3,133	2,994	3,267
At or Above Poverty	12,753	12,953	4,079	12,782	11,955	12,749

Table 2: Demographic Characteristics by Poverty Status

	At or	
Gender	Below Poverty	AbovePoverty
Male	49.1%	51.7%
Female	50.9%	48.3%
Total	100%	100%
Race		
White	28.5%	66.6%
Black	31.4%	11.4%
Hispanic	32.1%	14.9%
Asian	2.3%	2.6%
Pacific Islander	0.7%	0.5%
American Indian	3.4%	1.1%
More Than One Race	1.4%	2.6%
Not Ascertained	0.1%	0.2%
Total	100%	100%
Grade Level in 2004		
2nd	0.0%	0.0%
3rd	2.3%	0.3%
4th	23.5%	10.3%
5th	74.2%	88.9%
6th	0.0%	0.4%
Total	100.0%	100.0%

Mean Age at K Assessment (in Months)

68.8	68.4
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Technical Information:

Dataset:

ECLS-K Longitudinal Kindergarten – Fifth Grade Public-Use Data File. U.S. Department of Education, Institute for Education Sciences, NCES 2006-035.

Variables:

Poverty: WKPOV_R; W1POVRTY; W3POVRTY; W5POVRTY

Overall Reading Scores: C1R3RSCL; C2R3RSCL; C3R3RSCL; C4R3RSCL;
C5R3RSCL; C6R3RSCL

Reading Skills: proficiency probability scores for each reading skill were averaged for each group. These scores range from 0 to 1, and estimate the probability that a student has mastered each skill. The mean was calculated for each group, then multiplied by 100 to calculate the percentage of students who are expected to have mastered each skill.

Sampling weight:

C1_6FC0 (normalized)

Confidence Intervals for Means:

Scale scores: Maximum 95% confidence interval is $\pm .9$

Proficiency scores: Maximum 95% confidence interval is ± 1.3

For more information on ECLS-K, visit the NCES website at: <http://www.nces.ed.gov/ecls/kindergarten.asp>

For more information on this report, contact Karen Douglas at kdouglas@reading.org.